INTERNATIONAL CIVIL AVIATION ORGANIZATION

THE MIDDLE EAST AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (MIDANPIRG)

REPORT OF THE SECOND MEETING OF MET SUB-GROUP

(Cairo, Egypt 15 -17 December 2009)

The views expressed in this Report should be taken as those of the MIDANPIRG MET Sub-Group and not of the Organization. This Report will, however, be submitted to the MIDANPIRG and any formal action taken will be published in due course as a Supplement to the Report.

Approved by the Meeting
and published by authority of the Secretary General

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PART I – HISTORY OF THE MEETING

1. PLACE AND DURATION

1.1. The second meeting of the Meteorology Sub-Group of the Middle East Planning and Implementation Regional Group (MET SG/2) was held in the conference hall of the ICAO Middle East (MID) Regional Office, Cairo, Egypt, 15 to 17 December 2009.

2. OPENING

2.1. The ICAO Deputy Regional Director, Mr Jehad M. Faqir, on behalf of the ICAO Regional Director, Mr. Mohamed. R. Khonji, welcomed all participants to the meeting. He expressed special gratitude to participants representing Service Provider States from outside the MID Region, namely the United Kingdom, and the representatives of the International Air Transport Association (IATA), and the World Meteorological Organisation (WMO).

2.2. In his opening address, Mr. Faqir outlined that this was the second meeting of the MET SG, which was formed in 2008 with the establishment of a new organizational structure of the MIDANPIRG. The structure was aimed at increasing efficiency and aligning the work programme of the MIDANPIRG and its contributory bodies with the new regional planning methodologies arising from the Global Air Navigation Plan and ICAO Business Planning requirements.

2.3. Mr. Faqir stressed that it was of paramount importance to the success of the MET SG that participants actively engage in the discussions during the 3 day meeting. Of particular note, he emphasised that the MET SG should afford the necessary high priority to matters related to the:

- implementation of MET services in the MID Region (such as TAF and SIGMET);
- identification, assessment and reporting of MET deficiencies; and
- implementation of quality management system (QMS) for MET service provision.

2.4. Mr. Faqir outlined that the QMS for MET services seminar held immediately prior to the MET SG/2, should afford the MET SG ample opportunity to consider QMS implementation in particular.

3. ATTENDANCE

3.1. The meeting was attended by a total of twenty participants, from seven States (Bahrain, Egypt, Kuwait, Oman, Saudi Arabia, the Syrian Arab Republic and the United Kingdom) and two International Organisations (International Air Transport Association (IATA) and the World Meteorological Organisation (WMO)). The list of participants is at the **Attachment A** to the Report.

4. OFFICERS AND SECRETARIAT

4.1. The Vice-Chairman of the MET SG, Mr. Mohamed Saad Mohamed Ismail, Forecaster Director Meteorology Office, EMA, from Egypt presided over the meeting for its duration in the absence of the Chairman, Mr Ahmad Hamood Al Harthy, Director Operations and Technical Services, DGMAN, from Oman.

4.2. The Secretary of the meeting was Mr. Greg Brock, Regional Officer (Meteorology), Europe and North Atlantic, assisted by Mr. Mohamed Smaoui, Regional Officer (Aeronautical Information and Charts/Meteorology), Middle East, and Mr. Neil Halsey, Technical Officer, Headquarters, Montreal.

5. LANGUAGE

5.1. Discussions were conducted in English and documentation was issued in English.

6. AGENDA

6.1. The following Agenda was adopted:

Agenda Item 1: Adoption of the Provisional Agenda

Agenda Item 2: Follow-up on MIDANPIRG/11 Conclusions and Decisions relevant to the MET field

Agenda Item 3: Review of recent and forthcoming global developments

Agenda Item 4: Status of implementation of the meteorological services in the MID Region:

- 4.1 Review implementation of WAFS and SADIS
- 4.2 Review implementation of the meteorological advisories and warnings:
  - a) International Airways Volcano Watch (IAVW);
  - b) International Tropical Cyclone Watch (ITCW); and
  - c) SIGMET information, and other warnings
- 4.3 Review of requirements for OPMET data and status of OPMET data exchange
- 4.4 Review implementation of MET service for low-level flights

Agenda Item 5: Review of the MET provisions in the MID Basic ANP and FASID

Agenda Item 6: Identification, assessment and reporting of MET deficiencies

Agenda Item 7: Institutional issues related to MET

Agenda Item 8: Future work programme

Agenda Item 9: Any other business

7. CONCLUSIONS AND DECISIONS - DEFINITIONS

7.1. All MIDANPIRG Sub-Groups and Task Forces record their actions in the form of Conclusions and Decisions with the following significance:

a) **Conclusions** deal with the matters which, in accordance with the Group's terms of reference, merit directly the attention of States on which further action will be initiated by ICAO in accordance with established procedures; and

b) **Decisions** deal with matters of concern only to the MIDANPIRG and its contributory bodies.

