METEOROLOGICAL WARNINGS STUDY GROUP (METWSG)

SECOND MEETING

Montréal, 19 to 21 May 2009

SUMMARY OF DISCUSSIONS

1. HISTORICAL

1.1 The second meeting of the Meteorological Warnings Study Group (METWSG/2) was held at the International Civil Aviation Organization (ICAO) Headquarters in Montréal, Canada, 19 to 21 May 2009.

1.2 The names and addresses of the participants are listed in Appendix A. Mr. Bill Maynard was elected Chairman of the meeting. The meeting was served by the Secretary of the METWSG, Neil Halsey, ICAO Technical Officer, Meteorology from the MET/AIM Section of the Air Navigation Bureau.

1.3 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: Content and issuance of SIGMET

- 5.1 Improved issuance of SIGMET
- 5.2 Quantitive criteria for weather phenomena included in SIGMET
- 5.3 Decoding and encoding of SIGMET in table-driven codes
- 5.4 Use of closed lines of coordinates and location indicators to describe the area in SIGMET/AIRMET

Agenda Item 6: Wind shear and turbulence warnings

6.1 Low-level wind shear detection in the approach/ take-off paths
6.2 Improved forecast algorithms for turbulence for use in SIGMET
6.3 Automated turbulence warnings in the approach/landing areas

Agenda Item 7: Future work programme

Agenda Item 8: Any other business

Agenda Item 9: Closure of the meeting

1.4 A list of study notes and information papers issued for the meeting is given at 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: CONTENT AND ISSUANCE OF SIGMET

3.1 Improved issuance of SIGMET

Background

3.1.1 The group recalled that long-standing implementation issues had been addressed at its first meeting. Such problems had appeared to persist in spite of efforts made by ICAO regional offices. A number of ICAO bodies had addressed the issue since the METWSG/1 Meeting:

a) the thirteenth meeting of the Satellite Distribution System Operations Group (SADISOPSG/13) (May 2008) had noted with concern the results of monitoring that had shown occurrences of significant deficiencies in SIGMET format compliance and incorrect routing of SIGMET with particular reference to the first line of the SIGMET. The results had been disappointing in that only 29 per cent of the samples during a 14-day period had been in compliance as far as the identification of the FIR was concerned;

b) the ninth meeting of AERMET SG of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/9) (2008) had noted that at least three States in the CAR/SAM Regions had not followed the guidance on the issuance of

SIGMET and one State had not had the necessary personnel to staff the meteorological watch office (MWO);

c) at the twelfth meeting of the CNS/MET SG of the ASIA/PAC Air Navigation Planning and Implementation Regional Group (APANPIRG/12), the Secretariat had identified five States for not being compliant with guidance on the issuance of SIGMET, including not issuing SIGMET as required by Annex 3 — *Meteorological Service for International Air Navigation* ; and

d) a SIGMET test had been carried out in the AFI Region during 2008 in which only 14 per cent of the MWOs involved had provided correctly formatted SIGMET. ICAO regulations calling for the transfer of responsibility for the MWO to another State able to do so, foreseen for such cases, had been rarely applied.

3.1.2 During the previous year, the eighteenth meeting of the Meteorology Group (METG/15) of the European Air Navigation Planning Group (EANPG) (2008) had discussed the apparent inconsistent cessation or change of hazardous weather warnings at FIR boundaries due to differences in methods and working practices between MWOs. Operators and flight crew had raised concern that warnings of hazardous weather phenomena were not well coordinated between FIRs, particularly where they came from different MWOs. This problem was particularly present where FIRs were relatively small. The METG had agreed that improved coordination between MWOs had been necessary. However, such coordination had only resulted in limited improvements. The group had suggested that regionally based centres could assume a coordinating role and that SIGMET could be issued for areas consistent with ATM-defined functional blocks of air space when determined by regional agreement.

