METEOROLOGICAL WARNINGS STUDY GROUP (METWSG)

FIFTH MEETING

Montréal, 20 to 21 June 2013

Agenda Item 5: SIGMET/AIRMET and air reports
   5.1: SIGMET implementation issues
   5.2: SIGMET/AIRMET and air report requirements

PROGRESS REPORT ON SIGMET, AIRMET AND AIR REPORT ISSUES

(Presented by the Secretary)

SUMMARY

This study note provides an overview of the tasks of the group that concern SIGMET and AIRMET information and air-reports, as well as a review of the actions taken since the last meeting of the group.

Draft amendment proposals to Annex 3 – Meteorological Service for International Air Navigation are provided for the consideration of the group as necessary.

1. INTRODUCTION

1.1 This study note (SN) summarizes the progress made regarding SIGMET and AIRMET information and air report issues since the fourth meeting of the Meteorological Warnings Study Group (METWSG/4, 15 to 18 May 2012, Montreal) and provides suggested courses of action, where necessary. In addition, taking into account the study notes prepared for and to be considered during the meeting, the group may wish to formulate new actions to direct its future work. However, the group will recall that it is expected to provide input, through the Secretariat, for an ICAO Meteorology (MET) Divisional Meeting to be held in part conjointly with the Fifteenth Session of the World Meteorological Organization (WMO) Commission for Aeronautical Meteorology (CAeM) in July 2014. With this in mind, the group will need to decide whether its views are sufficiently mature on each topic so as to reduce or eliminate entirely the need for significant further work and/or meetings ahead of the MET Divisional Meeting.
2. DISCUSSION

2.1 SIGMET implementation issues

Further study into a global or multi-regional SIGMET advisory system (Deliverable 1)

2.1.1 The group will recall that it 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 phenomenon-based notification system rather than a flight information region (FIR)-based system form the reporting of hazardous meteorological conditions.

2.1.2 The group will be pleased to learn that as follow-up to Action Agreed 4/1, an ad-hoc group (A) has prepared a necessary report addressing each of the referred items (METWSG/5-SN/16 presented by ad-hoc group A refers), intended to assist the group in its further consideration of this issue. The group will note in particular that the concept of operations provides 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.

2.1.3 The group will be invited to consider whether the concept of operations, as proposed, can be supported in principle by the group. If this is the case, the group may wish to then consider whether the amendment to Annex 3 provisions, as proposed within the concept of operations, is of sufficient maturity to form part of draft Amendment 77 to Annex 3 (applicable in November 2016). It is to be noted that the concept of operations is expected to remain internal to the group since it provides a framework for the METWSG discussions which would, through consensus, lead to the development of ICAO provisions based on user requirements and meteorological service capabilities.

2.1.4 Additional to the above-mentioned report of ad-hoc group A, the group will be further invited to consider two reports relating to the establishment of a global or multi-regional SIGMET advisory system. The first concerns an analysis of wider issues and experiences in the provision of information relating to hazardous meteorological conditions (METWSG/5-SN/15 presented by Peter refers). The second concerns issues related to the requirements for regional SIGMET advisory centres based on recent discussions and experiences within the Asia-Pacific Region (METWSG/5-SN/17 presented by Jun refers).

2.1.5 In respect of the analysis of wider issues and experiences in the provision of information relating to hazardous meteorological conditions, taking into the significant and long-standing issues concerning SIGMET production and dissemination in some parts of the world, the group will be invited to consider whether the scope of the concept of operations, as proposed by the ad-hoc group A (in SN/16), should be widened to address the design, development and implementation of regional hazardous weather centres that would replace the existing MWO/FIR-oriented SIGMET system, focussed initially on those ICAO regions or sub-regions identified as underperforming in the production and dissemination of SIGMET.

2.1.6 In respect of issues related to the requirements for regional SIGMET advisory centres based on recent discussions and experiences within the Asia-Pacific Region, the group will be invited to consider some of the tools that may be available to the regional SIGMET advisory centres to assist in the SIGMET advisory production process – such as numerical weather prediction indices for icing,
turbulence and cumulonimbus (Cb) cloud and the automatic detection of areas of thunderstorms using satellite data. In order to ensure that quality, accuracy and reliability of SIGMET advisory information would be issued by the designated regional SIGMET advisory centres, the group will be invited to consider the necessary capabilities of such centres and the need to establish a verification framework.

2.1.7 The group may wish to consider these matters further in the context of the concept of operations, perhaps with a view to developing actions agreed as proposed for the group’s consideration in METWSG/5-SN/15 and METWSG/5-SN/17.