8. LIST OF DRAFT CONCLUSIONS AND DRAFT DECISIONS

DRAFT CONCLUSION 2/1	*TRAINING FOR THE NEW WAFS FORECASTS*
DRAFT CONCLUSION 2/2	*SADIS STRATEGIC ASSESSMENT TABLES*
DRAFT CONCLUSION 2/3	*FINALIZED SIGMET TEST PROCEDURES AND CONDUCTING OF REGULAR SIGMET TESTS IN THE MID REGION*
DRAFT CONCLUSION 2/4	*INITIATING TROPICAL CYCLONE SIGMET TESTS IN THE MID REGION*
DRAFT CONCLUSION 2/5	*IMPROVING THE TROPICAL CYCLONE ADVISORIES AND WARNINGS FOR AVIATION*
DRAFT CONCLUSION 2/6	*SIGMET GUIDE FOR THE MID REGION*
DRAFT CONCLUSION 2/7	*IMPROVING OPMET DATA IN THE MID REGION*
DRAFT CONCLUSION 2/8	*HARMONIZATION OF PROCEDURES FOR OPMET DATA ISSUANCE*
DRAFT CONCLUSION 2/9	*PROPOSAL FOR AMENDMENT TO PART VI (MET) OF THE MID AIR NAVIGATION PLAN VOLUME I AND VOLUME II*
DRAFT DECISION 2/10	*REVIEW OF PART VI (MET) OF THE MID AIR NAVIGATION PLAN VOLUME II (FASID)*
DRAFT CONCLUSION 2/11	*REGIONAL SURVEY ON THE IMPLEMENTATION OF MET SERVICES AND FACILITIES*
DRAFT CONCLUSION 2/12	*FACILITATING THE IMPLEMENTATION OF QMS FOR MET IN THE MID REGION*
DRAFT DECISION 2/13	*UPDATE TO THE TERMS OF REFERENCE AND WORK PROGRAMME OF THE MET SUB-GROUP OF THE MIDANPIRG*
DRAFT CONCLUSION 2/14	*ACTIVATION AND PROPOSED MEETING OF THE MID OPMET BULLETIN MANAGEMENT GROUP*

PART II: REPORT ON AGENDA ITEMS

REPORT ON AGENDA ITEM 1: ADOPTION OF THE PROVISIONAL AGENDA

1.1. The meeting was presided over for its duration by the MET SG Vice-Chairman, Mr. Mohamed Saad Mohamed Ismail, Forecaster Director Meteorology Office, EMA, Egypt.

1.2. The meeting was presented with the Provisional Agenda and was informed that it was established in support of the ICAO Strategic Objectives 2005-2010[1], in particular those related to *safety* (A) and *efficiency* (D), and to ensure its consistency and continuity with the last MET SG meeting and those of other ICAO Regional MET (Sub-) Group meetings.

1.3. The Provisional Agenda focused on the harmonised implementation of the meteorological services in the MID Region, identification and reporting of deficiencies and increasing the efficiency of the MET SG in fulfilling its tasks determined by MIDANPIRG.

1.4. After review, the meeting adopted the Agenda as shown in paragraph 6 of the History of the Meeting.

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[1] http://www.icao.int/icao/en/strategic_objectives.htm

REPORT ON AGENDA ITEM 2: FOLLOW-UP ON MIDANPIRG CONCLUSIONS AND DECISIONS RELEVANT TO THE MET FIELD

2.1 The meeting recalled that the MIDANPIRG/11 meeting (9 to 13 February 2009, Cairo, Egypt) had adopted seven Conclusions and three Decisions related to the work of the MET SG.

2.2 The meeting reviewed the follow-up action taken on the Conclusions and Decisions and noted that the action on only one of the Conclusion has been completed fully (namely Conclusion 11/77).

2.3 The meeting agreed to address the six outstanding Conclusions and three outstanding Decisions under agenda items 4, 5, 7 and 9 as follows:

Agenda Item 4:	Conclusions 11/76, 11/79, 11/80 and 11/81 Decisions 11/78
Agenda Item 5:	Decision 11/75
Agenda Item 7:	Conclusions 11/83 and 11/84
Agenda Item 9:	Decision 11/82

2.4 The meeting noted that in respect of MIDANPIRG/11 Conclusion 11/76 (*Training for the new WAFS forecasts*), the training seminar and associated material would be delayed until 2011 at the earliest in view of the outcomes of the WAFSOPSG/5 meeting. In respect of Conclusion 11/84 (*Fostering the future implementation of QMS for the provision of MET service for international air navigation*), the meeting was pleased to note that a two-day seminar had been held at the MID Regional Office immediately prior to the MET SG/2 meeting.

2.5 The status of the follow-up action on the MET related Conclusions and Decisions of MIDANPIRG/11, as updated by the MET SG, is presented at **Appendix 2A** to the Report on Agenda Item 2.

