



METEOROLOGICAL WARNINGS STUDY GROUP(METWSG)

FIFTH MEETING

Montréal, 20 to 21 June 2013

SUMMARY OF DISCUSSIONS

1. HISTORICAL

1.1 The fifth meeting of the Meteorological Warnings Study Group (METWSG) was held at the Headquarters of the International Civil Aviation Organization (ICAO) in Montréal, Canada, 20 to 21 June 2013.

1.2 The meeting was opened by Mr. Greg Brock, Chief of the Meteorology Section of the Air Navigation Bureau of ICAO. Mr. Brock extended a warm welcome to all the participants, and emphasized that in view of the convening of an ICAO Meteorology (MET) Divisional Meeting in July 2014, to be held in part conjointly with the Fifteenth Session of the World Meteorological Organization (WMO) Commission for Aeronautical Meteorology (CAeM-XV), that the group would need to work efficiently during its two days of deliberations and would need to decide whether its views were sufficiently mature on each of the topics to be addressed so as to reduce or eliminate entirely the need for significant further work and/or meeting ahead of the MET Divisional Meeting.

1.3 The names and contact details of the participants are listed in **Appendix A**. Mr. Bill Maynard was elected Chairman of the meeting. The meeting was served by the Acting Secretary of the METWSG, Mr. Greg Brock, Chief, Meteorology Section.

1.4 The meeting considered the following agenda items:

Agenda Item 1: Opening of the meeting;

Agenda Item 2: Election of Chairman;

Agenda Item 3: Adoption of working arrangements;

Agenda Item 4: Adoption of the agenda;

Agenda Item 5: SIGMET/AIRMET and air-reports

- a) SIGMET implementation issues;
- b) SIGMET/AIRMET and air-report requirements

Agenda Item 6: Aerodrome warnings**Agenda Item 7:** Deliverables;**Agenda Item 8:** Any other business; and**Agenda Item 9:** Closure of the meeting.

1.5 A list of study notes and information papers issued for the meeting is given in **Appendix B**.

2. **AGENDA ITEMS 1 TO 4: OPENING OF THE MEETING;
ELECTION OF CHAIRMAN; ADOPTION OF WORKING
ARRANGEMENTS; ADOPTION OF THE AGENDA**

2.1 These items are covered under Section 1: Historical.

3. **AGENDA ITEM 5: SIGMET/AIRMET AND
AIR-REPORTS**

3.1 **SIGMET implementation issues**

Further study into a regional SIGMET advisory system (Deliverable 1)

3.1.1 The group recalled that it had formulated Action Agreed 4/1 at the last meeting concerning the development of a concept of operations for a global or multi-regional SIGMET advisory system and criteria for the selection of regional SIGMET advisory centres by the respective ICAO planning and implementation regional groups (PIRGs). In addition, Action Agreed 4/1 was to address the development of a revised format for the advisory information, the development of an amendment proposal to Annex 3 – *Meteorological Service for International Air Navigation*, and the development of a proposal for further study into a regional-based notification system rather than a flight information region (FIR)-based system form the reporting of hazardous meteorological conditions.

3.1.2 The group was pleased to learn that as follow-up to Action Agreed 4/1, an ad-hoc group (A) had prepared a necessary report addressing each of the referred items, intended to assist the group in its further consideration of this issue. The group noted in particular that the concept of operations provided background to the proposed establishment of regional SIGMET advisory centres, current operations and capabilities, concepts for the establishment of such regional centres, expected functional and performance requirements, operational scenarios and an assessment of the impacts of the introduction of regional SIGMET advisories in support of the issuance of SIGMET messages by meteorological watch offices (MWOs).

3.1.3 To aid the deliberations, the group considered two further reports relating to the establishment of a regional SIGMET advisory system to aid the discussion. The first report concerned an analysis of wider issues and experiences in the provision of information relating to hazardous meteorological conditions, including the need to ensure that a long-term solution to a long-term problem (i.e. the lack of implementation of SIGMET in some parts of the world) was well founded, and the second report concerned issues related to the requirements for regional SIGMET advisory centres based on recent discussions and experiences within the Asia-Pacific Region, including consideration of the tools that may be necessary to assist in a regional SIGMET advisory production process and the need for a suitably established verification framework.

3.1.4 Taking all of these reports into account, the group considered in detail whether the concept of operations for a regional SIGMET advisory system, as developed thus far, was of a sufficient level of maturity to provide a basis for the development of Annex 3 provisions. Appreciating the efforts of the ad-hoc group in the development of the concept of operations, the group reflected that the concept of operations needed to ensure that the views of users and regulatory authorities were taken into account in future iterations. The group noted that some users/operators do not use SIGMET information for volcanic ash and tropical cyclone in flight planning. The group noted that the users (the International Air Transport Association (IATA) and the International Federation of Air Line Pilots' Associations (IFALPA)) recorded their disappointment that the issues at hand had not progressed further than they had. The users reported continued inconsistency and lack of issuance of SIGMET information, and that the non-standardized format of the SIGMET information used by some meteorological watch offices was unacceptable. Notwithstanding the need for additional work on the concept of operations, the group noted that the users considered that an action plan that identified when and where the regional SIGMET advisory centres would come into operation was required. The group concurred that the concept of operations would be a "living document" going forwards and that there was a need to ensure that the concept of operations was supported by a high-level strategic statement relating to the short- and long-term vision for the provision of information relating to hazardous meteorological conditions.

3.1.5 Recognizing the evolving needs of aviation, and in particular the transition to global air traffic management supported by a system-wide information management environment, the group expressed that as meteorological information plays a more integrated role in strategic and tactical decision-making – of airline operators, flight crews, air traffic flow managers, air navigation service providers and others – the existing FIR-based approach to SIGMET provision would likely become a hindrance to progress unless some form of regional-based approach was realized in the longer-term. The group noted emerging issues such as governance and equitable cost recovery would have to be addressed regardless of whether future SIGMET provision was regional, multi-regional or global in nature.

3.1.6 Taking the foregoing into account, the group agreed to the following three-tiered strategy with which to progress this issue. Firstly, that a high-level strategic statement relating to the short- and long-term vision for the provision of information relating to hazardous meteorological conditions was needed in time for the MET Divisional Meeting. Secondly, that the concept of operations for hazardous meteorological conditions should continue to mature as a living document, taking inspiration from the referred high-level strategic statement and with inputs from users and regulatory authorities. And thirdly, that a plan for future governance and equitable cost recovery of such a regionalized-approach to meteorological service provision should be realized. The group formulated the following actions agreed accordingly:

Action Agreed 5/1 — High-level strategic statement relating to the short- and long-term vision for the provision of information for hazardous meteorological conditions

That, **Albert, Bill, Colin, Hans-Rudi, Herbert, Juan, Jun, PW, Sue, Patrick, Peter (Rapporteur)** and **Steve** develop a high-level strategic statement relating to the short- and long-term vision for the provision of information for hazardous meteorological conditions, and provide a report to the Secretary by 30 September 2013 for subsequent endorsement by the group through correspondence by 31 October 2013 so that the statement can be forwarded by the **Secretary** to:

- a) ad hoc group A to assist in the follow-up to Action Agreed 5/2; and
- b) the Meteorology Divisional Meeting in July 2014.

Action Agreed 5/2 — Further development of a concept of operations for a regional SIGMET advisory system

That, an ad hoc group (WG/A) consisting of **Albert, Bill, Colin, Hans-Rudi, Herbert, Juan, Jun, PW (Rapporteur), Patrick, Peter** and **Steve** develop a further iteration to the concept of operations for a regional SIGMET advisory system for hazardous meteorological conditions that reflects the views of users and regulatory authorities and the short- and long-term vision provided through Action Agreed 5/1, and provide a report to the Secretary by 30 September 2013 for subsequent endorsement by the group through correspondence by 31 October 2013 so that the concept of operations can be forwarded by the **Secretary** to the Meteorology Divisional Meeting in July 2014 as information.

Action Agreed 5/3 — Plan for the future governance and equitable cost recovery of a regional SIGMET advisory system

That, **Colin (Rapporteur), Herbert, Hans-Rudi, Patrick, Peter, Sue** and **Zhang** develop a plan for the future governance and equitable cost recovery of a regional SIGMET advisory system for hazardous meteorological conditions, and provide a report to the **Secretary** by 15 October 2013 for subsequent endorsement by the group through correspondence by 15 November 2013 so that the concept of operations can be forwarded by the **Secretary** to the Meteorology Divisional Meeting in July 2014 as information.

Regional SIGMET guidance

3.1.7 The group recalled that it had formulated Action Agreed 4/3 a) concerning regional SIGMET guidance. The group was pleased to learn that an ad-hoc group (B) had prepared a necessary report on the progress made in developing generic guidance on the issuance of SIGMET, with a view to its use in the development and/or maintenance of Regional SIGMET Guides in the ICAO Regions. The group concurred that whilst the ad-hoc group had advanced the development of a regional SIGMET guide template to a reasonable level of maturity, some further effort was required prior to it being suitable for release to the ICAO Regional Offices.

3.1.8 The group noted that the regional SIGMET guide template, as developed thus far, included background information in the responsibilities and coordination between the various parties concerned (meteorological watch offices, air traffic services units and others) and procedures for the preparation of SIGMET information (including a list of the permissible phenomena that would trigger issuance, permissible abbreviations and message construct). In addition, the regional SIGMET guide template proposed the inclusion of a series of appendices to address, *inter alia*, a SIGMET guidance table, SIGMET message examples and SIGMET test procedures.

3.1.9 The group appreciated that the regional SIGMET guide template and the Regional SIGMET Guides developed from it offered amplification to Annex 3 provisions insofar as the construct of a SIGMET message was concerned (based on Annex 3, Appendix 6, Table A6-1), making use of best practice examples.

3.1.10 The group noted that an ad hoc group of the International Airways Volcano Watch Operations Group (IAVWOPSG) was currently tasked to address the issuance of SIGMET messages for complex volcanic ash cloud events. Noting the best practice approach within the proposed regional SIGMET guide template, the group appreciated that there would be merit in looking to combine the efforts of the IAVWOPSG (ad hoc group) and the METWSG in this regard so that the regional SIGMET guide template could include some necessary examples to assist implementation.

3.1.11 In terms of the scope of the appendices to the regional SIGMET guide template, the group concurred that the proposed inclusion of certain facilities and services implementation document (FASID) Tables MET was probably redundant given that ICAO Regions with air navigation plans maintained such tables as “living documents” either in a paper-based form or online, and that the transition to an electronic air navigation plan (eANP) would enhance the availability and maintenance of information such as the designation of meteorological watch offices.

3.1.12 Having reviewed the content of the regional SIGMET guide template, and noting that further work was required prior to the template being suitable for release to the ICAO Regional Offices – in particular relating to best practice examples, the scope of the appendices and alignment with Amendment 76 of Annex 3 (applicable 14 November 2013) – the group formulated the following action agreed accordingly:

Action Agreed 5/4 — Regional SIGMET guide template

That, an ad hoc group (WG/B) consisting of **Albert, Bill, Colin (Rapporteur), Hans-Rudi, Juan, Patrick, Steve and Sue** complete the development of a regional SIGMET guide template, including its alignment with Amendment 76 to Annex 3 – *Meteorological Service for International Air Navigation*, and provide to the **Secretary** by 30 September 2013 to enable its early availability at the ICAO Regional Offices to assist in the issuance or updating of regional SIGMET guides in the ICAO Regions.