Feasibility study

3.1.3 Based on the analyses of the problems above, the group concurred that problems continued to exist in all ICAO regions. In Europe the root of the problem was in volcanic ash SIGMET and the lack of coordination between a large number of adjacent MWOs (a problem which could be expected to be addressed by the new airspace concept of Functional Airspace Blocks of the Single European Sky, which would reduce the number of MWOs significantly, in line with the creation of larger air space blocks). Meanwhile, in the Africa-Indian Ocean (AFI), Caribbean and South American (CAR/SAM) Regions, problems with adherence to procedure, training and qualifications of staff and available technology appeared as the main issues. Similar problems were apparent in the Pacific (PAC) Region where at least two MWO had not been implemented. The group was pleased to note however that at least one State had established an arrangement with a nearby State to prepare and disseminated SIGMET on their behalf. As remedial actions, SIGMET seminars had been held in 2008 in the AFI Region and others were planned for other regions to be held in the 2009 to 2010 time frame. The issue of qualification of staff was being addressed by WMO through its EC Panel on Education and Training, and, in particular, the Task Team on Aviation Forecaster Qualification, in which ICAO was participating actively. This work, however, would only have an impact in the long term.

3.1.4 At the METWSG/1 Meeting, the group had discussed ways to improve the reliable issuance of accurate, coherent and complete SIGMET by MWO. It had been recognized for some time by the ICAO planning and implementation regional groups (PIRGs) and Air Navigation Commission (ANC) that there had been a need to improve MWO capabilities to issue and disseminate SIGMET in accordance with Annex 3. Subsequently, an ad hoc working group had been established “to undertake a feasibility study considering the rationalization and consolidation of the issuance of SIGMET to selected regional centres, to be designated by regional air navigation (RAN) agreement” (METWSG Action Agreed 1/2

refers). It had been further agreed by the group that the ad hoc group should also consider the improvement of the existing framework and the development of draft provisions with a view to use regional cooperation, in particular where resources at MWO were deemed insufficient to cope with the requirements. In addition, the group had been expected to consider developing proposals to improve training related to SIGMET, regular testing and real-time monitoring and to extend successful measures to all ICAO regions.

3.1.5 The group noted that two somewhat differing views regarding the most appropriate way forward had been expressed by members of the ad hoc group. Fundamentally, questions had been raised concerning the likely benefits of continuing efforts to assist States in the provision of SIGMET rather than simply paving the way towards the selection of regional centres for the issuance of SIGMET themselves. The group agreed that, since such questions had been raised by members of the ad hoc group, it was prudent to conduct a feasibility study in order to establish the value of providing further assistance through the introduction of SIGMET advisory information to be issued by designated regional centres, similar to that currently produced by the volcanic ash advisory centres and the tropical cyclone advisory centres. Such a study could have the following aims:

a) to establish the most appropriate format for a SIGMET advisory information;

b) to measure and monitor any improvements in the *issuance* of SIGMET for MWO in receipt of the SIGMET advisory information;

c) to assess any improvements in the *content* of SIGMET for MWO in receipt of the SIGMET advisory information including the consistency between adjacent MWO are affected; and

d) to assess the level of added value to SIGMET advisory information provided by the subsequent SIGMET issued by MWO.

3.1.6 In order to achieve the above aims the group agreed that it would be necessary to carry out a feasibility study of a reasonable period in a region that was known to have problems in this regard and also that had a State with sufficient resources to provide the SIGMET advisory information together with the capability of monitoring the results as necessary. The group agreed that the ASIA/PAC and AFI Regions both included areas of concern with regard to SIGMET delivery and had data monitoring groups that could provide assistance in the conducting of a feasibility study. Furthermore, in order to evaluate the potential added value provided by the MWO it was agreed that it would be helpful to provide the advisory information to all interested users. The only outstanding question, should the group agree, would be the selection of a State willing to provide the SIGMET advisory information to assist in the feasibility study. Such a State would need to have access to sophisticated numerical weather prediction (NWP) capability over the region concerned and would preferably have representation within the METWSG. The group agreed to the following action:

Action agreed 2/1 — Feasibility study into the issuance of SIGMET advisory information from selected regional centre(s)

That an ad hoc group (A) consisting of Albert, Carole, CM (co-rapporteur), Colin, Herbert, Jun, Keith, Patrick (co-rapporteur), Steve, Sue (co-rapporteur), Tom, and Zhang will oversee the planning for, and conduct of a feasibility study into the issuance of SIGMET advisory information from selected regional centre(s) using the work plan in the

Appendix C.