MET SG/2
Appendix 2A to the Report on Agenda Item 2

FOLLOW-UP ACTION ON RELEVANT MIDANPIRG/11 CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
DEC. 11/75: REVIEW AND AMENDMENT OF THE FASID MET TABLES That, the MID OPMET Bulletin Management Group, assisted by the ICAO Secretariat, is tasked to review of the FASID Tables related to the OPMET exchange (FASID Tables MET 1A, 2A, 2C, 4A and 4B), and propose amendments, as necessary.	Review and update FASID	OPMET BMG ICAO	FASID amendment proposal	Sep. 2009	**CLOSED** Superseded by Draft Conc. 2/9 and Draft Dec.2/10 (Agenda Item 5)
CONC. 11/76: TRAINING FOR THE NEW WAFS FORECASTS That, in order to facilitate the implementation of the new WAFS forecasts by the WAFS users in the MID States: a) WAFC Provider States be invited to organize in 2010 a training seminar for the MID Region on the use of the new gridded WAFS forecasts for convective clouds, icing and turbulence; and b) WAFSOPSG be invited to consider development of alternative methods of provision of training to the States regarding the new gridded forecasts for turbulence, icing and cumulonimbus clouds, including electronic training packages, in order to ensure that a maximum number of WAFS users in the States would have access to the training.	Follow up with WAFSOPSG	WAFC Provider States WAFSOPSG	Training seminar Electronic training packages	2010	**CLOSED** Superseded by Draft Conc. 2/1 (Agenda Item 4.1)
CONC. 11/77: SADIS STRATEGIC ASSESSMENT TABLES That, the MID SADIS Strategic Assessment Tables 2008 - 2012 at Appendix 5.6B to the Report on Agenda Item 5.6, be adopted and forwarded to the SADIS Operations Group for	Follow up with the SADISOPSG	ICAO SADISOPSG	MID SADIS Strategic Assessment Tables	Mar 2009	**CLOSED**

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
planning the future SADIS bandwidth requirements.					
DEC. 11/78: FINALIZING THE MID SIGMET TEST PROCEDURES That, an ad-hoc working group composed by experts from the Inter-Regional OPMET Gateway (IROG) Vienna (Austria) and the VAAC Toulouse (France), and the MET SG Rapporteur on SIGMET Tests, assisted by the Secretariat, is tasked to finalize the MID SIGMET Test Procedures, based on the proposals presented at MET SG/1 meeting.	Prepare regional guidance document	Ad-hoc working group ICAO	MID SIGMET test procedures	May 2009	**CLOSED** Superseded by Draft Conc. 2/3 (Agenda Item 4.2)
CONC. 11/79: CONDUCTING REGULAR SIGMET TESTS IN THE MID REGION That, a) the final MID SIGMET Tests Procedures be adopted and forwarded to the MID States for implementation; b) the MID States are urged to participate in the regular SIGMET test; c) in order to facilitate the conduct of the SIGMET tests, MID States are invited to designate SIGMET focal points; and d) the results of the SIGMET tests are reported to the MET Sub-Group and feed-back on any identified deficiencies is provided to the MID States concerned with proposed corrective actions.	Follow up with States, MET Sub-Group	ICAO States VAAC MET Sub-Group	State letter Nomination of focal points SIGMET test Analysis of tests results and feedback	May 2009 October 2009 MET SG/2	**CLOSED** Superseded by Draft Conc. 2/3 (Agenda Item 4.2)
CONC. 11/80: IMPROVING THE TROPICAL CYCLONE ADVISORIES AND WARNINGS FOR AVIATION That, in order to improve the quality and timeliness of the Tropical Cyclone Advisories and SIGMETs, MID Region States, having the capability to forecast tropical cyclones tracks in the Arabian Sea and related hazardous aviation weather, be encouraged to establish close collaboration with	Follow-up with the States concerned	ICAO States concerned	State letter	May 2009	**CLOSED** Superseded by Draft Conc. 2/5 (Agenda Item 4.2)

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
the Tropical Cyclone Advisory Centre (TCAC) in New Delhi and provide feed-back to the TCAC in case of identified forecast errors or other operational problems.					
CONC. 11/81: IMPROVING THE PROCEDURES FOR SENDING OF MID OPMET DATA TO THE EUR REGION That, MID States: a) be advised to use LOZZMMID as a single AFTN address for sending OPMET data to the EUR Region; and b) that have not yet Implemented the correct METAR and TAF format be urged to do so as soon as possible.	Follow up with States	ICAO States	State letter Feed back	Mar 2009 Jul 2009	**CLOSED** State Letter AN 10/11 – 09/360 issued 17 Nov. 2009
DEC. 11/82: ACTIVATION OF MID OPMET BULLETIN MANAGEMENT GROUP (BMG) That, a) the MID OPMET Bulletin Management Group be activated with the Terms of Reference as at **Appendix 5.6C** to the Report on Agenda Item 5.6; and b) the MID States participating in the OPMET BMG are urged to nominate appropriate experts on the group and inform the ICAO MID Regional Office accordingly.	Follow up with States participating in the OPMET BMG	ICAO States	State letter Nomination of experts	Mar 2009 ASAP	**CLOSED** Superseded by Draft Conc. 2/14 (Agenda Item 9)
CONC. 11/83: REGIONAL SURVEY ON THE IMPLEMENTATION OF THE MET SERVICES AND FACILITIES That, a) the MID Regional Office conduct a regional survey on the status of implementation of the meteorological services and facilities in the MID Region, including up-to-date information on the designated meteorological authorities and authorized meteorological service	Follow up with States	ICAO States	State letter Questionnaire Response to Questionnaire	May 2009 Jul 2009	**CLOSED** Superseded by Draft Conc. 2/11 (Agenda Item 7)