2.1.8 In the event that the group considers that the concept of operations (as contained in METWSG/5-SN/16) can be supported in principle and that the proposed amendment to Annex 3 therein is of a sufficient level of maturity, the group may wish to formulate the following action agreed accordingly (as a replacement for the action agreed proposed in METWSG/5-SN/16):

RSPP Action Agreed 5/.. — Updating of Annex 3 relating to regional SIGMET advisory centres and associated SIGMET advisory information

That, the Secretary develop a proposal to modify Annex 3 – Meteorological Service for International Air Navigation concerning the establishment of regional SIGMET advisory centres and associated SIGMET advisory information, based on the concept of operations supported in principle by the Meteorological Warnings Study Group (METWSG) as provided at Appendix 1 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 can be forwarded by the Secretary as part of draft Amendment 77 to Annex 3.

Regional SIGMET guidance

2.1.9 The group will recall that it formulated Action Agreed 4/3 a) concerning regional SIGMET guidance. The group will be pleased to learn that an ad-hoc group (B) has 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 so as to eliminate inconsistencies in the guides that are currently available to States/meteorological watch offices (METWSG-SN/4 presented by ad-hoc group B refers).

2.1.10 The group will note that whilst the ad-hoc group has advanced the development of a regional SIGMET guide template to a reasonable level of maturity, some further effort is required prior to it being suitable for release to the ICAO Regional Offices. The group will note that the regional SIGMET guide template, as developed thus far, includes background information in the responsibilities and coordination between the various parties concerned (meteorological watch offices, air traffic services units and others), 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 proposes the inclusion of a series of appendices to address, inter alia, a SIGMET guidance table, SIGMET message examples, and SIGMET test procedures.

¹ METWSG/5-SN/16 Appendices A and B
2.1.11 Having reviewed the content of the regional SIGMET guide template, and noting that further work is required prior to the template being suitable for release to the ICAO Regional Offices, the group may wish to formulate the following action agreed accordingly (as a replacement for the actions agreed proposed in METWSG/5-SN/4):

**Action Agreed 5/.. — Regional SIGMET guide template**

That, an ad hoc group (WG/..) consisting of [...] 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**

2.1.12 The group will recall that it formulated Action Agreed 4/3 b) concerning Table A6-1 of Annex 3 (Template for SIGMET and AIRMET messages and special air-reports (uplink)). The group will be pleased to learn that an ad-hoc group (B) has prepared a necessary report that details an investigation into splitting Annex 3, Appendix 6, Table A6-1 into its three component parts – namely SIGMET messages, AIRMET messages and special air-reports (uplink) (METWSG-SN/5 presented by ad-hoc group B refers).

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

2.1.14 Accordingly, the group will be invited to consider the merits of splitting the existing Table A6-1 into its three principle component parts – i.e. one table each for SIGMET messages, AIRMET messages and special air-reports (uplink). The group will need to give careful consideration as to whether the splitting of Table A6-1 reduces or increases the complexity of how the three message types are to be constructed and, as importantly, maintained going forwards. The group will need to give careful consideration as to the construct of the tables (including the handling of footnotes and examples) and their numbering.

2.1.15 The group will need to consider whether the three separate tables would be numbered as Table A6-1 (Template for SIGMET messages), Table A6-2 (Template for AIRMET messages) and Table A6-3 (Template for special air-reports (uplink)), since this would result in consequential amendments to all “Table A6-n” references in Appendix 2, Appendix 4 and Appendix 6 – including a renumbering of the existing Tables A6-2 (Template for aerodrome warnings), Table A6-3 (Template for wind shear warnings) and Table A6-4 (Ranges and resolutions for the numerical elements included in volcanic ash and tropical cyclone advisory messages, SIGMET/AIRMET messages and aerodrome and wind shear warnings).
2.1.16 Alternatively, the group may consider it more preferable (less problematic) that Table A6-1 be split into Table A6-1A, Table A6-1B and Table A6-1C, which would avert the need to renumber existing Tables A6-2, 6-3 and 6-4 and their associated references in Annex 3. Or, perhaps, the group may decide to only split Table A6-1 into two component parts – one table for SIGMET and AIRMET messages, and one table for special air-reports (uplink).