Note. — The feasibility study is expected to be conducted after the METWSG/3 Meeting.

3.1.7 The group noted that the expected end result of such a study would be a recommendation to be made to the forthcoming conjoint ICAO/WMO MET Divisional Meeting which was expected to be held in 2013 or 2014. The results of any feasibility study would be presented by the Secretariat based on the advice of the METWSG. It was expected that the details of the feasibility study would be prepared for consideration by the METWSG/3 Meeting (November 2010) and that the consideration of the results of the study would be carried out at the METWSG/4 Meeting (spring 2012) in time for proposals to be made to the divisional meeting.

3.1.8 It was be noted that information from regional, specialized NWP models, while considered highly useful to MWOs, in addition to any other basic MET data (e.g. SYNOPs, remote sensing data from meteorological satellites and radar/lightning networks, AMDAR profiles etc.), its provision and use cannot be subject to ICAO regulatory material (neither Standards and Recommended Practices (SARPs) , nor guidance material), in accordance with the *Working Arrangements between the International Civil Aviation Organization and the World Meteorological* Organization (Doc 7475) and that the exchange and use of such data would have to be included in appropriate WMO documents, as deemed necessary by an appropriate WMO body. The consideration of the dissemination of such information was not to be included in this study.

Training and other factors

3.1.9 The group was aware of the efforts already made in order to assist States in this regard through seminars conducted by WMO in collaboration with ICAO as well as several missions to various States and the publication of Regional SIGMET Guides and SIGMET posters which had all been prepared to improve the delivery and content of SIGMET globally. Whereas it was noted that further seminars had already been planned, as described above, it was recognized that the resources available in this regard were limited. The group considered any additional training methods that could be employed which should include the review of any material produced for online training from the technical perspective. It was expected that the ad hoc group as created in action 2/1 above should propose any useful additions that could be made to the training material available in cooperation with WMO and through WMO, the Cooperative Program for Operational Meteorology, Education and Training (COMET®).

3.1.10 The group was pleased to note the progress that had been made in South Africa as a result of the implementation of a training programme which had yielded a marked reduction in the formatting errors over a sustained period. It was agreed that in order to benefit from such training there needed to be cooperation at all levels of the providing organization as well as the technical training itself and a clear understanding of the requirements concerned. The example shown in South Africa provided the group with some encouragement that such improvements could be achieved given a comprehensive approach.

3.1.11 It was also noted that the introduction of the quality management provision as a Standard in Annex 3 as proposed in draft Amendment 75 (to be applicable in November 2010) could be expected to assist in the improvement of the implementation of SIGMET provisions and that some States had also responded in the same respect following Universal Safety Oversight Audit Programme (USOAP) audits.

3.1.12 The group concurred that whereas these measures, above, were of great assistance it did not remove the need for significant action as proposed in action 2/1 above.

Monitoring

3.1.13 The group recalled that the ad hoc group (A) was invited to consider the promulgation of successful concepts on a global basis. The web-based monitoring scheme that had been devised for use in the ASIA/PAC Regions had been suggested for this purpose and the group was informed that this facility could be adapted to assist in the feasibility study described in action 2/1 above.

3.2 Quantitive criteria for weather phenomena included in SIGMET

3.2.1 The group recalled that the METWSG/1 Meeting (action 1/3 refers) had agreed that there had been a need to consider the possibility of creating criteria to identify the intensity of sandstorms and duststorms as such phenomena had caused a significant hazard to aviation in some regions. Such a distinction would enable a more appropriate decision making tool for the issuance of SIGMET.