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
provider(s), through a comprehensive questionnaire encompassing the main implementation MET areas; and b) the results of the survey be reported to MET SG/2 meeting.			Survey report to MET SG/2	Dec 2009	
CONC. 11/84: FOSTERING THE IMPLEMENTATION OF QMS FOR THE PROVISION OF METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION That, a) The MID States that have not already done so, are urged to establish Quality Management System (QMS) for the provision of meteorological service for international air navigation; and b) ICAO, in coordination with the WMO, be invited to organize a training event on the QMS for MET in the MID Region in 2009.	Follow up with the States Organise seminar	ICAO States ICAO & WMO	State letter Action plans Training seminar	May 2009 TBD Dec 2009	**a) CLOSED** Superseded by Draft Conc. 2/12 (Agenda Item 7) **b) CLOSED** Seminar held 13-14 Dec. 2009

REPORT ON AGENDA ITEM 3: REVIEW OF RECENT AND FORTHCOMING GLOBAL DEVELOPMENTS

3.1 The meeting was informed of important global development with relevance to the provision of meteorological service to international air navigation; in particular, the status of the proposed amendment (Amendment 75) to ICAO Annex 3 – *Meteorological Service for International Air Navigation*, which is envisaged for applicability on 18 November 2010. It was noted that overall broad support for the proposed amendment had been expressed by States during the consultation phase.

3.2 The meeting noted that the proposed addition of a mandatory letter in the numbering of SIGMET had raised concern by a number of States during the consultation phase of the proposal for amendment early in 2009. Accordingly, the Air Navigation Commission (ANC), with the support of the ICAO Secretariat, agreed to the elimination of this particular amendment proposal. However, it was considered that the lack of a uniform identification system for SIGMET was a safety issue and accordingly this issue will be addressed by ICAO Headquarters with assistance from the MET Warnings Study Group (METWSG).

3.3 The meeting was informed that Amendment 75 to Annex 3 underwent final review by the ANC on 12 November 2009. Only one change of substance was introduced to the amendment by the ANC: the applicability date of the Standard related to the QMS would be postponed until November 2012. The remainder of the amendment would become applicable, as expected, in November 2010. The meeting acknowledged that the next steps in the process would be the: i) adoption of the amendment in March 2010, as modified by the ANC during the final review; and ii) applicability of Amendment 75 to Annex 3 in November 2010.

REPORT ON AGENDA ITEM 4: STATUS OF IMPLEMENTATION OF THE METEOROLOGICAL SERVICES IN THE MID REGION

4.1: REVIEW IMPLEMENTATION OF THE WAFS AND SADIS

4.1.1 The meeting was apprised of the main outcomes of the fifth meeting of the WAFS Operations Group (WAFSOPSG/5) and the fourteenth meeting of the SADIS Operations Group (SADISOPSG/14), held 16 to 18 September 2009 and 15 to 17 July 2009 respectively.

4.1.2 The representative from the United Kingdom (WAFC London Provider State and SADIS Provider State) presented a summary of recent developments to the WAFS and SADIS since MET SG/1 meeting (June 2008), and forthcoming developments of relevance to the MET SG to assist in future (regional) planning.

4.1.3 In respect of the WAFS, of particular note the meeting was informed on the progress towards developing WAFS upper-air gridded forecasts in GRIB 2 code form (including trial and evaluation forms of icing, turbulence and cumulonimbus (CB) clouds forecasts), recent and planned improvements to WAFS performance indicators, and the planned introduction of corrections to WAFS SIGWX forecasts.

4.1.4 In respect of the SADIS, of particular note the meeting recalled that the SADIS first-generation satellite broadcast (SADIS 1G) had been withdrawn from service in January 2009, as scheduled, in view of the implementation of the SADIS second-generation (SADIS 2G) service, and that the SADIS FTP service had undergone recent enhancements to improve resilience and data redundancy. In addition, the meeting noted that further developments to SADIS FTP were planned before the end of 2010 in the form of a new SADIS FTP Secure service. The SADIS Provider outlined progress towards the procurement of a SADIS data backup arrangement, harmonization of the International Satellite Communication System (ISCS) with SADIS in respect of OPMET, the forthcoming availability of trial and evaluation gridded WAFS forecasts for icing, turbulence and CB clouds in GRIB 2 code form on the SADIS FTP service., and recent satellite transmission tests conducted using GRIB 2 trial WAFS data.