2.1.17 In the event that the group considers that the splitting of Table A6-1 into two or three separate tables, as described, is necessary, and having given due consideration to matters such as table construct and numbering (including impacts on other provisions in Annex 3), the group may wish to formulate the following action agreed accordingly (as a replacement for the actions agreed proposed for the group’s consideration in METWSG/5-SN/5 and METWSG/5-SN/4):

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

That, the Secretary develop a proposal to modify Annex 3 – Meteorological Service for International Air Navigation such that Appendix 6, Table A6-1 is split into [two/three] component parts, namely [SIGMET messages/AIRMET messages/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

2.1.18 The group will be 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 will be invited to consider 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 a meteorological watch office (MWO) is in position to exchange SIGMET in a digital form as well as traditional alphanumeric code (TAC) form (METWSG/5-SN/6 presented by Colin refers). More specifically, the group will be invited to agree that where a MWO does intend to issue/exchange SIGMET information in TAC form and digital form that 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 which may generate downstream issues.

2.1.19 The group will need to give careful consideration as to what it considers 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)).
2.1.20 Having given the matter the necessary consideration, and having agreed that such a protocol should be recommended in instances where a MWO issues SIGMET in TAC form and digital form, the group may wish to formulate the following action agreed accordingly (as a replacement for the action agreed proposed in METWSG/5-SN/6):

**Action Agreed 5/.. — Location of phenomenon used in SIGMET messages issued in traditional alphanumerical code form and digital form**

That, the Secretary develop guidance for inclusion in the *Manual of Aeronautical Meteorological Practice* (Doc 8896) and/or the *Manual on the Digital Exchange of Aeronautical Meteorological Information* (Doc 10003) that recommends that where a SIGMET messages is issued by a meteorological watch office in traditional alphanumerical code form and digital form, the location of the phenomenon should be described using only a polygon of latitude and longitude coordinates (in degrees and minutes).

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

2.1.21 The group will be 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.

2.1.22 In this regard, the group will be invited to consider that since there are 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 are unnecessary and inconsistent with the other permissible location descriptors available in the ‘Location’ section (METWSG/5-SN/7 presented by Colin refers).

2.1.23 The group will be invited to agree 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. Having given the matter the necessary consideration, and having agreed that Table A6-1 warrants simplification in this regard, the group may wish to formulate the following action agreed accordingly (as a replacement for the action agreed proposed in METWSG/5-SN/7):
RSPP  Action Agreed 5/.. — 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 that simplifies and consolidates the location descriptors for a volcanic ash cloud used in SIGMET messages, as provided at Appendix2 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

2.1.24 The group will be aware that Annex 3, Appendix 6, Table A6-1 (Template for SIGMET and AIRMET messages and special air-reports (uplink)) enables the description of multiple separate areas of the same phenomenon within a single SIGMET message. More specifically, Table A6-1 permits the 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 (FIR) to be repeated, as necessary.

2.1.25 In this regard, the group will be invited to consider 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 (METWSG/5-SN/12 presented by Bill refers). Noting that, in the case of a volcanic ash cloud, there may occasions where there is a significant variation in the location and extent (vertical and horizontal) of the volcanic ash cloud, the group may wish to consider retaining the option to repeat the elements (location, level, movement or expected movement, changes in intensity and forecast position) for this phenomenon alone, and that for all other phenomenon the option should be removed. Alternatively, the group may wish to consider eliminating the repetition of elements option entirely from Table A6-1.

2.1.26 The group should however give close attention to the reasons to changing the existing ICAO provisions in this regard. As the group will recall, 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 originated at the first meeting of the group (METWSG/1 Summary of Discussions, Action Agreed 1/1 and Appendix C refer). Therefore, to revoke (fully or partially) the option to repeat the referred elements in a SIGMET message would call into question the maturity of the proposal that originated at METWSG/1 and could, potentially, lead to implementation issues.

2.1.27 Having given the matter the necessary consideration, and in the event that the group considers that the option to repeat elements in Table A6-1, as described, should be removed either in full or in part (i.e. not including for a volcanic ash cloud), the group may wish to formulate the following action agreed accordingly:

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2 Appendix A to METWSG/5-SN/7
RSPP Action Agreed 5/.. — 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 that removes the option to repeat 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 (FIR) [except for a volcanic ash cloud], 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

2.1.28 The group will be aware that Annex 3 requires that in the case of an interruption to the operation of a world area forecast centre (WAFC), its functions are to be carried out by the other WAFC (Annex 3, 3.2.2 refers). Similarly, in the case of an interruption to the operation of a volcanic ash advisory centre (VAAC), its functions are to be carried out by another VAAC or another meteorological centre as designated by the VAAC Provider State concerned (Annex 3, 3.5.3 refer). The group may be aware that Annex 3 does not prescribe/require such contingency modes of operation to be available at other types of meteorological offices that provide service for international air navigation, including meteorological watch offices (MWOs).