3.2.2 The group noted that in response to the need outlined, the following criteria were presented for consideration by the group involving visibility and wind thresholds which could be readily assessed without recourse to complex considerations involving the particle size and lighting conditions etc.:

- visibility < 3 000 m and gusts of >=20 kt for a light sandstorm or duststorm, (not to be reported in SPECI);
- visibility < 1 500 m and gusts of >=30 kt for moderate sandstorm or duststorm, and
- visibility <5 00 m and gusts of >=40 kt for heavy sandstorm or duststorm.

(Alternatively, to avoid too frequent warnings and SPECIs, the visibility criteria could be tightened to 1 500/800/300m).

3.2.3 It was noted in consideration of the criteria presented that they were presented as a simplified first guess and the group considered that a better understanding of the user needs for the information would be beneficial before reaching a decision. An preliminary finding was that users have no need for intensity information concerning sandstorms and duststorms as no operations could occur in the presence of these phenomena regardless of the intensity. It was suggested that the distinction between blowing sand/dust and sandstorm/duststorm was of greater importance. The group agreed the following action:

Action agreed 2/2 — Intensity criteria for sandstorm and duststorm

That,

a) Carole and Tom seek user information regarding sandstorm and duststorm intensity that may assist the modification of the criteria presented below by the end of August 2009;

b) all members of the group provide information, as available, to Herbert concerning the forecasting of sandstorm and/or duststorm intensity by May 2010;

c) Herbert collate the information received and prepare a report for consideration at the METWSG/3 Meeting; and

d) the Secretary prepare a draft amendment to Annex 3, as necessary, in response to c) above.

3.2.4 The group was aware that the only phenomenon for which no objective criteria existed in Annex 3, Appendix 6, 4.2 was icing and therefore agreed the following action:

Action agreed 2/3 — Criteria for the issuance of SIGMET for icing

That members of the group provide information, as available, for consideration at the next meeting of the group to assist in the creation of criteria for the issuance of SIGMET for icing.

Note. — The group may also wish to take into account of numerous events where an engine flame-out had occurred due to ice at cruise altitudes in the vicinity of convection at ambient temperatures at, or lower than, minus forty degrees Celsius.

3.2.5 The group agreed that it would be beneficial to develop guidance material to assist States in developing detailed criteria based on those outlined in Annex 3 above once consideration is given to icing and sandstorm/duststorm as described above.

3.2.6 It was noted by the group that some States used an areal criteria in order to assist forecasters in the preparation of SIGMET for certain parameters. However, it was agreed that the current provisions in Annex 3, in this regard, offered some flexibility which was beneficial in that allowed differing approaches in such cases where climatological factors and could be of consideration.

3.3 Decoding and encoding of SIGMET in table-driven codes

3.3.1 The group recalled that binary universal form for the representation of meteorological data (BUFR) tables had been generated for SIGMET prior to the METWSG/1 Meeting but that the planned migration to table-driven codes as developed by WMO in coordination with ICAO had been put on hold by the Air Navigation Commission whilst a pilot project into the use of XML/GML was being conducted jointly by WMO and ICAO. The group noted that the pilot project was expected to be completed towards the end of 2009 and that whilst the study into the use of XML/GML concentrated on METAR/SPECI and TAF it may be expected that code tables for XML/GML would be developed for SIGMET provided that the pilot project is conclusive.

3.3.2 It was noted by the group that this work was strongly linked to the philosophy behind the information management elements of both the FAA NextGen and EUROCONTROL SESAR plans that were being actioned in the United States and Europe respectively. It was noted that any work concerning the formatting and coding of meteorological information should be mindful of these plans and the International Organization for Standardization (ISO) data standards that were expected to be used or developed.