Proposal to split the template for SIGMET and AIRMET messages and special air-reports (uplink) into its component parts

3.1.13 The group recalled that it had formulated Action Agreed 4/3 b) concerning an investigation into the splitting of Annex 3, Appendix 6, Table A6-1 into its three component parts – namely SIGMET messages, AIRMET messages and special air-reports (uplink). The group was pleased to note that as follow-up to Action Agreed 4/3 b), ad hoc group B had prepared a necessary report accordingly.

3.1.14 Whilst appreciating that the current, combined nature of Table A6-1 was advantageous insofar as the application of common elements across the three message types was concerned, the group considered whether Table A6-1 could, at the same time, lead to confusion and potential misapplication of how each of the three message types should be constructed. And, taking into account the noted deficiencies that exist in some ICAO Regions with respect to the (lack of) implementation of SIGMET, the group considered that the existing construct of Table A6-1 could be a contributory factor to the lack of implementation of SIGMET messages and, to a lesser extent, the other message types concerned.

3.1.15 Accordingly, the group considered the merits of splitting the existing Table A6-1 into its three component parts – i.e. one table each for SIGMET messages, AIRMET messages and special air-reports (uplink). The group gave careful consideration as to whether the splitting of Table A6-1 would reduce or increase the complexity of how the three message types were to be constructed and, as importantly, maintained going forwards.

3.1.16 Recognizing that SIGMET messages and AIRMET messages were essentially identical in terms of their content except with respect to the phenomena for which they are required to be issued, the group concurred that it would be highly desirable to split the existing Table A6-1 into two rather than three parts. One of the resultant tables would cater for SIGMET and AIRMET messages whilst the other would cater for special air-reports (uplink). The group expressed that, by retaining the templates for SIGMET messages and AIRMET messages in one table, this would aid the maintenance of the tables and would also aid the use of the tables by forecasters at the meteorological watch offices who may be required to issue both types of message (for example, in the EUR Region). In respect of the numbering convention for the two resultant tables, the group concurred that it would be beneficial to simply renumber the new tables as A6-1A (*Template for SIGMET and AIRMET messages*) and Table A6-1B (*Template for special air-reports (uplink)*), since Tables A6-2, A6-3 and A6-4 were already well-established tables within Annex 3 and associated guidance. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/5 — Updating of Annex 3 relating to the template for SIGMET and AIRMET messages and special air-reports (uplink)

That, the **Secretary** in coordination with **Chris (for Colin)** develop a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation* such that Appendix 6, Table A6-1 is split into two parts – namely Table A6-1A (*Template for SIGMET and AIRMET messages*) and Table A6-1B (*Template for special air-reports (uplink)*) – and provide a report to the group by 30 September 2013 for subsequent endorsement through correspondence by 31 October 2013 so that the proposal can be forwarded by the **Secretary** as part of draft Amendment 77 to Annex 3.

Proposed protocol for the location of phenomenon used in SIGMET messages issued in traditional alphanumeric code form and digital form

3.1.17 The group was aware that Amendment 76 to Annex 3 (applicable 14 November 2013) enables the production and bilateral exchange, by States in a position to do so, of METAR/SPECI, TAF and SIGMET in a digital form, and that the digital form used is to be in accordance with the globally interoperable information exchange model and use the extensible markup language/geography markup language (XML/GML). In this regard, the group considered the need for a protocol with respect to the application of the “location” of the phenomenon warranting issuance of a SIGMET that may need to be applied in the event that an MWO is in position to exchange SIGMET in a digital form as well as traditional alphanumeric code (TAC) form. More specifically, where a MWO does intend to issue/exchange SIGMET information in TAC form *and* digital form, the group considered whether the “location” of the phenomenon warranting issuance of a SIGMET should be described *only* by using a polygon of latitude and longitude coordinates (in degrees and minutes) rather than other descriptive forms (for example, “N OF A LINE ...”).

3.1.18 The group gave careful consideration as to what it considered to be the most optimum way to describe the location of a phenomenon in a SIGMET message going forwards, taking into account the requirements concerning SIGMET message construct contained in Annex 3, Appendix 6, Table A6-1 (*Template for SIGMET and AIRMET messages and special air-reports (uplink)*).

3.1.19 Taking in account the earlier considerations that a longer-term vision was to move from an FIR-based approach for SIGMET provision to a regional-based approach (3.1.5 above refers), the group concurred that such a move would lend itself perfectly to transitioning to the exclusive use of a polygon of coordinates to describe the phenomenon warranting the issuance of a SIGMET. However, until such a time, appreciating the often complex, non-uniform boundaries of FIRs (such as in continental Europe), the group noted that many MWOs would require the ability to describe the location of the phenomenon through the use of descriptive terms for the foreseeable future. The group appreciated that since Annex 3 would, as part of Amendment 76, enable the use of the extensible markup language (XML) *and* the geography markup language (GML) for the digital representation of SIGMET (as well as for METAR/SPECI and TAF), the accommodating of the Table A6-1 descriptors to describe the location of the phenomenon would be assured.

3.1.20 In view of the foregoing, the group agreed that there was no need to introduce a protocol with respect to the location of phenomenon used in SIGMET messages issued in traditional alphanumeric code form and digital form.

Proposal to simplify the location descriptors for a volcanic ash cloud used in SIGMET messages

3.1.21 The group was aware that Annex 3, Appendix 6, Table A6-1 (*Template for SIGMET and AIRMET messages and special air-reports (uplink)*) requires that the flight level or altitude and extent of a volcanic ash cloud be included in SIGMET messages – at the observed/forecast position at the start of the period of validity of the SIGMET message and at the forecast position at the end of the period of validity of the SIGMET message.

3.1.22 In this regard, the group considered that since there were adequate methods of identifying the location of all phenomenon that warrant the issuance of the SIGMET in the “Location” section of Table A6-1, that the descriptors pertaining to a volcanic ash cloud in the “Level” section of Table A6-1 were unnecessary and inconsistent with the other permissible location descriptors available in the “Location” section.

3.1.23 The group concurred that simplification within Table A6-1 was a desirable pursuit, since an overly complicated table did not aid the forecasters at the MWOs nor the users of the SIGMET information. Indeed, it was expressed that, from a user’s perspective, inconsistency in output through the misapplication of the ICAO provisions lent itself to decreased confidence in the information that was being provided.

3.1.24 Having completed its consideration of the proposal, the group agreed that the location descriptors for a volcanic ash cloud at the start of the period of validity of a SIGMET message should be simplified and consolidated into the “Location” section of Table A6-1, and also that the “Forecast position” section should be simplified with respect to a volcanic ash cloud forecast position at the end of the period of validity of a SIGMET message. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/6 — Update of Annex 3 relating to the location descriptors for a volcanic ash cloud in SIGMET messages

That, a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 6, Table A6-1, whereby the location descriptors for a volcanic ash cloud used in SIGMET messages are simplified and consolidated, as provided at **Appendix C** to this Summary of Discussions, be forwarded by the **Secretary** as part of draft Amendment 77 to Annex 3.

Repetition of elements included in SIGMET messages

3.1.25 The group was aware that Annex 3, Appendix 6, Table A6-1 (*Template for SIGMET and AIRMET messages and special air-reports (uplink)*) permits the description of multiple separate areas of the same phenomenon within a single SIGMET message. More specifically, Table A6-1 permits the elements “location”, “level”, “movement or expected movement”, “changes in intensity” and “forecast position” of the same phenomenon covering more than one area within the FIR/CTA to be repeated, as necessary. The group recalled that the option to repeat the referred elements in a SIGMET message was

introduced as recently as Amendment 75 to Annex 3 (applicable November 2010), based on a proposal that had originated at the first meeting of the group (METWSG/1, 20 to 22 November 2007, Montréal).

3.1.26 Notwithstanding the earlier position, the group considered whether the repetition of these elements in a single SIGMET message, for the phenomena that warrant the issuance of a SIGMET, could result in an excessively long and potentially complex SIGMET messages and could lead to downstream difficulties for those wishing to make operational use of the SIGMET information. The group noted that the repetition of the referred elements for the same phenomenon in a SIGMET message was optional, and that if a MWO elected to use separate SIGMET messages for such instances they were perfectly entitled to do so within the existing ICAO provisions. This was believed to be what the majority of MWOs were doing in practice.

3.1.27 Noting that, in the case of a volcanic ash cloud and a tropical cyclone, there may be occasions where there was a significant variation in the location and extent (vertical and horizontal) of the volcanic ash cloud and the cumulonimbus cloud respectively, the group concurred that the option to repeat the referred elements for these two phenomena alone should be retained, but that for all other phenomena the option should be removed.

3.1.28 In view of the foregoing, the group formulated the following action agreed accordingly:

RSPP Action Agreed 5/7 — Updating of Annex 3 relating to the repetition of elements included in SIGMET messages

That, **Secretary** to develop a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 6, Table A6-1 that removes the option to repeat the elements “location”, “level”, “movement or expected movement”, “changes in intensity” and “forecast position” of the same phenomenon covering more than one area within the flight information region/control area (FIR/CTA) *except for* a volcanic ash cloud and cumulonimbus cloud associated with a tropical cyclone, and provide a report to the group by 30 September 2013 for subsequent endorsement through correspondence by 31 October 2013 so that the proposal may then be forwarded, as necessary, by the **Secretary** as part of draft Amendment 77 to Annex 3.

Temporary interruption to the operation of a meteorological watch office

3.1.29 Noting that Annex 3, 3.4.2 requires MWOs to maintain a continuous watch over meteorological conditions affecting flight operations within its area of responsibility, the group considered whether it was necessary to develop an ICAO provision that would specify that, in the event of a temporary interruption to the operation of a MWO, contingency modes of operation were employed by the MWO (as determined by the meteorological authority of the State concerned) to ensure the maintenance of the continuous meteorological watch.

3.1.30 Whilst supporting the principal intent of the proposal, the group expressed an exchange of views insofar as whether a specific ICAO provision was absolutely necessary. Noting that, as of November 2012 (as part of Amendment 75 to Annex 3), States are required to have in place a properly organized quality system for the provision of meteorological service for international air navigation, the

group considered that contingency modes of operation should already be well catered for in such circumstances. And, notwithstanding this existing requirement for a quality management system, the group expressed that for some States/Regions, significant resource challenges would be faced if contingency modes of operations were to be mandated.