2.1.29 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 – typically flight information region(s) and/or control area(s) – the group may wish to agree that in order to ensure the maintenance of a continuous meteorological watch over flight information regions and control areas that it would be desirable, even essential, to ensure in the event of a temporary interruption to the operation of a MWO that contingency modes of operation are employed by the MWO, as determined by the meteorological authority of the State concerned. Such contingency modes might include the delegation of some or all of the functions of the (primary) MWO to another MWO or other meteorological office within the State (where such other offices exist) or to a MWO or other meteorological office in another State with sufficient capability so as to ensure the continuous meteorological watch in the flight information region(s) and/or control area(s) concerned until such time as the primary MWO returns to normal operating mode.

2.1.30 In view of the foregoing, the group may wish to consider the merit of introducing into Annex 3, 3.4 a requirement (or a recommendation) that in the case of an interruption to the operation of a meteorological watch office, its functions shall (or should) be carried out by another meteorological watch office or other meteorological office as designated by the meteorological authority of the State concerned. In the event that the group considers that this would be a desirable or necessary way to proceed, any such new provision in Annex 3 would likely need to be supported by the inclusion of back-up procedures/guidelines, such as in the Manual of Aeronautical Meteorological Practice (Doc 8896). The group may wish to formulate the following action agreed accordingly:
RSPP Action Agreed 5/.. — Updating of Annex 3 relating to the temporary interruption to the operation of a meteorological watch office

That, Secretary develop a proposal to modify Annex 3 – Meteorological Service for International Air Navigation that introduces a [requirement/recommendation] that in the case of an interruption to the operation of a meteorological watch office, its functions [shall/should] be carried out by another meteorological watch office or other meteorological office as designated by the meteorological authority of the State concerned, 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.

2.2 SIGMET/AIRMET and air report requirements

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

2.2.1 The group will be aware that Annex 3 requires a meteorological watch office to prepare and issue SIGMET information for tropical cyclone (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 will be invited to note that whilst tropical cyclones are often symmetrical at low latitudes (tropical regions), when they transition to mid-latitudes, as they often do, 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 cyclone currently only permit the use of a centre point and circle of a defined radius to describe the area of Cumulonimbus (Cb) cloud associated with a tropical cyclone, and recognizing that as tropical cyclones transition from low-latitudes to mid-latitudes they may lose their symmetrical structure whilst retaining the tropical cyclone intensity, the group will be invited to consider whether Annex 3, Appendix 6, Table A6-1 provisions should be amended so as to permit the use of a polygon of coordinates to describe the Cb cloud top associated with the tropical cyclone in a SIGMET message (METWSG/5-SN/10 presented by Steve refers). The group may wish to agree that the introduction of such a provision into Table A6-1 would render more appropriate definition of the horizontal extent of the Cb cloud associated with the tropical cyclone by the MWO in the SIGMET messages and thus more efficient use of air space – since a more refined area of Cb cloud tops would be described.

2.2.2 Having given the matter the necessary consideration, and having agreed 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 may wish to formulate the following action agreed accordingly (as a replacement for the action agreed proposed in METWSG/5-SN/10):
RSPP  Action Agreed 5/.. — Updating of Annex 3 relating to the use of a polygon of coordinates for tropical cyclone in SIGMET messages

That, 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, as provided at Appendix3 to this Summary of Discussions, be forwarded by the Secretary as part of draft Amendment 77 to Annex 3.

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

2.2.3 Further to the considerations above concerning SIGMET messages for tropical cyclones, the group will be invited to consider a proposal that SIGMET messages should be additionally issued for post- and sub-tropical cyclones (METWSG/5-SN/9 presented by Steve refers). The group will be apprised of generic descriptions that describe post- and sub-tropical cyclones, noting that in both cases the 10-minute mean surface wind of 17 m/s (34 knots) or more is retained – which is the threshold used to trigger the issuance of a SIGMET message for a tropical cyclone (Annex 3, Appendix 6, 1.1.4 refers).