3.4 Use of closed lines of coordinates and location indicators to describe the area in SIGMET/AIRMET

3.4.1 The group recalled that the METWSG/1 Meeting (agreed action 1/4 refers) had considered the need to study the provisions in Annex 3, Table A6-1 relating to the description of the position and movement of phenomena in SIGMET and AIRMET.

3.4.2 The group noted the resulting series of recommendations given below for its consideration concerning various problems encountered in describing geographical areas where there is a desirability to be both succinct and unambiguous.

Recommendation 1— To remove reference to locations or geographic features well known internationally, but maintain all the other Table A6-1 standards for describing location in a SIGMET or AIRMET, including a closed line of coordinates.

3.4.3 The group agreed that the reference to well-known geographical areas should be removed from Table A-6-1. The introduction of aeronautical reference points as given in States Aeronautical Information Publication (AIP) documents should be explicitly described.

Recommendation 2— To adjust the maximum number of coordinates that are permissible when describing location within a SIGMET and AIRMET.

3.4.4 The group agreed that a note, similar to the wording of Annex 3, Appendix 5, 1.5 relating to the number of PROB groups in TAF should be used to recommend limiting the number of coordinates to seven under normal circumstances.

Recommendation 3— To harmonize the description of movement of phenomena in all SIGMET when used in text and graphical forms of SIGMET and AIRMET.

3.4.5 The group also agreed that the Secretary should investigate the use of MOV with a view to harmonizing the description used with the SIGMET for volcanic ash and tropical cyclones and prepare a draft Amendment to Table A 6-1 accordingly.

3.4.6 The group also considered further proposals to provide additional flexibility to the descriptions of location of phenomena as given in Table A6-1 of Annex 3. Whilst it was agreed that such flexibility would be useful, the group was also mindful of the additional complexity that such additions would generate for the development and maintenance of automatic decoding software. Furthermore, the group was also aware that the expected introduction of XML/GML for SIGMET (3.3 above refers) would alleviate such problems in the future. As a result the group agreed that no additional changes to Table A6-1 should be made at this stage.

3.4.7 The group is agreed to the following action:

Action agreed 2/4 — Description of geographical areas of phenomena in SIGMET and AIRMET

That,

a) a draft amendment to Annex 3, Table A6-1 concerning the geographical area of phenomena in SIGMET and AIRMET be developed by the Secretary based on the recommendations (1, 2 and 3) described above given above for the consideration of the group by May 2010;

b) members provide feedback on the draft amendment proposal by July 2010; and

c) a consolidated amendment proposal be prepared by the Secretary for consideration by the group at the METWSG/3 Meeting.

4. AGENDA ITEM 6: WIND SHEAR AND TURBULENCE WARNINGS

4.1 Low-level wind shear detection in the approach/take-off paths

4.1.1 The group recalled that Action Agreed 1/5 from the METWSG/1 Meeting sought the development of a proposal for the development of standard phraseologies for wind shear alert information in the approach and take-off/climb-out areas. Furthermore, it had been noted by that meeting that any proposal would need to be coordinated appropriately as an air traffic management (ATM) procedure and would have to respect the editorial policy of the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM (Doc 4444)) in that it should consist of no more than two or three standard phraseologies.

4.1.2 The group noted that a set of standard phraseologies had been agreed with those limited additions to the PANS-ATM (Doc 4444) presented in Appendix. D. The group agreed the following action on the strength of the work carried out:

Agreed action 2/5 — Phraseologies relating to wind shear for proposed inclusion in the PANS-ATM (Doc 4444)

That the Secretary forward the standard phraseologies included in the Appendix D for inclusion in the PANS-ATM (Doc 4444) following the appropriate consultation process.

Note. — Preliminary review by the ANC expected after the METWSG/3 Meeting in the first half of 2011.