3.1.31 The group noted that the *Manual of Aeronautical Meteorological Practice* (Doc 8896) and the *Manual on the Quality Management System for the Provision of Meteorological Service to International Air Navigation* (Doc 9873) do not currently provide guidance on contingency modes of operation. Having agreed that such guidance would be beneficial in one or both documents, the group formulated the following action agreed accordingly:

Action Agreed 5/8 — Guidance on contingency modes of operation during the temporary interruption to the operation of a meteorological watch office

That, the **Secretary** develop brief guidance for inclusion in the *Manual of Aeronautical Meteorological Practice* (Doc 8896) and/or the *Manual on the Quality Management System for the Provision of Meteorological Service to International Air Navigation* (Doc 9873) pertaining to contingency modes of operation during the temporary interruption to the operation of a meteorological watch office.

3.2 SIGMET/AIRMET and air-report requirements

Proposal to use of a polygon of coordinates for tropical cyclone in SIGMET messages

3.2.1 The group was aware that Annex 3 requires an MWO to prepare and issue SIGMET information for tropical cyclones (Annex 3, Chapter 7 and Appendix 6 refer), and that the format of the SIGMET messages issued must conform to Table A6-1 (*Template for SIGMET and AIRMET messages and special air-reports (uplink)*). In this regard, the group noted that while tropical cyclones are often symmetrical in structure at low latitudes, when/if they transition to mid-latitudes they may become asymmetrical in structure due to wind shear associated with engagement of the jetstream. Appreciating that Annex 3 provisions concerning SIGMET information for tropical cyclones currently only permit the use of a centre point and circle of a defined radius (together with a speed and direction of movement) to describe the area of cumulonimbus (CB) cloud associated with a tropical cyclone, the group recognized that this may be a limiting factor for MWOs in being able to describe the true extent of the CB cloud. It was recognized that in some instances this may lead to an overly conservative description of the CB cloud extent – and a less efficient use of airspace – since larger areas would be depicted in a SIGMET message for a tropical cyclone when using the centre point and circle of a defined radius method compared with the use of a polygon of coordinates method.

3.2.2 Having given the matter due consideration, the group concurred that it would be desirable to permit the use a polygon of coordinates in a SIGMET message to describe the extent of CB cloud tops associated with a tropical cyclone. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/9 — Updating of Annex 3 relating to the use of a polygon of coordinates for CB cloud tops associated with tropical cyclone in SIGMET messages

That, the **Secretary** in coordination with **Matt (for Steve) and Chris (for Colin)** develop a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation* such that Appendix 6, Table A6-1 enables the use of a polygon of latitude and longitude coordinates (in degrees and minutes) to describe the cumulonimbus (CB) cloud tops associated with a tropical cyclone in a SIGMET message, and provide a report to the group by 30 September 2013 for subsequent endorsement through correspondence by 31 October 2013 so that the proposal may then be forwarded, as necessary, by the **Secretary** as part of draft Amendment 77 to Annex 3.

Proposal to issue SIGMET messages for post- and sub-tropical cyclones

3.2.3 Further to the considerations above concerning SIGMET messages for tropical cyclones, the group considered a proposal that additional SIGMET messages should be issued for post- and sub-tropical cyclones. The group was apprised of generic descriptions that were now being used by some of the WMO Tropical Cyclone Regional Specialized Meteorological Centres/Tropical Cyclone Warning Centres (TC RSMCs/TCWCs), notably Miami and Honolulu, to describe post- and sub-tropical cyclones in a public information context and that, in both cases, the 10-minute mean surface wind of 17 m/s (34 knots) or more was retained – which was the threshold used to trigger the issuance of a SIGMET message for a tropical cyclone (Annex 3, Appendix 6, 1.1.4 refers).

3.2.4 Notwithstanding these recent developments within some of the TC RSMCs/TCWCs, the group expressed concern with respect to the use of the terms post- and sub-tropical cyclone in an aviation context and with respect to the proposed introduction of SIGMET messages for post- and sub-tropical cyclones. The group’s concerns principally centred on the generic descriptions offered and the fact that this would be a proliferation of terminology – leading to downstream user issues, including education and training. The group therefore agreed to not pursue this issue.

Proposal to enhance SIGMET and AIRMET message provisions and associated guidance

3.2.5 The group considered several proposals to enhance SIGMET and AIRMET provisions in Annex 3 and the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400), as well as associated guidance material. More specifically, the group considered the following aspects. That:

- a) the message sequence number of SIGMET and AIRMET messages used in Annex 3, Appendix 6, Table A6-1 should be amended from “[nn]n” to “[n]nn” in order to accommodate a widespread practice amongst MWO to issue SIGMET message sequence numbers as one letter followed by one or two numbers;

- b) the PANS-ABC, Doc 8400 which includes separate decodes of the abbreviations RDO (*radio*) and ACT (*active* or *activated* or *activity*) but not the combined abbreviation RDOACT, should be amended to include a decode for RDOACT, since the abbreviation RDOACT CLD (*radioactive cloud*) is used at Annex 3, Appendix 6, 1.1.4 as one of the phenomenon warranting the issuance of a SIGMET message;
- c) since Annex 3, 7.1.2 and 7.2.2, respectively, require that SIGMET information and AIRMET information be cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area, then as part of a properly organized quality system in instances where test SIGMET messages or test AIRMET messages have to be issued (such as those used periodically in ICAO Regions to test the end-to-end effectiveness of the communication of SIGMET messages) the test SIGMET messages or test AIRMET messages themselves must be cancelled when the test is concluded;
- d) the polygon of coordinates used to describe the location (horizontal extent) of a phenomenon in a SIGMET and AIRMET message should be such that, as a best practice, the first coordinate point should be repeated as the last coordinate point in order to “close” the polygon; and
- e) a greater degree of flexibility should be allowed in respect of the use of lines to describe the location of a phenomenon in a SIGMET and AIRMET message, so that the abbreviation “[nnNM WID LINE BTN (nnKM WID LINE BTN)]” should be extended beyond its existing permissible use for SIGMET messages for a volcanic ash cloud.

3.2.6 In the context of the proposal at 3.2.5 a) above, the group considered a further way to denote the message sequence number of SIGMET and AIRMET messages through the use of “[n][n]n”. Noting current practices of MWOs, whereby the message sequence number of SIGMET and AIRMET messages could be one up to a maximum of three alphanumeric characters, the group agreed that “[n][n]n” would provide the most appropriate way to describe the message sequence number. The group formulated the following actions agreed accordingly:

RSPP Action Agreed 5/10 — Updating of Annex 3 relating to the sequence numbering of SIGMET and AIRMET messages

That, the **Secretary** develop a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation* concerning the sequence numbering of SIGMET and AIRMET messages, and provide a report to the group by 30 September 2013 for subsequent endorsement through correspondence by 31 October 2013 so that the proposal may then be forwarded, as necessary, by the **Secretary** as part of draft Amendment 77 to Annex 3.

3.2.7 In the context of the proposal at 3.2.5 b) above, the group fully supported that PANS-ABC, Doc 8400 should be brought into line with Annex 3 in this regard. The group formulated the following actions agreed accordingly:

RSPP Action Agreed 5/11 — Updating of PANS-ABC relating to introduction of an abbreviation and decode for a “radioactive”

That, the **Secretary** develop a proposal to modify *Procedures for Air Navigation Services – ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400) that introduces the abbreviation “RDOACT” with decode “radioactive” to ensure consistency with Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 6, 1.1.4 that requires the issuance of a SIGMET message for a radioactive cloud (RDOACT CLD).

3.2.8 In the context of the proposal at 3.2.5 c) above, the group gave consideration to the cancellation of SIGMET and AIRMET messages in a more general sense – i.e. not simply in the context of test messages. The group fully concurred that if a SIGMET or AIRMET message required cancellation *within* its period of validity – since the phenomenon for which the message was issued was no longer occurring or was no longer expected to occur – the MWO *was required* to issue a cancellation message (as per Annex 3, 7.1.2 and 7.2.2). In the context of SIGMET and AIRMET messages that were *no longer within* their period of validity, there was an exchange of views as to whether MWOs were required to issue a cancellation message. This exchange of views stemmed from two ways of interpreting the referred Annex 3 provisions. Some experts were of the view that SIGMET and AIRMET messages that have exceeded their period of validity *do not warrant* the issuance of cancellation messages, since to do so would increase the forecaster workload and lead to an increase in the number of SIGMET and AIRMET message that would have to be accommodated by downstream users and their systems. Other experts were of the view that SIGMET and AIRMET messages that have exceeded their period of validity *do warrant* the issuance of cancellation messages. This was seen by some members as the only way to demonstrate proper maintenance of a continuous watch over meteorological conditions within the area of responsibility (Annex 3, 3.4.2 a)), thus eliminating the potential for uncertainty amongst end users as to whether the phenomenon warranting the issuance of a SIGMET/AIRMET message in the first instance had actually ceased upon the expiration of the message. It also ensured that expired SIGMET/AIRMET messages would be suitably handled by end users systems (such as flight management systems).

3.2.9 Taking these exchanges of view into account, the group arrived at a consensus that a best practice recommendation would be that, for SIGMET and AIRMET messages that have passed their period of validity, the MWO should issue a cancellation message. The group agreed that brief guidance in this regard should be included in the regional SIGMET guide template under development by the ad-hoc group (WG/B). The group formulated the following action agreed accordingly:

Action Agreed 5/12 — Best practice regarding the cancellation of SIGMET and AIRMET messages

That, an ad hoc group (WG/B) consisting of **Albert, Bill, Colin (Rapporteur), Hans-Rudi, Juan, Patrick, Steve** and **Sue** develop, by 30 September 2013, brief guidance for inclusion in the regional SIGMET guide template that recommends as a best practice that for SIGMET messages and AIRMET messages that have passed their period of validity, the meteorological watch office should issue a SIGMET cancellation message and AIRMET cancellation message respectively.

Note. — METWSG/5 Action Agreed 5/4 concerns the completion of the development of a regional SIGMET guide template.

3.2.10 In respect of the proposal at 3.2.5 d) above, the group concurred that as a best practice recommendation, the polygon of coordinates used to describe the location (horizontal extent) of a phenomenon in a SIGMET and AIRMET message should be such that the first coordinate point is repeated as the last coordinate point in order to “close” the polygon. In addition, the group recommended that the construct of the polygon should be such that the coordinates are ordered in a clockwise sense. The group agreed that guidance in this regard should be included in the Regional SIGMET Guide template under development, as referred at 3.1.7 to 3.1.12 above.

3.2.11 In respect of the proposal at 3.2.5 e) above, the group concurred that the use of lines to describe the location of a phenomenon in a SIGMET and AIRMET message should be extended to cover all phenomena for which a SIGMET message and an AIRMET message would be issued – i.e. beyond its existing use only for SIGMET messages for a volcanic ash cloud – since this would provide greater flexibility for MWOs in the description of the horizontal extent of a phenomenon. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/13 — Updating of Annex 3 relating to the use of lines to describe the location of a phenomenon in a SIGMET and AIRMET message

That, the **Secretary** develop a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation* that enables the use of lines to describe the location of a phenomenon in a SIGMET and AIRMET message to be extended to all phenomena, and provide a report to the group by 30 September 2013 for subsequent endorsement through correspondence by 31 October 2013 so that the proposal may then be forwarded, as necessary, by the **Secretary** as part of draft Amendment 77 to Annex 3.