2.2.4 In this regard the group could proceed in one of two ways.

2.2.5 Prior to development of provisions in Annex 3 that would require SIGMET messages to be issued for post- and sub-tropical cyclone, the group could request, through the World Meteorological Organization (WMO), that the WMO Tropical Cyclone Regional Specialized Meteorological Centres and Tropical Cyclone Warning Centres (TC RSMCs and TCWCs) that are Tropical Cyclone Advisory Centres (TCACs) provide an indication of their position on this issue, specifically whether they would issue tropical cyclone advisory information for post- and sub-tropical cyclones. If the group agrees that this would be necessary in the first instance, it may wish to formulate the following action agreed accordingly:

Action Agreed 5/.. — Investigation into the issuance of tropical cyclone advisory information for post- and sub-tropical cyclones

That, [Herbert] investigate whether WMO Tropical Cyclone Regional Specialized Meteorological Centres and Tropical Cyclone Warning Centres (TC RSMCs and TCWCs) that are Tropical Cyclone Advisory Centres (TCACs) would issue tropical cyclone advisory information for post- and sub-tropical cyclones where the 10-minute mean surface wind of 17 m/s (34 knots) or more is retained, and provide a report to the group, through the Secretary, by 30 September 2013.

2.2.6 Alternatively, if the group believes that such tropical cyclone advisory information would be available from TCACs that could be used to support the issuance of SIGMET messages for post- and sub-tropical cyclones by MWOs, and having agreed that the proposal is sufficiently mature, the group may wish to formulate the following action agreed accordingly (as a replacement for the action agreed proposed in METWSG/5-SN/9):

3 Appendix D to METWSG/5-SN/10
RSPP  Action Agreed 5/.. — Updating of Annex 3 relating to the inclusion of post- and sub-tropical cyclones as phenomena warranting the issuance of a SIGMET message

That, the Secretary develop a proposal to modify Annex 3 – Meteorological Service for International Air Navigation that introduces a requirement that post- and sub-tropical cyclones with a 10-minute mean surface wind speed of 17 m/s (34 kt) or more are included in the list of phenomena that warrant 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 enhance SIGMET and AIRMET message provisions and associated guidance

2.2.7 The group will be invited to consider several proposals to enhance SIGMET and AIRMET provisions in Annex 3 and PANS-ABC, as well as associated guidance material (METWSG/5-SN/13 presented by Bill refers). More specifically, the group will be invited to consider 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 Procedures for Air Navigation Services – ICAO Abbreviations and Codes (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 is 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 been 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, such 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.

METWSG/5-SN/13 also considers matters relating to the issuance of SIGMET for tropical cyclone, which have been addressed within the earlier considerations of this group (paragraphs 2.2.1 to 2.2.6 inclusive above refer).

2.2.8 In the context of the proposal at 2.2.7 a) above, the group may wish to consider a further option that could be available whereby the numeric value of the SIGMET message could be 1 or (maximum) two characters and the alphabetic value of the SIGMET message could be a maximum of one character. In other words, that the message sequence number of SIGMET and AIRMET messages should be denoted in Table A6-1 as “[n][n]”.

2.2.9 In the context of the proposal at 2.2.7 c), the group may wish to give more general consideration to the operational use of SIGMET or AIRMET messages that have expired – i.e. that have past their period of validity – irrespective of whether they are test messages. In this regard, the group may consider that only those SIGMET or AIRMET messages that are still within their period of validity that are requiring cancellation (per Annex 3, 7.1.2 and 7.2.2) would actually necessitate a cancellation SIGMET or AIRMET message, and that if is would be beneficial to include some brief guidance in this regard in the Manual of Aeronautical Meteorological Practice (Doc 8896) and, as necessary, the regional SIGMET guides.

2.2.10 Having given the above-mentioned matters the necessary consideration, including a recognition of those elements which, if agreed to, would result in an amendment to Annex 3 and PANS-ABC provisions and associated guidance material, the group may wish to formulate the following actions agreed accordingly:

RSPP Action Agreed 5/.. — Updating of Annex 3 relating to sequence numbering and location descriptors in SIGMET and AIRMET messages

That, the Secretary develop a proposal to modify Annex 3 – Meteorological Service for International Air Navigation concerning the sequence numbering and location descriptors used 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.

Action Agreed 5/.. — Guidance regarding the cancellation of SIGMET and AIRMET messages

That, the Secretary develop guidance for inclusion in the Manual of Aeronautical Meteorological Practice (Doc 8896) and, as necessary, the regional SIGMET guides, that clarifies that the cancellation of SIGMET and AIRMET messages only applies where such messages are still valid (i.e. within their period of
validity), and that such messages that have exceeded their period of validity do not require a “cancellation” SIGMET or AIRMET message to be issued.

RSPP Action Agreed 5/.. — 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 which requires the issuance of a SIGMET message for a radioactive cloud (RDOACT CLD).

Note. — Doc 8400 already includes the abbreviation “CLD” with the decode “Cloud”.