4.1.3 The group noted that further discussion relating to the potential for additional entries relating to the distinction between expected and observed wind shear events and hence the use of a semi-automatic system also had been addressed by the ad hoc group. The group agreed that such phraseology, relating to nowcast information should not be included in wind shear alerts at this stage but that further consideration should be given to the inclusion of such information. It was noted that such consideration should also bear in mind the distinction between warnings and alerts as provided in Annex 3, 7.4 and the need for brevity in the provisions relating to phraseology. As a result, the group agreed that an ad hoc group should give consideration to this proposed addition and agreed the following action:

Action agreed 2/6 — Inclusion of expected/reported in the phraseologies used for wind shear alerts

That an ad hoc group (B) consisting of Carole, CM, Herbert, Juan, Steve and Tom (rapporteur), study whether the inclusion of the words "expected and reported" should be included in the phraseology for wind shear alerts in PANS-ATM (Doc 4444) considering Annex 3, Amendment 7.4 requirements and report their findings to the METWSG/3 Meeting.

Provisions related to low-level wind shear

4.1.4 The group recalled that additional material had been provided for the *Manual on Low-Level Wind Shear* (Doc 9817) at the METWSG/1 Meeting, which had subsequently been included in the manual issued in September 2008, and that the ICAO wind shear posters had also been updated by the group in order to assist in the observing and reporting of low-level wind shear. The group noted that the task in the work programme of the group relating to the observing and reporting of low-level wind shear had remained open with a view to updating Doc 9817 to make it compatible with Amendment 75 to Annex 3. The update was expected to take place once Amendment 75 had been adopted and it was proposed that the task be deleted following this action since no direct proposals were expected relating to this task in the foreseeable future. The group agreed the following action:

Action agreed 2/7 — Update of the *Manual on Low-Level Wind Shear* (Doc 9817) and deletion of the related work programme task

That,

a) the Secretary update the *Manual on Low-Level Wind Shear* (Doc 9817) to make it compatible with Amendment 75 to Annex 3 following its adoption; and

b) work programme task 5 relating to the observing and reporting of low-level wind shear be deleted on completion of a) above.

4.2 Improved forecast algorithms for turbulence for use in SIGMET

4.2.1 The group noted that the Air Navigation Commission (ANC), in disbanding the Meteorological Information Data Link Study Group (METLINKSG) during the seventh meeting of its 178th Session on 12 June 2008, had agreed that two outstanding tasks allocated for the Secretariat should be progressed with the assistance of the METWSG. One of them relates to improved forecast algorithms for turbulence for use in SIGMET and the other to automated turbulence warnings in the approach/landing areas (4.3 refers).

4.2.2 The group noted that the automatic generation of turbulence forecast information for use in the world area forecast system (WAFS) had been under consideration by the World Area Forecast System Operations Group (WAFSOPSG) since its inception following the MET Divisional Meeting (2002). This had led to the introduction of gridded forecasts of clear-air and in-cloud turbulence by the WAFC as a part of draft Amendment 75 to Annex 3 in 2010.

4.2.3 The group agreed that a study should be undertaken to consider whether the algorithms used to automatically generate the WAFS forecasts of turbulence could provide some benefit in the case of SIGMET. Such a study should take advantage of the knowledge gained by the WAFC and the contributions made by other members of the group where similar work had been undertaken and should focus on the possibility of providing guidance or the need for provisions to assist in this regard. The group agreed the following action:

Action agreed 2/8 — Use of turbulence forecast algorithms in the automatic generation of SIGMET

That an ad hoc group (C) consisting of CM, Colin (rapporteur), Patrick and Steve should study the possibility of using turbulence forecast algorithms for the use in SIGMET and produce a report in time for the METWSG/3 Meeting for its consideration.

4.3 Automated turbulence warnings in the approach/landing areas

4.3.1 With regard to automated turbulence warnings in the approach/landing areas the group agreed that it was not expected that any significant progress could be made in the foreseeable future in this area and that it would not be worthwhile to pursue this task. The group agreed the following action:

Action agreed 2/9 — The use of automatic turbulence warning systems in the approach/landing and take-off/climb-out areas

That the task relating to the automated turbulence warnings in the approach/landing areas be deleted from the work programme.