3.2.12 Further to the above considerations of the use of lines to describe the location of a phenomenon in a SIGMET and AIRMET message, the group considered whether the horizontal extent descriptors “nnKM” and “nnNM” within the descriptor “[nnNM WID LINE BTN (nnKM WID LINE BTN)]” were too limiting, since they only supported horizontal ranges up to 99KM and 99NM respectively, depending on which descriptor was applied. In this regard, the group concurred that “nnKM” and “nnNM” were not too limiting and that they were necessary since increasing the range of options to, say, “[n]nnKM” and “[n]nnNM” would lead to the misapplication of the intended use of a line – where the length of the line should be proportionally greater (often significantly greater) than the width of the line.

Geographic descriptors for phenomena in SIGMET

3.2.13 The group recalled that it had formulated Action Agreed 4/5 concerning the development of a draft amendment proposal to Annex 3 that would enable the use of multi-segment lines and areas between two lines in the horizontal extent of phenomena included in a SIGMET messages. The group noted that such a proposal had not yet been advanced in view of the related on-going considerations in respect of the optimum way to describe the location of phenomena in SIGMET and AIRMET messages.

3.2.14 Notwithstanding these on-going considerations, the group concurred that it was beneficial to pursue the use of multi-segment lines and areas between two lines in the horizontal extent. The group formulated the following action agreed as a replacement to Action Agreed 4/5:

RSPP Action Agreed 5/14 — Updating of Annex 3 relating to the use of multi-segment lines and areas between two lines in the horizontal extent of phenomena included in SIGMET and AIRMET messages

That, the **Secretary** develop a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 6, Table A6-1 that enables the use of multi-segment lines and areas between two lines in the horizontal extent to describe the location of a phenomenon in SIGMET and AIRMET messages, and provide a report to the group by 30 September 2013 for subsequent endorsement through correspondence by 31 October 2013 so that the proposal may then be forwarded, as necessary, by the **Secretary** as part of draft Amendment 77 to Annex 3.

Note. – This action replaces Action Agreed 4/5 formulated at METWSG/4.

SIGMET categories for thunderstorms

3.2.15 The group recalled that it had formulated Action Agreed 4/4 requesting user clarification on the need for each of the SIGMET issuance categories for thunderstorm given in Annex 3, Appendix 6, 1.1.4 – namely obscured (OBSC TS), embedded (EMBD TS), frequent (FRQ TS), squall line (SQL TS), obscured with hail (OBSC TSGR), embedded with hail (EMBD TSGR), frequent with hail (FRQ TSGR), and squall line with hail (SQL TSGR).

3.2.16 The group noted that the International Air Transport Association (IATA), based on the advice of its MET Task Force, had decided to defer taking a position on this issue, and instead had elected to assess the proceedings of METWSG/5 before deciding whether to adjust the IATA position held during METWSG/4 – which was to the effect that the same operational decision was made regardless of the particular category of thunderstorm that was included in a SIGMET (METWSG/4 Summary of Discussions, 3.2.3 refers).

3.2.17 The group was apprised that IATA was intending to undertake a broader survey of its member airlines on this issue with a view to arriving at a mature position. Accordingly, the group agreed to defer further consideration of this issue until such time as IATA's further view was expressed.

Use of symbols and abbreviations in SIGMET information in graphical form

3.2.18 The group was aware that Annex 3 currently enables, as a recommended practice, the issuance of SIGMET information in a graphical form using the WMO BUFR code form, by MWOs in a position to do so, in addition to the issuance of SIGMET information in abbreviated plain language (Annex 3, Appendix 6, 1.1.6 refers). Moreover, when issued in graphical format, the SIGMET information should conform to Annex 3, Appendix 1 – specifically Model STC (SIGMET for tropical cyclone in graphical format), Model SVA (SIGMET for volcanic ash in graphical format) and Model SGE (SIGMET for phenomena other than tropical cyclone and volcanic ash in graphical format) (Annex 3, Appendix 6, 1.1.7 refers). The Model SN (Sheet of notations used in flight documentation) is also included in Annex 3, Appendix 1, providing a necessary list of the symbols, abbreviations, etc. that can be used in flight documentation to aid production by the meteorological office personnel and interpretation by the users. The group was aware that the responsibility for maintaining Appendix 1 of Annex 3 resided with the World Meteorological Organization (WMO), and that WMO had a standardized symbol to denote a thunderstorm and a thunderstorm with hail.

3.2.19 The attention of the group was drawn to the fact that whilst Model SN contained an extensive list of symbols for significant weather (including tropical cyclone, moderate and severe icing and turbulence, volcanic eruption and radioactive material in the atmosphere), the list did not currently include any symbol for a thunderstorm and its variants (such as obscured thunderstorm (OBSC TS), obscured thunderstorm with hail (OBSC TSGR), etc.). In fact, *all* phenomena that would warrant the issuance of a SIGMET (Annex 3, Appendix 6, 1.1.4) were included in Model SN *except for* thunderstorm and its variants.

3.2.20 The group agreed that WMO should be invited to include a standardized symbol for a thunderstorm (and its variants) within Model SN of Annex 3, Appendix 1. In addition, the group concurred that when SIGMET information is issued in a graphical format, the MWO should be encouraged to make use of standardized symbols and/or abbreviations. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/15 — Updating of Annex 3 relating to the use of symbols and abbreviations when SIGMET is issued in a graphical format

That,

- a) **Herbert** develop a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 1, Model SN (Sheet of notations) that introduces the WMO symbol for thunderstorm (and its variants);
- b) the **Secretary** develop a proposal to modify Annex 3, Appendix 6, 1.1.7 (1.1.9 in the 18th Edition, 2013) that enables the depiction of SIGMET issued in a graphical format using symbols and/or abbreviations; and
- c) the **Secretary** in coordination with **Herbert** provide a report to the group on a) and b) above by 30 September 2013 for subsequent endorsement through correspondence by 31 October 2013 so that the proposal may then be forwarded by the **Secretary** as part of draft Amendment 77 to Annex 3.

3.2.21 On a related matter, the group noted that WMO intended to undertake a review of Model SN in order to ensure that all of the symbols and descriptions used therein were aligned with the latest WMO standards.

Use of ENTIRE FIR and ENTIRE CTA descriptors in SIGMET messages

3.2.22 The group was aware that Amendment 76 to Annex 3, applicable 14 November 2013, introduces at Appendix 6, Table A6-1 (*Template for SIGMET and AIRMET messages and special air-reports (uplink)*) the option for an MWO to use the descriptors ENTIRE FIR or ENTIRE CTA¹ in a SIGMET message for the observed and/or the forecast position of a volcanic ash cloud, and that the use of these descriptors was reserved exclusively for volcanic ash clouds and may not be used for other phenomena where a SIGMET may be issued.

3.2.23 The group was apprised that during the Air Navigation Commission's final review of proposed Amendment 76 to Annex 3 (AN-Min 191-4 refers), the Commission noted that the METWSG would be invited to consider extending the use of the ENTIRE FIR and ENTIRE CTA descriptors to *all* phenomena that would warrant the issuance of a SIGMET – in other words, enabling their application for thunderstorm, tropical cyclone, turbulence, icing, mountain wave, duststorm, sandstorm and radioactive cloud (and the variants thereof) in addition to volcanic ash cloud.

3.2.24 In giving this matter the consideration, the group noted that the phenomena listed at Annex 3, Appendix 6, 1.1.4 would likely be of sufficient horizontal extent that an “entire FIR” or an “entire CTA” may be impacted, taking into account that the physical size (extent) of the flight information region/control area had a bearing on this determination, since FIRs/CTAs range in size from State or sub-State scales (such as in much of continental Europe and the Americas) to substantially larger scales (such as in oceanic areas). The group appreciated that, understandably, volcanic ash was

¹ Plain language decode: entire flight information region or entire control area

recognized as the first phenomena for which it was deemed suitable to enable the use of the ENTIRE FIR and ENTIRE CTA descriptors in view of the experiences during the volcanic eruptions of Eyjafjallajökull, Grimsvötn and Puyehue-Cordon Caulle in 2010 and 2011, where numerous flight information regions and control areas were encompassed by volcanic ash clouds in their entirety.

3.2.25 Having given the matter consideration, the group agreed that there was merit in extending the application of the ENTIRE FIR and ENTIRE CTA descriptors in SIGMET messages to *all* the phenomena listed at Annex 3, Appendix 6, 1.1.4. The group concurred that the introduction of this option would be of the greatest benefit to those MWOs responsible for maintaining continuous watch over FIRs/CTAs that are relatively small in scale (e.g. in Europe), and that forecasters at MWOs would undertake due diligence with respect to when it was appropriate to apply these descriptors in the SIGMET messages. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/16 — Updating of Annex 3 relating to the application of the descriptors ENTIRE FIR and ENTIRE CTA to phenomena warranting the issuance of a SIGMET message

That, the **Secretary** develop a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 6, Table A6-1 that enables the application of the descriptors ENTIRE FIR and ENTIRE CTA to all phenomena warranting the issuance of a SIGMET message, and provide a report to the group by 30 September 2013 for subsequent endorsement through correspondence by 31 October 2013 so that the proposal may then be forwarded, as necessary, by the **Secretary** as part of draft Amendment 77 to Annex 3.

Proposal to enable the use of SFC (surface) for height of cloud base in AIRMET messages

3.2.26 The group was aware that Annex 3, Appendix 6, Table A6-1 enables the use of the abbreviations BKN CLD and OVC CLD to respectively denote widespread areas of broken or overcast cloud in AIRMET messages in the following form:

- BKN CLD nnn/[ABV]nnnnM (or BKN CLD nnn/[ABV]nnnnFT)
- OVC CLD nnn/[ABV]nnnnM (nnn/[ABV]nnnnFT)

Moreover, Annex 3, Appendix 6, 2.1.4 provides the necessary requirement that BKN CLD and OVC CLD are used in AIRMET messages when widespread areas of broken or overcast cloud with a height of base less than 300 m (1,000 ft) above ground level are expected.

3.2.27 The group's attention was drawn to the fact that SIGMET messages permit the use of the abbreviation SFC (decode: surface) to denote the lowest level of a phenomenon; however, in AIRMET messages the use of SFC was not currently permitted to describe the height of the base of the cloud. Recognizing the variations in landform and in the base of a cloud, the group considered whether the abbreviation SFC should be introduced into AIRMET message as an additional means to describe the height of the base of the lowest cloud layer of broken or overcast extent.

3.2.28 Having given the matter consideration, the group concurred that it was necessary to enable the use of SFC (surface) to denote the height of the base of the lowest cloud layer of broken or overcast extent in AIRMET messages. The group noted that this would make SIGMET and AIRMET messages consistent with respect to the application of SFC. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/17 — Updating of Annex 3 relating to the use of SFC (surface) for height of cloud base in AIRMET messages

That, the **Secretary** develop a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 6, Table A6-1 that enables the use of SFC (surface) for the height of cloud base in AIRMET messages, and provide a report to the group by 30 September 2013 for subsequent endorsement through correspondence by 31 October 2013 so that the proposal may then be forwarded, as necessary, by the **Secretary** as part of draft Amendment 77 to Annex 3.