Geographic descriptors for phenomena in SIGMET

2.2.11 The group will recall that it 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. In view of the foregoing discussion concerning, inter alia, the use of a polygon of coordinates to describe the location of a phenomenon, the group is invited to note that this issue is considered to have been overtaken by events.

SIGMET categories for thunderstorms

2.2.12 The group will recall that it 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).

2.2.13 The group will be invited to note that the Secretary has been informed that the International Air Transport Association (IATA), through its MET Task Force, has 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).

2.2.14 Accordingly, the group may wish to agree to close consideration of this issue at the present time.

Use of symbols and abbreviations in SIGMET information in graphical form

2.2.15 The group will be 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.

2.2.16 The group will be aware that the responsibility for maintaining Appendix 1 of Annex 3 resides with the World Meteorological Organization (WMO), and that WMO has a standardized symbol to denote a thunderstorm and a thunderstorm with hail.

2.2.17 The attention of the group will be drawn to the fact that whilst Model SN contains 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 does not 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) are included in Model SN except for thunderstorm and its variants. Accordingly, the group will be invited to consider whether SIGMET information, when issued in a graphical format, should use symbols (as per Model SN with a necessary amendment to include thunderstorm and its variants) and/or abbreviations (as per Annex 3, Appendix 6, 1.1.4) (METWSG/5-SN/14 presented by Sue refers).

2.2.18 Having given the matter the necessary consideration, the group may wish to formulate the following action agreed accordingly (as a replacement for the action agreed proposed in METWSG/5-SN/14):

RSPP Action Agreed 5/.. — 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 that enables the depiction of SIGMET issued in a graphical format using symbols or abbreviations; and

c) [Herbert] and the Secretary provide a report to the group on a) and b) above respectively 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.
Use of ENTIRE FIR and ENTIRE CTA descriptors in SIGMET messages

2.2.19 The group will be 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 a meteorological watch office to use the descriptors ENTIRE FIR or ENTIRE CTA in a SIGMET message for the observed and/or the forecast position of a volcanic ash cloud. The use of these descriptors is (as of 14 November 2013) exclusively reserved for volcanic ash clouds and may not be used for other phenomena for which a SIGMET may be issued.

2.2.20 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.

2.2.21 In giving this matter the necessary consideration, the group may wish to consider which of the phenomena listed at Annex 3, Appendix 6, 1.1.4 (phenomena that are required be included in a SIGMET message) would be likely to be of sufficient horizontal extent that an ‘entire FIR’ or an ‘entire CTA’ may be impacted. Of course, the physical size (extent) of the flight information region/control area has 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).

2.2.22 Understandably, volcanic ash was recognized as the first phenomena for which it was deemed suitable to enable the use of the ENTIRE FIR and ENTIRE CTA descriptors in a SIGMET message, particularly taking into account 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.

2.2.23 In the event that the group considers that there would be merit of extending the application of the ENTIRE FIR and ENTIRE CTA descriptors in SIGMET messages to some or all of the other phenomena listed at Annex 3, Appendix 6, 1.1.4, the group may wish to formulate the following action agreed accordingly:

RSPP Action Agreed 5/.. — 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 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.

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4 Plain language decode: entire flight information region or entire control area
Proposal to enable the use of SFC (surface) for height of cloud base in AIRMET messages

2.2.24 The group will be 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.

2.2.25 The group’s attention will be 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 is not currently permitted to describe the height of the base of the cloud. Recognizing the variations in land form and in the base of a cloud, the group will be invited to consider whether the abbreviation SFC should be introduced into AIRMET message as an additional means with which to describe the height of the base of the lowest cloud layer of broken or overcast extent (METWSG/5-SN/11 presented by Bill refers).

2.2.26 In the event that the group considers that it is 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 may wish to formulate the following action agreed accordingly:

RSPP Action Agreed 5/.. — 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 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

2.2.27 At the fifty-third meeting of the European Air Navigation Planning Group (EANPG/53, 28 November to 1 December 2011, Paris), the EANPG 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. The EANPG had taken note that a project team on the regional harmonization of MET services for low-level flights (PT/LLF, a subsidiary body of the Meteorology Group (METG) of the EANPG) had identified several inconsistencies within Annex 3 relating to formatting, flexibility in the reporting layer of a weather element, and the order of weather elements used in GAMET as well as in special air-reports and SIGMET. In order to provide greater consistency amongst the information provided, so as to assist meteorological offices in the creation of these products and to improve the interpretation of the products by the user, the EANPG had formulated Conclusion 53/23 accordingly.
2.2.28 In this regard, the group is invited to review Appendix A to this study note which provides a list of issues identified by the PT/LLF through METG and EANPG. The group may wish to consider each of the issues in turn in view of determining which, if any, warrant inclusion to a proposed amendment to Annex 3 – specifically within 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 examples thereto.