4.1.5 The representative of the World Meteorological Organization (WMO) expressed appreciation of the imminent introduction of a simple text-based solution that will afford the World Area Forecast Centres the capability to notify WAFS users that a significant weather (SIGWX) forecast requires correction, in the event that an error is identified after transmission, in accordance with the principles of a Quality Management System (QMS). In addition, WMO expressed the importance of training in respect of the future intended operational use of the gridded fields for icing, turbulence and CB clouds as a replacement to the traditional SIGWX forecasts, noting that such forecasts were significantly different in nature and application to wind and temperature forecasts, given, in particular, their stochastic characteristic.

4.1.6 In considering the recent and planned improvements to WAFS performance indicators (for wind and temperature), the meeting briefly discussed whether performance indicators for WAFS SIGWX forecasts would be developed within the WAFS. The meeting was informed that verification of traditional WAFS SIGWX forecasts (in BUFR code and/or PNG chart form) had proven to be very difficult and subjective until now. This was due, in part, to the limited availability of observational data to verify against. However, through the WAFSOPSG, a more objective verification technique

may emerge for the gridded WAFS SIGWX forecasts for icing, turbulence and CB clouds, using observational forms of data such as aircraft reports. WMO strongly encouraged the fostering of the WMO Aircraft Meteorological Data Relay (AMDAR) programme in the MID Region, in view of its direct applicability to support global verification schemes such as those for the WAFS.

4.1.7 The meeting commended the continued efforts of the SADIS Provider State and the ISCS Provider State to harmonize, to the extent possible, OPMET information on the respective satellite broadcasts, particularly in light of the planned introduction of a SADIS 2G data backup arrangement. In respect of the development of a SADIS FTP Secure service, the meeting acknowledged that the new service was expected to become available towards the end of 2010, and would run in parallel with the existing SADIS FTP service for a period of time to be determined by the SADISOPSG. SADIS FTP Secure would likely necessitate new usernames, passwords and host addresses, and thus, potentially software updates to user workstations. Further information in this regard was expected to become available through the SADISOPSG, and would be communicated to States accordingly.

4.1.8 The meeting recalled that MIDANPIRG/11 had formulated Conclusion 11/76, inviting the WAFC Provider States to organise training on the new gridded WAFS forecasts for icing, turbulence and cumulonimbus clouds in 2010. The meeting acknowledged that in view of the outcomes of WAFSOPSG/5, such training would be delayed until 2011 (WAFOPSG/6) at the earliest, and agreed to the following Draft Conclusion which was proposed to replace and supersede MIDANPIRG/11 Conclusion 11/76:

DRAFT CONCLUSION 2/1 – TRAINING FOR THE NEW WAFS FORECASTS

That, in order to facilitate the implementation of the new WAFS forecasts by the WAFS users in the MID States, WAFC Provider States be invited to organize in 2011 or 2012 a training seminar for the MID Region on the use of the new gridded WAFS forecasts for convective clouds, icing and turbulence.

4.1.9 In view of the developments described by the WAFC London Provider State and SADIS Provider State, and the importance of the information within the MID Region, the meeting considered it necessary to include the WAFS- and SADIS-related information in **Appendix 4.1A** to the Report on Agenda Item 4.1.

4.1.10 Based on a report by the SADIS Provider State, the meeting reviewed the contents of the SADIS Strategic Assessment Tables for years 2009-2013 inclusive. The meeting acknowledged that there was no international requirement for short-TAF (FC bulletins) for aerodromes in the MID Region, and accordingly agreed that the 2010 to 2013 entries in Table 1 of the SADIS Strategic Assessment Tables should be zero. In addition, in view of the envisaged increase in implementation of QMS by States in the MID Region, and in accordance with the upgrading of QMS for MET from a Recommended Practice to a Standard as part of Amendment 75 to Annex 3, the meeting agreed that this should result in an increased availability of SIGMET messages emanating from the MID Region. The SIGMET entries of the SADIS Strategic Assessment Tables were increased accordingly for years 2012 and 2013.

4.1.11 Having completed a review of the SADIS Strategic Assessment Tables, the meeting requested that the Secretariat forward the completed tables to the SADISOPSG for planning the future SADIS bandwidth requirements, by adopting the following Draft Conclusion:

DRAFT CONCLUSION 2/2 – SADIS STRATEGIC ASSESSMENT TABLES

That, the MID SADIS Strategic Assessment Tables, at ***Appendix 4.1B*** *to the Report on Agenda Item 4.1, be adopted and forwarded by 31 March 2010 to the SADISOPSG for planning the future SADIS bandwidth requirements.*

4.1.12 In considering the expected migration from alphanumeric to table driven code form OPMET the meeting highlighted that there may be a need for the format of the SADIS Strategic Assessment Tables to change in future years. However, it was outlined that such modification to the format of the tables was not in the purview of the MET SG, and would instead be addressed by the SADISOPSG, as and when appropriate.