Improvement of GAMET, AIRMET, SIGMET and air-report provisions in Annex 3

3.2.29 The group was apprised that at the fifty-third meeting of the European Air Navigation Planning Group (EANPG/53, 28 November to 1 December 2011, Paris), the EANPG had formulated Conclusion 53/23 tasking the ICAO Regional Director, Europe and North Atlantic to undertake the necessary action to coordinate a proposed revision to the GAMET, AIRMET, SIGMET and air-report provisions in Annex 3 with the aim of eliminating reported inconsistencies in content and format.

3.2.30 The group reviewed a list of issues identified by the EANPG with respect to GAMET, AIRMET, SIGMET and air-report provisions and considered which, if any, warranted inclusion in a proposed amendment to Annex 3. The group concurred that all of the (seven) issues identified by the EANPG merited attention, and noted that this would have implications for Annex 3, Appendix 5, Table A5-3 (*Template for GAMET*), Appendix 6, Table A6-1 (*Template for SIGMET and AIRMET messages and air-reports (uplink)*) and the accompanying examples. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/18 — Updating of Annex 3 relating to GAMET, SIGMET, AIRMET and air-report provisions

That, the **Secretary** develop a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation* relating to GAMET, SIGMET, AIRMET and air-report provisions based on the proposals provided at **Appendix D** to this Summary of Discussions, and provide a report to the group by 30 September 2013 for subsequent endorsement through correspondence by 31 October 2013 so that the proposal may then be forwarded, as necessary, by the **Secretary** as part of draft Amendment 77 to Annex 3.

Requirement for ice crystals in GAMET area forecasts and AIRMET messages

3.2.31 The group was aware that Amendment 76 to Annex 3 (applicable 14 November 2013) removes the requirement for ice crystals to be included as an element of local routine and special reports, METAR and SPECI, and TAF. With this in mind, the group's attention was drawn to the fact that the requirement to include ice crystals as a component of the surface visibility element of Section I of a GAMET area forecast and in AIRMET messages was *not* removed as part of Amendment 76, and therefore ice crystals (abbreviation: IC) continued to exist as a component of Annex 3, Appendix 5, Table A5-3 (*Template for GAMET*) and Appendix 6, 2.1.4, respectively.

3.2.32 Appreciating the primary reason for the removal of ice crystals from local routine and special reports, METAR/SPECI and TAF – where there was no operational requirement for the reporting of ice crystals since the only potential hazard associated with ice crystals was the obscuration which would always be reported as fog should the visibility be reduced sufficiently (AMOFSG/9 Summary of Discussions, 3.1.45 refers) – the group considered whether ice crystals should be removed from GAMET area forecasts and AIRMET messages for the same reasoning.

3.2.33 Having given the matter consideration, the group concurred that IC should be removed from GAMET area forecasts and AIRMET messages for the same reason that IC had been removed as part of Amendment 76 to Annex 3 for local routine and special reports, METAR and SPECI, and TAF. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/19 — Updating of Annex 3 relating to the removal of “ice crystals” from GAMET area forecasts and AIRMET messages

That, the proposal to modify Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 5, Table A5-3 (*Template for GAMET*) and Appendix 6, 2.1.4 to remove the reporting of ice crystals (IC) as an component of the surface visibility element of GAMET area forecasts (Section I) and AIRMET messages, as provided at **Appendix E** to this Summary of Discussions, be forwarded by the **Secretary** as part of draft Amendment 77 to Annex 3.

Issues related to the dissemination of AIRMET

3.2.34 The group was apprised that at the fifty-fourth meeting of the European Air Navigation Planning Group (EANPG/54, 3 to 6 December 2012, Paris), the EANPG had formulated Conclusion 54/32 tasking the ICAO Regional Director, Europe and North Atlantic to undertake the necessary action to align the *Manual of Aeronautical Meteorological Practice* (Doc 8896) and the Basic Operational Requirements and Planning Criteria (BORPC) of the regional air navigation plan with Annex 3 provisions concerning the exchange requirements for (dissemination of) AIRMET.

3.2.35 As the group recalled, when required by regional air navigation agreement, an MWO is required to prepare AIRMET information related to its area of responsibility, to supply AIRMET information to its associated air traffic services units, and to disseminate AIRMET information (Annex 3, 3.4.2 e) refers). Moreover, Annex 3 recommends that AIRMET messages should be disseminated to MWOs in adjacent flight information regions and to other MWOs or aerodrome meteorological offices as agreed by the meteorological authorities concerned. Also recommended is transmission to international

operational meteorological databanks and the centres designated by regional air navigation agreement for the operation of aeronautical fixed service satellite distribution systems, in accordance with regional air navigation agreement (Annex 3, Appendix 6, 2.2.1 and 2.2.2 refer).

3.2.36 The group was informed that the EANPG had identified that where there is a regional air navigation requirement for AIRMET – currently AIRMET are only required in the EUR Region – that such messages should be distributed globally through the databanks and centres described in Annex 3, Appendix 6, 2.2.2. However, the EANPG had noted that Doc 8896 and the BORPC did not currently describe the dissemination of AIRMET to such databanks and centres, thus potentially preventing their global distribution and availability.

3.2.37 In view of the foregoing, the group agreed that Doc 8896, Chapter 4 (AIRMET information), 4.4.5 concerning the dissemination of AIRMET merited improvement to ensure its content aligned with Annex 3 provisions. The group formulated the following action agreed accordingly:

Action Agreed 5/20 — Guidance concerning the dissemination of AIRMET messages

That, the **Secretary** develop guidance for inclusion in the *Manual of Aeronautical Meteorological Practice* (Doc 8896) concerning the dissemination of AIRMET messages which would ensure consistency with Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 6, 2.2.2 provisions.

3.2.38 In respect of the BORPC, the group noted that the Air Navigation Commission had decided in March 2011 (AN Min. 186-6 refers) that a new Statement of the BORPC should be developed in conjunction with and be included within the new revision of the Global Air Navigation Plan (GANP). Therefore, any such alignment of the BORPC with ICAO provisions (including Annex 3) would be addressed in due time.

Air-report categories for turbulence and icing

3.2.39 The group recalled that it had formulated Action Agreed 4/6 that sought clarification from the International Federation of Airline Pilots’ Associations (IFALPA) that a requirement (identified by IFALPA) for an additional air-report category of “moderate to severe” for turbulence and icing had been developed in the knowledge of the potential consequential implications for the issuance of SIGMET information for these two phenomena.

3.2.40 In this regard, the group was pleased to note an update provided by IFALPA that indicated that flight crew were now being encouraged to report either “moderate isolated severe” or “moderate occasionally severe” rather than the earlier referred “moderate to severe” categorization, with a view to assisting MWOs receiving such air-reports in their determination of whether the encounter warranted the issuance of a SIGMET message. The group noted that IATA supported IFALPA in this regard. The group further noted that the determination of a moderate isolated/occasionally severe encounter was largely a subjective assessment by the flight crew, and that it was predominantly an issue during in-flight turbulence encounters rather than icing encounters.

3.2.41 Appreciating the steps IFALPA was taking to move away from reporting “moderate to severe” encounters, the group nevertheless expressed some concern as to what MWOs, world area forecast centres (WAFCs) and others would be expected to do up on receipt of such air-reports. Recognizing that, for safety reasons, operators would tend to flight plan so as to avoid areas of severe

turbulence and severe icing, the group noted that if there was an expectation that, for example, a “moderate occasionally severe” turbulence air-report would lead an MWO to the issuance of a SIGMET message for severe turbulence (in view of erring on the side of caution, and hence safety), operators may find themselves hampered from making operational use of airspace where only “moderate occasionally severe” turbulence had been reported.

3.2.42 The group also noted that Annex 3, Appendix 4, Table A4-1 (*Template for the special air-report (downlink)*) and Appendix 6, Table A6-1 (*Template for SIGMET and AIRMET messages and special air-reports (uplink)*) currently makes no allowance for the reporting of “moderate isolated severe” (MOD ISOL SEV) or “moderate occasionally severe” (MOD OCNL SEV) for turbulence and icing in downlinked and uplinked air-reports and in SIGMET and AIRMET messages.

3.2.43 In view of the complexity of the issue, the group agreed to the following action agreed accordingly:

RSPP Action Agreed 5/21 — Further investigations into air-reports for turbulence and icing and a potential updating of Annex 3 provisions

That,

- a) an ad-hoc group (**WG/C**) consisting of **Bill (Rapporteur), Carole, Colin, Herbert, Hans-Rudi** and **Steve** to undertake further investigations into the air-reporting of turbulence and icing encounters – specifically, “moderate isolated severe” and “moderate occasionally severe” encounters – with a view to determining whether Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 4, Table A4-1 (*Template for the special air-report (downlink)*) and Appendix 6, Table A6-1 (*Template for SIGMET and AIRMET messages and special air-reports (uplink)*) require amendment, and provide a report to the **Secretary** by 31 August 2013; and
- b) if required, the **Secretary** prepare a proposal to modify Annex 3 accordingly and provide a report to the group by 30 September 2013 for subsequent endorsement through correspondence by 31 October 2013 so that the proposal may then be forwarded, as necessary, by the **Secretary** as part of draft Amendment 77 to Annex 3.

Implementation of air reports

3.2.44 The group recalled that it had formulated Action Agreed 4/8 requesting the Secretary to draw the attention of the ICAO Regional Offices to the implementation of air reports and, specifically, to the correct use of WMO headers for the dissemination of air-reports so that appropriate action may be taken. In this regard, the group was pleased to learn that a memorandum was sent to the ICAO Regional Offices on 5 June 2012 to enable the attention of States to be drawn, through appropriate means, to the correct WMO abbreviated header lines (AHLs) to be used for routine and special air-reports.

Dissemination of special air-reports to the centres designated to provide the AFS satellite distribution system and Internet-based services

3.2.45 The group considered the dissemination of special air-reports to the centres designated to provide the AFS satellite distribution system and Internet-based services. In this regard, the group noted the detailed considerations at the Seventeenth Meeting of the Satellite Distribution System Operations Group (SADISOPSG/17, 29 to 31 May 2012, Cairo) where the SADISOPSG had reaffirmed that special air-reports should be available for dissemination on the SADIS broadcast (SADISOPSG Decision 17/12 refers) and that an amendment to Annex 3 provisions should be developed accordingly by an appropriate ICAO group (SADISOPSG Conclusion 17/14 refers).

3.2.46 The group exchanged views as to what the operational requirement was for special air-reports to be made available on the aeronautical fixed service (AFS) satellite distribution system and Internet-based services, since the original intent of such systems/services within the context of the world area forecast system (WAFS) was to support flight planning by operators. A view was expressed that there may be a need for the Satellite Distribution System Operations Group (SADISOPSG) and/or the World Area Forecast System Operations Group (WAFSOPSG) to consider the intent of the WAFS broadcast in this regard.