2.2.29 In view of the foregoing, the group may wish to formulate the following Action Agreed accordingly:

RSPP Action Agreed 5/.. — 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 5.. 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

2.2.30 The group will be 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.

2.2.31 With this in mind, the group’s attention will be 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) continues to exist as a component of Annex 3, Appendix 5, Table A5-3 (Template for GAMET) and Appendix 6, 2.1.4 respectively.

2.2.32 Appreciating the primary reason for the removal of ice crystals from local routine and special reports, METAR/SPECI and TAF – which was the fact that 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 may wish to give due consideration as to whether ice crystals should be removed from GAMET area forecasts and AIRMET messages for the same reasoning.

2.2.33 In the event that the group agrees that IC should be removed from GAMET area forecasts and AIRMET messages, the group may wish to formulate the following action agreed accordingly:

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5 Appendix A to METWSG/5-SN/2
RSPP Action Agreed 5/.. — 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 Appendix6.. 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

2.2.34 At the fifty-fourth meeting of the European Air Navigation Planning Group (EANPG/54, 3 to 6 December 2012, Paris), the EANPG 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.

2.2.35 As the group will recall, when required by regional air navigation agreement, a meteorological watch office 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 meteorological watch offices in adjacent flight information regions and to other meteorological watch offices or aerodrome meteorological offices as agreed by the meteorological authorities concerned, and that they should be transmitted 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).

2.2.36 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 noted that Doc 8896 and the BORPC did not currently describe the dissemination of AIRMET to such databanks and centres, thus preventing their global distribution and availability.

2.2.37 In view of the foregoing, the group may wish to agree that Doc 8896, Chapter 4 (AIRMET information), 4.4.5 concerning the dissemination of AIRMET merits improvement to ensure its alignment with Annex 3 provisions. In this regard the group may wish to formulate the following action agreed accordingly:

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6 METWSG/5-SN/2 Appendix B
Action Agreed 5/.. — 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.

2.2.38 In respect of the BORPC, the group is invited to note that the Air Navigation Commission 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 in the new revision of the Global Air Navigation Plan (GANP). Therefore, any such alignment of the BORPC with ICAO provisions (including Annex 3) will be addressed in due time.

Air-report categories for turbulence and icing

2.2.39 The group will recall that it formulated Action Agreed 4/6 in respect of seeking 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.

2.2.40 In this regard, the group will be invited to note that, as yet, the Secretariat has not yet received the requested clarification from IFALPA. In the event that the member from IFALPA is not in a position to provide the requested clarification during the METWSG/5 meeting, the group may wish to agree that Action Agreed 4/6 should be closed due to a lack of progress.

Implementation of air reports

2.2.41 The group will recall that it 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 will be 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, as appropriate, 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

2.2.42 The group will be invited to consider the dissemination of special air-reports to the centres designated to provide the AFS satellite distribution system and Internet-based services (METWSG/5-SN/18 presented by the Secretariat refers). In this regard, the group will note 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 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).
2.2.43 The group will therefore be invited to consider a proposed amendment to Annex 3 and also to the Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444) that would require special air-reports to be disseminated to the centres designated to provide the AFS satellite distribution system (SADIS 2G) and the Internet-based services (Secure SADIS FTP and the WAFS Internet File Service (WIFS)), thus ensuring their availability on the SADIS broadcast and WIFS. The group is invited to formulate the action agreed proposed for its consideration in METWSG/5-SN/18 accordingly.

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

2.2.44 In a further issue related to special air-reports, the group will be 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 through voice communications and data link communications. In addition, the Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444), Chapter 4 and Appendix 1 provide necessary procedures relating to the reporting of operational and meteorological information.

2.2.45 The group will be invited to note that Doc 4444, Appendix 1 which includes a special air-report template with which to relay such reports by voice communications (Model AIREP SPECIAL) is not wholly consistent with the list of meteorological conditions which would prompt the issuance of a special air-report – specifically it is inconsistent with Annex 3, Appendix 4, Table 4-1 since the Model AIREP SPECIAL in Doc 4444, Appendix 1 makes no allowance for the flight level of a volcanic ash cloud, moderate turbulence (with or without EDR), and moderate icing (METWSG/5-SN/8 presented by Colin refers).