MET SG/2
Appendix 4.1A to the Report on Agenda Item 4

RECENT AND FORTHCOMING DEVELOPMENTS TO THE WAFS AND SADIS

(Information provided by the WAFC London and SADIS Provider State)

1. RECENT WAFS DEVELOPMENTS

1.1 Development of WAFS upper-air data in the GRIB 2 code form

WAFSOPSG/4 endorsed the WAFC Provider States to continue with the development of WAFS upper-air forecasts in the GRIB 2 code form, including new forecasts for icing, turbulence and CB cloud. The two WAFCs have been coordinating their development efforts to ensure that these gridded forecasts are harmonised with respect to content, encoding and compression algorithms. Coordination activities have included a science co-ordination meeting in Washington DC in April 2009.

GRIB 2 WAFS data benefits from higher spatial and temporal resolution, and additional fields, compared to its GRIB 1 predecessor – for example, the GRIB 2 WAFS data is based on a regular 1.25*1.25 degree (unthinned) grid, T+6 to T+36 at 3-hourly time intervals, and includes additional flight level information at FL270, FL320 and FL360 and icing, turbulence and CB cloud forecasts.

The WAFCs have provided a progress report to the WAFSOPSG/5 meeting (September 2009) outlining the steps taken towards delivery of GRIB 2 WAFS data. The progress report includes a summary of verification that both WAFCs have conducted with respect to icing, turbulence and CB cloud forecasts. In addition, the WAFC Provider States have prepared a general guidance document on the intended use of the gridded WAFS forecasts for icing, turbulence and CB cloud.

WAFSOPSG/5 reviewed the status of development of the GRIB 2 forecasts to determine their future operational implementation.

Suggested action: *Review discussions at WAFSOPSG and associated guidance material.*

1.2 Coordination between the WAFCs and the TCACs

In response to WAFSOPSG Conclusion 4/8, the WAFC Provider States have conducted a coordination trial with the Tropical Cyclone Advisory Centres, with a view to determining the feasibility of, and benefits for the WAFS from, establishing and maintaining contact with the TCACs in order the harmonise the information on TC in the WAFS SIGWX forecasts and the TCAC advisories.

The WAFSOPSG/5 considered that the trial was a success, with good participation and valuable feedback which had been beneficial for the WAFS; with little additional effort on the part of the WAFCs; it had led to greater awareness and harmonization between the TC information on the WAFS SIGWX charts and the advisory information issued by the TCACs.

The group was pleased to note that the overall feedback provided by participant TCACs had indicated that the coordinated sessions were easy to access and understand and of satisfactory duration. Noting the concerns expressed by some TCACs regarding the allotted time of the coordination sessions, sustained participation during the off-season and resource/language constraints, the group agreed that the involvement of the TCACs in the coordination sessions should be voluntary rather than mandatory. The group concurred that there was no need to extend the coordination session beyond simple confirmation of the name(s) and position(s) of TCs that were active or expected to develop during the next 24 hours.

Based on the beneficial outcomes of the trial for the WAFS, the group agreed that such Co-ordination activity should continue and formulated the following decision:

WAFSOPSG Decision 5/5 — Coordination between WAFCs and TCACs

That, the WAFC Provider States continue to maintain contact with the Tropical Cyclone Advisory Centres (TCACs) in order to harmonise the information on tropical cyclones in the WAFS SIGWX forecasts and TCAC advisories, by making available a web-based Internet chat-room facility, to be hosted by WAFC Washington.

Suggested action: *Note this information only.*

1.3 WAFC backup tests

The WAFC Provider States have continued to test their SIGWX backup procedures in the event that one WAFC was unable to produce SIGWX forecasts in the BUFR-code and PNG-chart format. Routine backup tests are conducted quarterly, with the results posted on the WAFSOPSG website at URL: http://www.icao.int/anb/wafsopsg/Recent%20Chronology%20of%20WAFC%20Backup%20Tests.pdf. Tests over the last 12 months have been largely successful, and transparent for the overwhelming majority of WAFS users.

Forthcoming backup tests are outlined at URL: http://www.icao.int/anb/wafsopsg/Forthcoming%20WAFC%20Backup%20Tests.pdf. Notification of WAFC backup tests is promulgated on the SADIS broadcasts in advance, by way of administrative messages.

In addition, WAFC backup procedures are outlined at: http://www.icao.int/anb/wafsopsg/backup.pdf.