5. FUTURE WORK PROGRAMME OF THE GROUP

5.1 In light of the progress made the group agreed that the Secretary would update the work programme and make it available to the group for comment by 27 May 2009.

Action agreed 2/10 — Work programme of the group

That the Secretary update the work programme of the group and make it available to the group for comments by 27 May 2009.

6. ANY OTHER BUSINESS

6.1 None.

7. METWSG/3 MEETING

7.1 The group noted that the METWSG/3 Meeting would tentatively be held in Montreal from 15 to 18 November 2010.

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APPENDIX A

LIST OF PARTICIPANTS

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APPENDIX B

LIST OF DOCUMENTATION

SN no.	Number of pages	Presented by	Title	Agenda item
1	3	Secretary	Provisional agenda	4
2	8	Secretary	Progress report on the content and issuance of SIGMET	5
3	6	Secretary	Progress report on wind shear and turbulence warnings	6
4	2	Secretary	Work programme of the group	7
5	3	Herbert Puempel	Quantitative criteria for "sandstorm" and "duststorm"	5.2
6	10	Colin Hord	Proposals to amend location information in SIGMET and AIRMET templates	5.4
7	6	Steven Albersheim	Feasibility study on the rationalization of the issuance of SIGMET	5.1
8	6	Herbert Puempel	Feasibility study on the rationalization of the issuance of SIGMET	5.1
9	5	C.M. Shun and Steven Albersheim	Standard ATC phraseology for provision of wind shear alert information to aircraft	6.1

10	5	C.M. Shun	Standard ATC phraseology for provision of wind shear alert information to aircraft	6.1
11	4	Zhang Zhongfeng	Concerns about the proposal for the issuance of SIGMET to be taken up by regional centres	5.1
12	5	Steven Albersheim	Operation of the Meteorological Watch Office	5.1
13	3	Steven Albersheim	Standard practices and procedures in the provision of wind shear and microburst alerts	6.1
14 revised	4	Keith Mackersy	Proposed regional issue of warnings to international aviation	5.1
15	6	Bill Maynard	SIGMET and AIRMET template	5.1
16	4	Sue O'Rourke	Proposal for changes to SIGMET format	5.4
17	2	Sue O'Rourke	Thunderstorm SIGMETs	5.2
18	2	Tom Fahey	Issuance of SIGMET by Meteorological Watch Offices	5.1

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1	2	Secretary	Working arrangements for the meeting	3
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3	8	Secretary	Agreed actions from the METWSG/1 Meeting	8
4	4	Steven Albersheim	Graphical AIRMET by MWO-Kansas City	5
5	2	Keith Mackersy	New Zealand SIGMET	5.4
6	3	Sue O'Rourke	Participation in WS SIGMET tests in ASIA/PAC Region	5.1
7	3	Albert Moloto	The South African Weather Service (SAWS) takes steps to ensure compliance with ICAO Annex 3 provisions	5.1
8	2	Juan Ayón	Effective solution of deficiencies in emission of SIGMET	5.1

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6	3
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7	4
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APPENDIX C

WORK PLAN FOR THE AD HOC GROUP TO CONSIDER THE RATIONALIZATION AND CONSOLIDATION OF THE PROVISION OF SIGMET

Main milestones:

August 2010: Report for consideration by the METWSG/3 Meeting (tentatively 15 to 18 November 2010)

1. Establish the content of advisory information to support issuance of SIGMET (SIGMET advisory) for phenomena other than volcanic ash, radioactive release and tropical cyclone; develop the corresponding format.

2. Select appropriate regional centre(s) using the following criteria:

   a) a monitoring scheme should be available in the region to easily provide statistics on the impact of the advisory information (use could be made of the web-based monitoring scheme created for use in the Asia/Pacific Regions which could be expanded if necessary to cover other regions);

   b) the centres(s) selected should be willing to provide the advisory information required and have access to the necessary NWP capabilities etc.; and

   c) the centre(s) should be represented in the ad hoc group in order to facilitate a flexible approach to the production of the advisory information.