2.2.46 In view of the foregoing, and having 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 may wish to formulate the following action agreed accordingly:

RSPP Action Agreed 5/.. — 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

2.2.47 At the fifty-third meeting of the European Air Navigation Planning Group (EANPG/53, 28 November to 1 December 2011, Paris), the EANPG 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:

i) transmission times, frequencies and formats, especially associated with SSR Mode S and ADS-C; and

ii) the impacts of transmitting at a fast rate automated routine MET observations via ADS-C on the network from an ATC operational perspective;

c) developing guidance related to the designation of aircraft to provide automated routine MET observations.

2.2.48 In considering these matters, the group is invited to note that the EANPG had recognized that ADS-C has the capability to provide automated routine MET observations, however 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 account of. 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.

2.2.49 In the event that the group supports the EANPG recommendation that Annex 3, 5.3.1 should be amended, the group is invited to note that this would have a consequential impact also on Chapter 1 (Definitions) and Appendix 4 (Technical specifications related to aircraft observations and reports), as shown at Appendix C to this study note.

2.2.50 In view of the foregoing, the group may wish to formulate the following actions agreed accordingly:

RSPP Action Agreed 5/.. — 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 7.. to this Summary of Discussions, be forwarded by the Secretary as part of draft Amendment 77 to Annex 3.

7 METWSG/5-SN/2 Appendix C
Action Agreed 5/.. — Specifications and guidance relating to aircraft providing automated routine MET reports

That, [the Secretary request an appropriate ICAO group / an ad-hoc group (WG/..) consisting of […]] to develop:

a) acceptable specifications for aircraft providing automated routine meteorological (MET) observations that would be in keeping with 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;

b) guidance related to the designation of aircraft providing automated routine MET observations; and

c) provide a report to the group in respect of a) and b) above through correspondence by [date].

3. ACTION BY THE MEETING

3.1 The METWSG is invited to:

a) note the information contained in this paper; and

b) decide on the draft actions proposed for the group’s consideration.
## APPENDIX A

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

The following is based on Appendix M of the EANPG/53 Report

<table>
<thead>
<tr>
<th>No.</th>
<th>EANPG/53 proposal</th>
<th>EANPG/53 reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.1</td>
<td>Deletion of blank spaces between numerical values and associated units in Annex 3; Table A5-3 and Example A5-3</td>
<td>GAMET would conform to format of AIRMET and meteorological report</td>
</tr>
<tr>
<td>A.2</td>
<td>Change of order of elements in GAMET forecast such that the location should be defined before vertical extent or level</td>
<td>GAMET would conform to order of elements provided in SIGMET, SPECIAL AIREP</td>
</tr>
<tr>
<td>A.3</td>
<td>Inclusion of optional additional digit [n] in the group [SFC/][n]nnnFT and all other relevant groups within the Table A6-1</td>
<td>This would accommodate for transition levels that are higher than 10 000ft in the EUR/NAT Region</td>
</tr>
<tr>
<td>A.4</td>
<td>Inclusion of additional vertical extent combinations for weather elements in Table A6-1: [nnnM/][nnnnM] (or [n]nnnM/][n]nnnFT), [nnnM/][FLnnn] (or [n]nnnFT/][FLnnn)</td>
<td>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</td>
</tr>
<tr>
<td>A.5</td>
<td>Inclusion of vertical extent to cover range of levels or layer for SPECIAL AIREP in Table A6-1</td>
<td>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</td>
</tr>
<tr>
<td>A.6</td>
<td>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</td>
<td>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</td>
</tr>
<tr>
<td>A.7</td>
<td>Re-examination to possible lowering of wind threshold of 15m/s (30kt) to be reported in GAMET in Table A5-3</td>
<td>This would facilitate in flight planning of lighter aircraft in particular</td>
</tr>
</tbody>
</table>
APPENDIX B

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

... PART II. APPENDICES AND ATTACHMENTS ...

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

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.

<table>
<thead>
<tr>
<th>Element</th>
<th>Detailed content</th>
<th>Identifier and time</th>
<th>Content</th>
<th>Location</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface visibility (C)</td>
<td>Widespread surface visibility below 5000 m including the weather phenomena causing the reduction in visibility</td>
<td>SFC VIS: [nn/mm]</td>
<td>mmm 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 IC or FC or GR or GS or PL or SQ</td>
<td></td>
<td>SFC VIS: 06/08 3000 M BR N of N51</td>
</tr>
</tbody>
</table>

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

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)
APPENDIX C

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

(EIGHTEENTH EDITION — JULY 2013)

PART I. CORE SARPs

CHAPTER 1. DEFINITIONS

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 (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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