Suggested action: *Note this information and consider visiting the WAFSOPSG website to obtain information pertaining to WAFC backup tests and procedures.*

2. FORTHCOMING WAFS DEVELOPMENTS

2.1 Corrections to WAFS SIGWX forecasts

WAFSOPSG/4 endorsed the WAFC Provider States to introduce a practical and minimal procedure to handle corrections to WAFS SIGWX forecasts (in BUFR code and/or PNG chart form). The procedure would involve the issuance of a plain text administrative message drawing users attention to the identified error. The BUFR data and/or PNG charts themselves, which contain erroneous data, would not be re-issued due to downstream implications detailed in the WAFSOPSG/4 report.

In view of concerns expressed by the 12th meeting of the CNS/MET sub-group of the APANPIRG, implementation of WAFS SIGWX corrections in 2008 was deferred. General guidance on how an operator may wish to handle the receipt of such administrative messages has been drafted by the WAFCs for WAFSOPSG/5. The procedures were endorsed by WAFSOPSG/5, and corrections to WAFS SIGWX will be introduced before the end of 2009.

The WAFCs intend to use the following WMO bulletin headers to issue the plain text administrative messages: FXUK65 EGRR (for corrections to WAFC London SIGWX) and FXUS65 KKCI (for corrections to WAFC Washington SIGWX). Implementation will be communicated via the WAFS Change Implementation Notice Board at URL:

http://www.icao.int/anb/wafsopsg/WAFS%20change%20notice%20board.pdf.

Suggested action: *Monitor the progress towards corrections to WAFS SIGWX through the WAFS Change Notice Board.*

2.2 Workshop on the gridded WAFS forecasts for icing, turbulence and CB cloud

In order to facilitate the implementation of the gridded forecasts for icing, turbulence and CB cloud, the WAFC Provider States, in co-ordination with ICAO and WMO, convened a two-day workshop on the intended use and visualisation of these new products.

The workshop took place at the ICAO Regional Office in Paris on 14 and 15 September 2009, immediately prior to WAFSOPSG/5.

Suggested action: *Review the Summary of discussions of the WAFS Workshop.*

2.3 Training for States on the use and visualisation of new gridded WAFS forecasts

The WAFSOPSG/5 noted that the need for training related to the "roll-out" of the new gridded forecasts had been recognized by most planning and implementation regional groups (PIRGs) which had formulated conclusions calling for the WAFC Provider States to organize training seminars on the use of the new gridded WAFS forecasts for CB clouds, icing and turbulence.

The group agreed that the availability of continuous training would be highly useful; therefore, it was considered important to develop computer-based training products for distribution to States and a web-based training package. The web-based training package will be based around a free and open-source e-learning software platform and available to all States and WAFS users; and the outline of proposed training, including associated costs, will be tabled for endorsement by the WAFSOPSG/6 Meeting.

Suggested action: *Consider what training needs your State will have regarding the use and visualisation the new gridded products.*

2.4 Improved visualisation of WAFS forecasts

An ad-hoc group of the WAFSOPSG (China as Rapporteur) has been studying how the visualisation of WAFS forecasts could be improved to ensure that the most relevant WAFS forecasts be presented in terms of space and time in flight documentation. These improvements to visualisation are expected to better serve the needs of the long-haul community.

Initial findings were presented to WAFSOPSG/4 (February 2008), with further proposals made at WAFSOPSG/5 (September 2009). The proposals are likely to include the concatenation of charts based on the gridded WAFS forecasts for icing, turbulence and CB cloud.

Suggested action: *Monitor the progress of developing concatenated WAFS forecasts through the WAFSOPSG.*

2.5 WAFS output performance indicators

WAFSOPSG/4 invited the WAFC Provider States to assess the possibility of providing additional WAFS output performance indicators. This invitation included wind and temperature performance indicators for the WMO defined area covering Australia and New Zealand, as well as globally for all standard forecast levels (in digital and chart form).

Wind and temperature performance indicators for Australia and New Zealand were added to the WAFCs websites during 2008. WAFC London data can be viewed at http://www.metoffice.gov.uk/icao/index.html and WAFC Washington data at http://www.emc.ncep.noaa.gov/gmb/icao/ncep_scores.html.

WAFC Washington has added performance indicators for the 850, 700, 500, 400, 300, 275, 225, 200, 150 and 100hPa standard levels, whilst WAFSOPSG/5 has endorsed corresponding levels to be added to the WAFC London web site.

The WAFCs have studied the cost and feasibility of providing global performance indicators in digital and chart format. The findings of this study were presented to WAFSOPSG/5 in order for the group to determine whether such an undertaking should be pursued.