   Note. — The selection of centre(s) for this feasibility study will not influence any decision taken by the ICAO Regions in the future should such centres be required on an operational basis.

3. Propose arrangements for a trial to be conducted by one or two regional centres (that are willing and able to do so) for the issuance of SIGMET advisories with the following aims:

   a) to assess any improvements in the issuance of SIGMET by MWOs which receive the advisory information from the regional centre(s);

   b) to assess any improvements in the content of SIGMET for MWOs in receipt of the advisory information including cases where adjacent MWOs are affected; and

   Note. – The assessments under a) and b) would consist of a comparison of the level of compliance before and during the trial period.

   c) to assess the level of added value to users provided by SIGMET issued based on SIGMET advisory compared to the use of SIGMET advisory alone.

d) to consider, in association with States and users, the delivery means that could be utilized by the regional centre(s) to distribute the SIGMET advisory .

4. Establish any further training requirements including the need for the review of online training material.

February 2012: Report for consideration by the METWSG/4 Meeting (May 2012)

1. Oversee the conduct of the trial as agreed by the METWSG/3 Meeting.

2. Prepare a detailed report on the results of the feasibility study addressing the issues outlined above; formulate recommendations for future course of action to the METWSG/4 Meeting.

3. Prepare a list of criteria to be met by a future Regional Centre (e.g. NWP capability, reception of high-resolution satellite data, access to radar networks, etc).

Late 2013/early 2014. WP for the MET/AIM Divisional Meeting including the recommendations and the proposed criteria for establishing regional centres.

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APPENDIX D

PROPOSED AMENDMENT TO THE PROCEDURES FOR AIR NAVIGATION SERVICES

AIR TRAFFIC MANAGEMENT (PANS-ATM, Doc 4444)

FIFTEENTH EDITION — 2007

CHAPTER 12

PHRASEOLOGIES

. . .

12.3 ATC phraseologies

. . .

Circumstances	*Phraseologies*
. . .	. . .
12.3.1.7 METEOROLOGICAL CONDITIONS	a) [SURFACE WIND (*number*) DEGREES (*speed*) (*units*):
. . .	. . .
Editorial Note.— Insert new text as follows:	
… for alerting approach or departure aircraft to microburst	p) [CAUTION] [RUNWAY *(number)*] MICROBURST [ALERT] [MINUS (*or* PLUS)] [(*number*) KNOTS (*or* KILOMETRES PER HOUR)] [LOSS (*or* GAIN)] [(*number*) MILE] [ON] [FINAL] [APPROACH (*or* DEPATURE)] [RUNWAY] *Note 1. Either [CAUTION] or [ALERT] should be used.* *Note 2. Either[(number) MILE][FINAL (or DEPARTURE)][ON RUNWAY]* *or* *[ON][FINAL APPROACH (or DEPARTURE)][RUNWAY]* *should be used*

Note 3. Either [MINUS (or PLUS)] or [LOSS (or GAIN)] should be used for the sign of the microburst magnitude.

… for alerting approach or departure aircraft to significant wind shear

q) [CAUTION] [RUNWAY *(number)*] WIND SHEAR [ALERT] [MINUS (*or* PLUS)] (*number*) KNOTS (*or* KILOMETRES PER HOUR) [LOSS (*or* GAIN)] [(*number*) MILE] [ON] [FINAL] [APPROACH (*or* DEPARTURE)] [RUNWAY]

Note 1. Either [CAUTION] or [ALERT] should be used.

Note 2. Either [(number) MILE][FINAL (or DEPARTURE)][ON RUNWAY]
or
[ON][FINAL APPROACH (or DEPARTURE)][RUNWAY]
should be used

Note 3. Either [MINUS (or PLUS)] or [LOSS (or GAIN)] should be used for the sign of the wind shear magnitude.

— END —