3.2.47 The group was apprised of the users perspective expressed at SADISOPSG/17 meeting, where IATA had indicated that special air-reports were an essential component of all available meteorological information that can assist users/operators in fulfilling their safety management system obligations. Moreover, recalling Annex 3, 9.1.3 the group noted a requirement that up-to-date and appropriate special air-reports relevant to the whole route are supplied to operators and flight crew members. It was highlighted that this was particularly relevant in the context of special air-reports for volcanic ash.

3.2.48 Taking the foregoing into account, the group concurred that Annex 3 and consequently the *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444) should be amended so as to ensure that special air-reports are disseminated to the centres designated to provide the AFS satellite distribution system and the Internet-based services as components of the WAFS – i.e. SADIS (SADIS 2G and Secure SADIS FTP) and the WAFS Internet File Service (WIFS). The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/22 — Updating of Annex 3 and PANS-ATM relating to the dissemination of special air-reports

That, a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation* and consequently the *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444) concerning the dissemination of special air-reports to the centres designated by regional air navigation agreement for the operation of the aeronautical fixed service (AFS) satellite distribution system and Internet-based services, as provided at **Appendix F** to this Summary of Discussions, be forwarded by the **Secretary** as part of draft Amendment 77 to Annex 3.

Special air-reports (downlink) provisions in Annex 3 and PANS-ATM

3.2.49 In a further issue related to special air-reports, the group was aware that Annex 3, Chapter 5 and Appendix 4 provide necessary provisions with respect to special aircraft observations of meteorological conditions that have been encountered or observed (such as moderate or severe turbulence, volcanic ash cloud, etc.), and in particular the relay of special air-reports via voice communications and data link communications. In addition, the PANS-ATM, Doc 4444, Chapter 4 and Appendix 1 provide necessary procedures relating to the reporting of operational and meteorological information.

3.2.50 The group noted that PANS-ATM, Doc 4444, Appendix 1 included a special air-report template for the relay of such reports by voice communications (Model AIREP SPECIAL) was not wholly consistent with the list of meteorological conditions that would prompt the issuance of a special air-report. Specifically it was inconsistent with Annex 3, Appendix 4, Table 4-1 since the Model AIREP SPECIAL in Doc 4444, Appendix 1 made no allowance for the flight level of a volcanic ash cloud, moderate turbulence (with or without EDR) and moderate icing.

3.2.51 In this regard, the group agreed that Doc 4444, Appendix 1, Model AIREP SPECIAL should be brought into alignment with Annex 3, Appendix 4, Table A-4-1. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/23 — Updating of PANS-ATM relating to the special air-reports (downlink)

That, the **Secretary** develop a proposal to modify the *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444), Appendix 1, Model AIREP SPECIAL to ensure that special air-reports (downlink) to be issued also for the flight level of a volcanic ash cloud, moderate turbulence (with or without EDR) and moderate icing, thus ensuring consistency with Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 4, Table A4-1 (*Template for the special air-report (downlink)*).

Clarification on automated routine MET observations by aircraft

3.2.52 The group was apprised that at the fifty-third meeting of the European Air Navigation Planning Group (EANPG/53, 28 November to 1 December 2011, Paris), the EANPG had formulated Conclusion 53/26 tasking the ICAO Regional Director, Europe and North Atlantic, to undertake the necessary action to coordinate:

- a) replacing the generic data link communications reference to automatic dependent surveillance (ADS) in Annex 3, 5.3.1 with a more specific reference to automatic dependent surveillance – contract (ADS-C);
- b) developing acceptable specifications for aircraft providing automated routine meteorological (MET) observations referred in Annex 3, 5.3.1, with consideration given to:
 - 1) transmission times, frequencies and formats, especially associated with SSR Mode S and ADS-C; and

- 2) the impacts of transmitting at a fast rate automated routine MET observations via ADS-C on the network from an ATC operational perspective; and
- c) developing guidance related to the designation of aircraft to provide automated routine MET observations.

3.2.53 In considering these matters, the group noted that the European Air Navigation Planning Group (EANPG) had recognized that ADS-C has the capability to provide automated routine MET observations. However, it was noted that the update rate of position reports (of 65 seconds) was 35 seconds adrift from the Annex 3 recommended practice that automated routine observations should be made every 30 seconds during the climb-out phase for the first 10 minutes of the flight (Annex 3, 5.3.1 refers). In addition, the EANPG had noted that transmitting reports at a faster rate using ADS-C should not negatively impact on the primary intended use of the ADS-C system – namely position reporting – and that the impacts on bandwidth spectrum and cost for the provision of service should be taken into account. Recognizing that the method of selection (i.e. ADS-C versus SSR Mode S) was possibly not up to the individual user, the EANPG had expressed that further guidance on the designation of aircraft to provide automated routine MET observations was needed.

3.2.54 In the context of the proposal at 3.2.52 a) above, and taking into account the referred considerations of the EANPG, IATA expressed that there would be a cost (to its member airlines) of recommending that ADS-C automated routine observations be made every 30 seconds during the climb-out phase for the first 10 minutes of the flight. Acknowledging this user perspective, the group nevertheless supported the EANPG view that Annex 3, 5.3.1 should be amended so as to refer to ADS-C rather than ADS. The group noted that this would have a consequential impact also on Chapter 1 (Definitions) and Appendix 4 (Technical specifications related to aircraft observations and reports) of Annex 3. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/24 — Updating of Annex 3 relating to routine aircraft observations where ADS-C is being applied

That, a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation*, Chapter 5 and Appendix 4 such that references to “automatic dependent surveillance (ADS)” are replaced by “automatic dependent surveillance — contract (ADS-C)”, as provided at **Appendix G** to this Summary of Discussions, be forwarded by the **Secretary** as part of draft Amendment 77 to Annex 3.

3.2.55 In the context of the proposals at 3.2.52 b) and c) above, the group expressed concern that it may be premature to develop such specifications and guidance until such time as it was known whether the referred amendment to Annex 3 had been approved (2016 timeframe at the earliest as part of Amendment 77 to Annex 3). Accordingly, the group agreed to defer consideration of these matters until such time as the proposal had been approved as part of the referred amendment.

3.2.56 No other items relating to the provision of SIGMET messages, AIRMET messages and air-reports were considered under this agenda item.

4. AGENDA ITEM 6: AERODROME WARNINGS

4.1 The group recalled that it had formulated Action Agreed 4/7 at the last meeting concerning the development of a draft amendment proposal to Annex 3 – *Meteorological Service for International Air Navigation* whereby a note would be added to Appendix 6, 5.1.3 stating that tsunami warnings were not required to be issued in cases where a national public safety plan for tsunami was integrated with the “at risk” aerodrome concerned. In this regard, the group will be pleased to learn that the Secretary had developed a necessary proposed amendment to Annex 3 accordingly.

4.2 The group reviewed the proposal and formulated the following action agreed accordingly:

RSPP Action Agreed 5/25 — Updating of Annex 3 to relating aerodrome warnings for tsunami

That, a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation*, Appendix 6 concerning the issuance of an aerodrome warning for a tsunami, as provided at **Appendix H** to this Summary of Discussions, be forwarded by the **Secretary** as part of draft Amendment 77 to Annex 3.

4.3 No other items relating to the provision of aerodrome warnings were considered under this agenda item.

5. AGENDA ITEM 7: DELIVERABLES

5.1 The group noted that the work programme of the group, in the form of deliverables, would be updated, as necessary, by the Secretary upon the conclusion of the meeting so that it corresponds with the progress made by the group during the meeting in respect of each deliverable.

5.2 Noting that the development of guidance to support the decoding and encoding of SIGMET exchanged in a digital form was part of the on-going work of the Meteorological Aeronautical Requirements and Information Exchange Project Team (MARIE-PT) to foster the implementation of Amendment 76 to Annex 3, Appendix 6 provisions, the group agreed that deliverable METWSG-03 concerning the decoding and encoding of SIGMET exchanged in table-driven code form had been overtaken by events and could therefore be deleted from the work programme of the METWSG.

5.3 The group recalled further that the work programme represented a “snapshot” since it was being kept up-to-date by the Secretary to reflect the progress made by the group and action taken by the Air Navigation Commission, and that it was available on the METWSG website².

² <http://www.icao.int/safety/meteorology/metwsg/>

6. AGENDA ITEM 8: ANY OTHER BUSINESS

Interpretation of uncertainty in the provision of meteorological information

6.1 The group recalled that it had formulated Action Agreed 4/2 at the last meeting concerning the development, by the Secretary, of an amendment proposal to Annex 3 relating to the uncertainties in the provision of meteorological information. Specifically, the group had proposed (at the fourth meeting of Meteorological Warnings Study Group (METWSG/4) that the provisions in Annex 3, 4.1.9 and 6.1.1 that relate to the interpretation of meteorological observations and forecasts, respectively, should be transferred to an appropriate placeholder in Chapter 2 of Annex 3. The group was pleased to note that the Secretary had prepared a necessary proposal for its consideration.

6.2 During the consideration of the proposal, WMO noted that sources of uncertainty could be related to: the inability to observe meteorological conditions precisely, everywhere; the inability to predict (forecast) meteorological conditions precisely, everywhere; and the inappropriate use of the (meteorological) information that had been provided. In this regard, and taking into account the way uncertainty associated with meteorological observations and forecasts was currently expressed in Annex 3 (4.1.9 and 6.1.1), the group considered that a more scientific approach to expressions of uncertainty may be beneficial in the longer term, perhaps with the assistance of the WMO Commission for Atmospheric Sciences (CAS).

6.3 Notwithstanding these longer-term aspirations, the group agreed with a proposal to move the uncertainty aspects of meteorological observations and forecasts from Chapters 4 and 6, respectively, to Chapter 2 of Annex 3. The group formulated the following action agreed accordingly:

RSPP Action Agreed 5/26 — Updating of Annex 3 relating to the interpretation of uncertainty in the provision of meteorological information

That, a proposal to modify Annex 3 – *Meteorological Service for International Air Navigation*, Chapters 2, 4 and 6 and Attachments A and B concerning the interpretation of uncertainty in the provision of meteorological information, as provided at **Appendix I** to this Summary of Discussions, be forwarded by the **Secretary** as part of draft Amendment 77 to Annex 3.

6.4 No other items were addressed under any other business.

7. AGENDA ITEM 9: CLOSURE OF THE MEETING

7.1 The Acting Secretary, Mr. Brock, and Chairman, Mr. Maynard, extended a warm word of thanks to the participants for the efficient and effective manner in which they had progressed their work during the meeting.

7.2 The meeting closed at 1500 hours on Friday 21 June 2013.

APPENDIX A
LIST OF PARTICIPANTS

NOMINATED BY	NAME	TELE-MAIL
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APPENDIX B

LIST OF DOCUMENTATION

Study Notes

SN no.	Title	Presented by	Agenda item
1	Provisional agenda	Secretary	4
2	Progress report on SIGMET, AIRMET and air report issues	Secretary	5.1 + 5.2
3	Progress report on aerodrome warning issues	Secretary	6
4	SIGMET guide	Colin Hord, Rapporteur of METWSG/4 WG/3	5.2
5	Proposal to separate the current table (A6-1) in ICAO Annex 3 into three separate tables	Colin Hord	5.1
6	Proposed policy for SIGMET formatting where a MWO issues both traditional alphanumeric SIGMET and digital SIGMET	Colin Hord	5.1
7	Proposal to simplify and consolidated position information for volcanic ash in the SIGMET template	Colin Hord	5.1
8	Inconsistency of special air-report templates in Annex 3 and PANS-ATM (Doc 4444)	Colin Hord	5.2
9	The issuance of SIGMETS for post- and sub-tropical cyclones	Steven Albersheim	5.2
10	The use of polygons in tropical cyclone SIGMETS	Steven Albersheim	5.2
11	Proposed enabling of the use of SFC in AIRMET for cloud	Bill Maynard	5.2
12	Footnote 21 to Table A6-1	Bill Maynard	5.1
13	Proposals for SIGMET/AIRMET provisions	Bill Maynard	5
14	Graphical SIGMET symbols	Sue O'Rourke	5.2

15	Development framework for better hazardous weather information	Peter Lechner	5.1
16	Proposed establishment of regional SIGMET advisory centres	P. W. Chan and Patrick Josse, co-rapporteurs of ad hoc group (A) of METWSG/4	5.1
17	Requirements for regional WX SIGMET advisory centre	Jun Ryuzaki	5.1
18	Dissemination of special air reports	Secretary	5.2
19	Work programme of the meteorological warnings study group (METWSG)	Secretary	7
20	The interpretation of uncertainty in the provision of meteorological information	Secretary	8

Information Papers

IP no.	Title	Presented by	Agenda item
1	Arrangements for the meeting	Secretary	3
2	Canadian harmonization of ICAO SIGMET Standards	Bill Maynard	5.1
3	Changes to the Australian SIGMET format	Sue O'Rourke	5
4	Information regarding parsing of SIGMET bulletins	Colin Hord	5.1

List of documentation in order of Agenda Item

Agenda Item	WP No.
3	IP/1
4	SN/1
5	SN/13 IP/3
5.1	SN/2, SN/5, SN/6, SN/7, SN/12, SN/15, SN/16, SN/17 IP/2, IP/3
5.2	SN/2, SN/4, SN/8, SN/9, SN/10, SN/11, SN/14, SN/18
6	SN/3
7	SN/18
8	SN/20

APPENDIX C

In view of METWSG Action Agreed 5/5 which proposed the splitting of Annex 3, Appendix 6, Table A6-1 into two component parts – namely Table A6-1A (Template for SIGMET and AIRMET messages) and Table A6-1B (Template for special air-reports (uplink)) – the exact placement of the tracked-changes shown below is subject to change, however the intent of the proposed changes will be retained.

**DRAFT AMENDMENT TO ANNEX 3 —
METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION
(EIGHTEENTH EDITION — JULY 2013)**

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PART II. APPENDICES AND ATTACHMENTS

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**APPENDIX 6. TECHNICAL SPECIFICATIONS RELATED TO
SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS
AND WIND SHEAR WARNINGS AND ALERTS
(See Chapter 7 of this Annex.)**

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Table A6-1. Template for SIGMET and AIRMET messages and special air-reports (uplink)

Key: M = inclusion mandatory, part of every message;
C = inclusion conditional, included whenever applicable;
= = a double line indicates that the text following it should be placed on the subsequent line.

Note.— The ranges and resolutions for the numerical elements included in SIGMET/AIRMET messages and in special air-reports are shown in Table A6-4 of this appendix.

Element as specified in Chapter 5 and Appendix 6	Detailed content	Template(s)			Examples
		SIGMET	AIRMET	SPECIAL AIR-REPORT ¹	
...					
Location (C) ²¹	Location (referring to latitude and longitude (in degrees and minutes))	Nnn[nn] Wnnn[nn] or Nnn[nn] Ennn[nn] or Snn[nn] Wnnn[nn] or Snn[nn] Ennn[nn] or N OF Nnn[nn] or S OF Nnn[nn] or N OF Snn[nn] or S OF Snn[nn] or [AND]		NnnnnWnnnnn or NnnnnEnnnnn or SnnnnWnnnnn or SnnnnEnnnnn	S OF N54 N OF N50 N2020 W07005 N2706 W07306 N48 E010 N OF N1515 AND W OF E13530

Element as specified in Chapter 5 and Appendix 6	Detailed content	Template(s)			Examples
		SIGMET	AIRMET	SPECIAL AIR-REPORT ¹	
		W OF Wnnn[nn] or E OF Wnnn[nn] or W OF Ennn[nn] or E OF Ennn[nn] or [N OF, NE OF, E OF, SE OF, S OF, SW OF, W OF, NW OF] [LINE] Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] or W ²⁷ Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – [Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] or ²⁴ APRX nnKM WID LINE ²⁵ BTN (or APRX nnNM WID LINE ²⁵ BTN) Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] or ²⁴ ENTIRE FIR ²⁴ or ²⁴ ENTIRE CTA ²⁴			W OF E15540 N OF LINE S2520 W11510 – S2520 W12010 WI N6030 E02550 – N6055 E02500 – N6050 E02630 APRX 50KM WID LINE BTN N64 W017 – N60 W010 – N57 E010 ENTIRE FIR ENTIRE CTA
Level (C) ²¹	Flight level or altitude and extent (C) ²²	[SFC]/FLnnn or [SFC]/nnnnM (or [SFC]/nnnnFT) or FLnnn/nnn or TOP FLnnn or [TOP] ABV FLnnn or ²³ CB TOP [ABV] FLnnn WI nnnKM OF CENTRE (or CB TOP [ABV] FLnnn WI nnnNM OF CENTRE) or CB TOP [BLW] FLnnn WI nnnKM OF CENTRE (or CB TOP [BLW] FLnnn WI nnnNM OF CENTRE) or ²⁴ FLnnn/nnn [APRX nnnKM BY nnnKM] [nnKM WID LINE ²⁵ BTN (nnNM WID LINE BTN)] [Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] (or FLnnn/nnn [APRX nnnNM BY nnnNM] [Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]])		FLnnn or nnnnM (or nnnnFT)	FL180 FL050/080 TOP FL390 SFC/FL070 TOP ABV FL100 FL310/450 CB TOP FL500 WI 270KM OF CENTRE (CB TOP FL500 WI 150NM OF CENTRE) FL310/350 APRX 220KM BY 35KM FL390
...					
Forecast phenomenon (C)	Indication of the time of the forecast of the phenomenon (C)	FCST nnnnZ	—	—	FCST 2200Z
Forecast position (C) ^{21, 22, 31}	Forecast position of volcanic ash cloud or the centre of the TC or other hazardous phenomena ²⁸ at the end of the validity period of the SIGMET message (C)	FCST nnnnZ TC CENTRE Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] or ²⁴ FCST nnnnZ VA-CLD APRX [nnKM WID LINE ²⁵ BTN (nnNM WID LINE BTN)] Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [– Nnn[nn] or Snn[nn]	—	—	FCST 2200Z TC CENTRE N2740 W07345 FCST 1700Z VA-CLD APRX S15 E075 – S15 E081 – S17 E083 – S18 E079 – S15 E075 APRX 50KM WID LINE BTN N64 W017 – N57

Element as specified in Chapter 5 and Appendix 6	Detailed content	Template(s)			Examples
		SIGMET	AIRMET	SPECIAL AIR-REPORT ¹	
		Wnnn[nn] or Ennn[nn] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [AND] ²⁶ or ²⁴ FCST nnnnZ ENTIRE FIR ²⁴ or ²⁴ FCST nnnnZ ENTIRE CTA ²⁴ or ²⁴ FCST nnnnZ-NO VA EXP or ²⁹ FCST nnnnZ-Nnn[nn] Wnnn[nn] or Nnn[nn] Ennn[nn] or Snn[nn] Wnnn[nn] or Snn[nn] Ennn[nn] or N OF Nnn[nn] or S OF Nnn[nn] or N OF Snn[nn] or S OF Snn[nn] [AND] W OF Wnnn[nn] or E OF Wnnn[nn] or W OF Ennn[nn] or E OF Ennn[nn] or [N OF, NE OF, E OF, SE OF, S OF, SW OF, W OF, NW OF] [LINE] Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] or Wl ²⁷ Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]}			W005 – N55 E010 – N55 E030 FCST 0500Z ENTIRE FIR FCST 0500Z ENTIRE CTA FCST 0500Z-NO VA EXP

Notes.—

1. No wind and temperature to be uplinked to other aircraft in flight in accordance with 3.2.
21. In the case of the same phenomenon covering more than one area within the FIR, these elements can be repeated, as necessary.
22. Only for SIGMET messages for volcanic ash cloud and tropical cyclones.
23. Only for SIGMET messages for tropical cyclones.
24. Only for SIGMET messages for volcanic ash.
25. A straight line between two points drawn on a map in the Mercator projection or a straight line between two points which crosses lines of longitude at a constant angle.
26. To be used for two volcanic ash clouds or two centres of tropical cyclones simultaneously affecting the FIR concerned.
27. The number of coordinates should be kept to a minimum and should not normally exceed seven.
28. Optionally can be used in addition to Movement or Expected Movement.
29. To be used for hazardous phenomena other than volcanic ash cloud and tropical cyclones.

...

31. The levels of the phenomena remain fixed throughout the forecast period.

Note.— In accordance with 1.1.5 and 2.1.5, severe or moderate icing and severe or moderate turbulence (SEV ICE, MOD ICE, SEV TURB, MOD TURB) associated with thunderstorms, cumulonimbus clouds or tropical cyclones should not be included.

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APPENDIX D

**PROPOSALS FOR IMPROVEMENT OF GAMET, SIGMET, AIRMET
AND AIR-REPORT PROVISIONS IN ANNEX 3**

Based on Appendix M of the EANPG/53 Report and reviewed by METWSG/5

No.	EANPG/53 proposal	EANPG/53 reasoning
D.1	Deletion of blank spaces between numerical values and associated units in Annex 3; Table A5-3 and Example A5-3	<i>GAMET would conform to format of AIRMET and meteorological report</i>
D.2	Change of order of elements in GAMET forecast such that the location should be defined before vertical extent or level	<i>GAMET would conform to order of elements provided in SIGMET, SPECIAL AIREP</i>
D.3	Inclusion of optional additional digit [n] in the group [SFC/] [n]nnnnFT and all of her relevant groups within the Table A6-1	<i>This would accommodate for transition levels that are higher than 10 000ft in the EUR/NAT Region</i>
D.4	Inclusion of additional vertical extent combinations for weather elements in Table A6-1: [nnnn/]nnnnM (or [[n]nnnn/] [n]nnnnFT), [nnnnM/]FLnnn (or [[n]nnnnFT/]FLnnn)	<i>This would provide more accuracy in depicting certain phenomena and not be restricted to the use of SFC at the lower end and allow for phenomena to cross the transition level</i>
D.5	Inclusion of vertical extent to cover range of levels or layer for SPECIAL AIREP in Table A6-1	<i>This would align Table A6-1 for use by MWOs to the reporting of SPECIAL AIREP in Table A4-1, which allows for level or range of levels</i>
D.6	Inclusion of providing surface wind (SFC WIND) versus the current surface wind speed (SFC WDSP) in GAMET and AIRMET Tables A5-3 and A6-1	<i>The addition of wind direction would facilitate in flight planning and contribute to safety of GA) – note that for the near term, a proposal to the Basic ANP is requested in addressed in Agenda Item 4</i>
D.7	Re-examination to possible lowering of wind threshold of 15m/s (30kt) to be reported in GAMET in Table A5-3	<i>This would facilitate in flight planning of lighter aircraft in particular</i>

APPENDIX E

**DRAFT AMENDMENT TO ANNEX 3 —
METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION**

(EIGHTEENTH EDITION — JULY 2013)

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PART II. APPENDICES AND ATTACHMENTS

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APPENDIX 5. TECHNICAL SPECIFICATIONS RELATED TO FORECASTS
(See Chapter 6 of this Annex.)

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4. CRITERIA RELATED TO AREA FORECASTS FOR LOW-LEVEL FLIGHTS

...

Table A5-3. Template for GAMET

Key: M = inclusion mandatory, part of every message;
C = inclusion conditional, dependent on meteorological conditions;
O = inclusion optional;
= = a double line indicates that the text following it should be placed on the subsequent line.

...

Element	Detailed content	Template(s)			Examples
		Identifier and time	Content	Location	
...					
Surface visibility (C)	Widespread surface visibility below 5 000 m including the weather phenomena causing the reduction in visibility	SFC VIS: [nn/nn]	nnnn M FG or BR or SA or DU or HZ or FU or VA or PO or DS or SS or DZ or RA or SN or SG or FC or FC or GR or GS or PL or SQ		SFC VIS: 06/08 3000 M BR N of N51
...					

...

APPENDIX 6. TECHNICAL SPECIFICATIONS RELATED TO SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS AND WIND SHEAR WARNINGS AND ALERTS
(See Chapter 7 of this Annex.)

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2. SPECIFICATIONS RELATED TO AIRMET INFORMATION

2.1 Format of AIRMET messages

...

2.1.4 In accordance with the template in Table A6-1, only one of the following phenomena shall be included in an AIRMET message, using the abbreviations as indicated below:

At cruising levels below flight level 100 (or below flight level 150 in mountainous areas, or higher, where necessary):

...

- | | |
|---|---|
| — surface visibility | |
| — widespread areas affected by reduction of visibility to less than 5 000 m, including the weather phenomenon causing the reduction of visibility | SFC VIS
(+ visibility)
(+ one of the following weather phenomena or combinations thereof: BR, DS, DU, DZ, FC, FG, FU, GR, GS, HZ, IC , PL, PO, RA, SA, SG, SN, SQ, SS or VA) |

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APPENDIX F

**DRAFT AMENDMENT TO ANNEX 3 –
*METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION***

(EIGHTEENTH EDITION – JULY 2013)

PART I. CORE SARPs

CHAPTER 5. AIRCRAFT OBSERVATIONS AND REPORTS

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5.8 Relay of air-reports by ATS units

The meteorological authority concerned shall make arrangements with the appropriate ATS authority to ensure that, on receipt by the ATS units of:

...

- b) routine and special air-reports by data link communications, the ATS units relay them without delay to their associated meteorological watch office, ~~and the~~ WAFCs, ~~and the centres designated by regional air navigation agreement for the operation of the aeronautical fixed service satellite distribution system and the Internet-based services.~~

...

PART II. APPENDICES AND ATTACHMENTS

**APPENDIX 4. TECHNICAL SPECIFICATIONS RELATED TO
AIRCRAFT OBSERVATIONS AND REPORTS**

(See Chapter 5 of this Annex.)

...

3. EXCHANGE OF AIR-REPORTS

3.1 Responsibilities of the meteorological watch offices

3.1.1 The meteorological watch office shall transmit without delay the special air-reports received by voice communications to ~~the~~ WAFCs ~~and the centres designated by regional air navigation agreement for the operation of the aeronautical fixed service satellite distribution system and the Internet-based services.~~

...

DRAFT CONSEQUENTIAL AMENDMENT TO *PROCEDURES FOR AIR NAVIGATION SERVICES – AIR TRAFFIC MANAGEMENT* (PANS-ATM)

(FIFTEENTH EDITION, AMENDMENT NO. 4, 2012)

...

Chapter 4

GENERAL PROVISIONS FOR AIR TRAFFIC SERVICES

...

4.12 REPORTING OF OPERATIONAL AND METEOROLOGICAL INFORMATION

...

4.12.6 Forwarding of meteorological information

...

4.12.6.2 When receiving special air-reports by data link communications, air traffic services units shall forward them without delay to their associated meteorological watch office, ~~and~~ the WAFCs, and the centres designated by regional air navigation agreement for the operation of the aeronautical fixed service satellite distribution system and the Internet-based services.

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APPENDIX G

DRAFT AMENDMENT TO ANNEX 3 —
METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION

(EIGHTEENTH EDITION — JULY 2013)

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PART I. CORE SARPs

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CHAPTER 1. DEFINITIONS

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~~*Automatic dependent surveillance (ADS).* A surveillance technique in which aircraft automatically provide, via a data link, data derived from on-board navigation and position fixing systems, including aircraft identification, four-dimensional position and additional data as appropriate.~~

Automatic dependent surveillance — contract (ADS-C). A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.

Note.— The abbreviated term “ADS contract” is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.

...

CHAPTER 5. AIRCRAFT OBSERVATIONS AND REPORTS

...

5.3 Routine aircraft observations — designation

5.3.1 **Recommendation.**— *When air-ground data link is used and automatic dependent surveillance — contract (ADS-C) or secondary surveillance radar (SSR) Mode S is being applied, automated routine observations should be made every 15 minutes during the en-route phase and every 30 seconds during the climb-out phase for the first 10 minutes of the flight.*

...

PART II. APPENDICES AND ATTACHMENTS

...

APPENDIX 4. TECHNICAL SPECIFICATIONS RELATED TO AIRCRAFT OBSERVATIONS AND REPORTS

(See Chapter 5 of this Annex.)

1. CONTENTS OF AIR-REPORTS

1.1 Routine air-reports by air-ground data link

1.1.1 When air-ground data link is used and automatic dependent surveillance — contract (ADS-C or SSR Mode S is being applied, the elements contained in routine air-reports shall be:

...

Note.— When ADS-C or SSR Mode S is being applied, the requirements of routine air-reports may be met by the combination of the basic ADS-C/SSR Mode S data block (data block 1) and the meteorological information data block (data block 2), available from ADS-C or SSR Mode S reports. The ADS-C message format is specified in the PANS-ATM (Doc 4444), 4.11.4 and Chapter 13 and the SSR Mode S message format is specified in Annex 10, Volume III, Part I — Digital Data Communication Systems, Chapter 5.

1.1.2 When air-ground data link is used while ADS-C and SSR Mode S are not being applied, the elements contained in routine reports shall be:

...

Note.— When air-ground data link is used while ADS-C and SSR Mode S are not being applied, the requirements of routine air-reports may be met by the controller-pilot data link communication (CPDLC) application entitled “Position report”. The details of this data link application are specified in the Manual of Air Traffic Services Data Link Applications (Doc 9694) and in Annex 10, Volume III, Part I.

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APPENDIX H

DRAFT AMENDMENT TO ANNEX 3 —
METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION

(EIGHTEENTH EDITION — JULY 2013)

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PART II. APPENDICES AND ATTACHMENTS

...

APPENDIX 6. TECHNICAL SPECIFICATIONS RELATED TO SIGMET AND AIRMET
INFORMATION, AERODROME WARNINGS AND WIND SHEAR WARNINGS AND ALERTS
(See Chapter 7 of this Annex.)

...

5. SPECIFICATIONS RELATED TO AERODROME WARNINGS

5.1 Format and dissemination of aerodrome warnings

...

5.1.3 **Recommendation.**— *In accordance with the template in Table A6-2, aerodrome warnings should relate to the occurrence or expected occurrence of one or more of the following phenomena:*

...

— *tsunami*

...

Note. — *Aerodrome warnings related to the occurrence or expected occurrence of tsunami are not required where a national public safety plan for tsunami is integrated with the 'at risk' aerodrome concerned.*

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APPENDIX I

DRAFT AMENDMENT TO ANNEX 3 –
METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION

(EIGHTEENTH EDITION – JULY 2013)

PART I. CORE SARPs

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CHAPTER 2. GENERAL PROVISIONS

...

2.2 Supply, use, ~~and~~ quality management **and interpretation** of meteorological information

...

Editorial Note.— Insert the following new text.

2.2.7 Owing to the variability of meteorological elements in space and time, to limitations of observing techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a report shall be understood by the recipient to be the best approximation to the actual conditions at the time of observation.

Note.— *Guidance on the operationally desirable accuracy of measurement or observation is given in Attachment A.*

2.2.8 Owing to the variability of meteorological elements in space and time, to limitations of forecasting techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a forecast shall be understood by the recipient to be the most probable value which the element is likely to assume during the period of the forecast. Similarly, when the time of occurrence or change of an element is given in a forecast, this time shall be understood to be the most probable time.

Note.— *Guidance on the operationally desirable accuracy of forecasts is given in Attachment B.*

End of new text.

...

CHAPTER 4. METEOROLOGICAL OBSERVATIONS AND REPORTS

...

4.1 Aeronautical meteorological stations and observations

...

~~4.1.9—Owing to the variability of meteorological elements in space and time, to limitations of observing techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a report shall be understood by the recipient to be the best approximation to the actual conditions at the time of observation.~~

~~—Note.—Guidance on the operationally desirable accuracy of measurement or observation is given in Attachment A.~~

...

CHAPTER 6. FORECASTS

...

6.1 ~~Interpretation and u~~Use of forecasts

~~6.1.1—Owing to the variability of meteorological elements in space and time, to limitations of forecasting techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a forecast shall be understood by the recipient to be the most probable value which the element is likely to assume during the period of the forecast. Similarly, when the time of occurrence or change of an element is given in a forecast, this time shall be understood to be the most probable time.~~

~~—Note.—Guidance on the operationally desirable accuracy of forecasts is given in Attachment B.~~

Editorial Note.— Renumber subsequent paragraph accordingly.

...

**ATTACHMENT A. OPERATIONALLY DESIRABLE
ACCURACY OF MEASUREMENT OR OBSERVATION**

Note.— The guidance contained in this table relates to *Chapter 2 — Supply, use, quality management and interpretation of meteorological information, in particular to 2.2.7, and Chapter 4 — Meteorological observations and reports, in particular to 4.1.9.*

...

**ATTACHMENT B. OPERATIONALLY DESIRABLE
ACCURACY OF FORECASTS**

Note 1.— The guidance contained in this table relates to *Chapter 2 — Supply, use, quality management and interpretation of meteorological information, in particular to 2.2.8, and Chapter 6 — Forecasts, in particular to 6.1.1.*

...

— END —