Suggested action: *Access the output performance indicator websites of the two WAFCs and monitor the further development of these products through the WAFSOPSG.*

3. RECENT SADIS DEVELOPMENTS

3.1 Cessation of the SADIS 1G satellite broadcast

In accordance with SADISOPSG Conclusion 9/15 and 13/24, the SADIS first-generation (SADIS 1G) satellite broadcast was withdrawn from service on 05 January 2009. Any SADIS 1G user yet to migrate to a SADIS second-generation (SADIS 2G) VSAT reception system can obtain procurement guidelines within the SADIS User Guide (URL: http://www.icao.int/anb/sadisopsg/sug/) and via the Met Office SADIS homepage (URL: http://www.metoffice.gov.uk/sadis/index.html)

Suggested action: *Note this information only.*

3.2 Update to the SADIS User Guide

A Fourth Edition of the SADIS User Guide (SUG) was endorsed by SADISOPSG/13. Extensive amendments to the SUG were necessary to take into account the phasing out of the SADIS 1G broadcast, Amendment 74 to Annex 3, and the agreement by the IAVWOPSG to use PNG chart form instead of T4 charts for the volcanic ash advisories in graphical form. No paper copies of the SUG will be distributed by ICAO. Instead, users are encouraged to visit URL: http://www.icao.int/anb/sadisopsg/sug/ to obtain the latest version and associated Annexes 1 to 4.

Suggested action: *Visit URL: http://www.icao.int/anb/sadisopsg/sug/ to obtain the latest SADIS User Guide, Annexes 1 to 4.*

3.3 Development of alternative SADIS 2G hardware

The SADIS Provider has completed acceptance tests of the NetSys SADIS Transcoder (NST) as an alternative SADIS 2G reception unit. The NST is available only as part of a complete NetSys SADIS 2G package, and presents data as a UDP-multicast output. Further information on the NST can be obtained direct from the supplier via URL: http://www.netsys.co.za/ or email: info@netsys.co.za.

In addition, the SADIS Provider has completed acceptance tests of a VADOS VadEDGE 4100-series router for SADIS 2G. In view of a market trend away from the X.25 protocol, VADOS Systems developed the 4100 as an entry-level IP-only router that is compatible with SADIS 2G reception systems. The VadEDGE 4100 presents data as TCP/IP or UDP-multicast. Further information on the VadEDGE 4100 can be obtained direct from the supplier at URL: http://www.vados.com/new/index.php or email: sadis2g@vados.com.

Details of the NetSys SADIS Transcoder and the VADOS VadEDGE 4100 are contained within the SADIS User Guide.

Suggested action: *Consider whether your SADIS reception system could benefit form these new service offerings and contact the vendors directly for further assistance.*

3.4 Initial phase of enhancements to the SADIS FTP service

In April 2009, SADIS Provider implemented an initial phase of enhancements to the SADIS FTP service. The SADIS FTP service now resides on virtual server hardware and benefits from cross-hall IT resilience. These enhancements were transparent to users, with existing usernames, passwords, IP/host address and directory/file structure remaining unchanged.

Suggested action: *Note this information only.*

3.5 Procurement of SADIS 2G data backup arrangement

The SADIS Provider State is continuing with the development of a SADIS 2G data backup arrangement with the US NWS Telecommunications Gateway (NWSTG) and the SADIS OPMET Gateway (NATS).

Once configured and tested, an ISDN data backup link would be instigated in the event that the UK Met Office was unable to pass SADIS data from Exeter to the satellite uplink facility at Whitehill. WAFS data would be routed from the NWSTG to the SADIS Gateway over ISDN, then onward routed to Whitehill for dissemination across the SADIS 2G satellite broadcast.

The SADIS Provider State expects this data backup capability to be available operationally in 2009.

Suggested action: *Note this information only.*

3.6 SADIS workstation software evaluations

At the request of SADISOPSG/13, the SADIS Provider has conducted a third round of SADIS workstation software evaluations. The assessments were necessary in light of changes to the SADIS broadcast since the previous round of evaluations in 2005/2006, notably the adoption of Amendment 74 to Annex 3 and the cessation of the SADIS 1G broadcast.

By May 2009, the SADIS Provider had conducted 8 SADIS workstation software evaluations, with 7 of the packages available fulfilling the software requirements of SADISOPSG/13. The results of these evaluations will be presented to SADISOPSG/14 and are also available to view at URL: http://www.metoffice.gov.uk/sadis/software/index.html.

It remains the responsibility of the user to ensure that procured software meets their full requirements. It is not intended that the software evaluations fulfil this task. The results from the software evaluations may be used as one additional source of information to aid any procurement process but should not be viewed in isolation of other important procurement requirements.

Suggested action: *Consider whether your workstation software continues to fulfil your local user needs and the requirements of the SADISOPSG. If not, consider consulting you workstation provider directly.*

3.7 GRIB 2 WAFS data trial on SADIS 2G

To facilitate the implementation of WAFS upper-air forecasts in GRIB 2 code form, the SADIS Provider has conducted initial trials using test data on the SADIS 2G satellite broadcast aimed at determining the likely transmission performance of this new data set.

In April 2009, the SADIS Provider disseminated two *uncompressed* GRIB 2 data volumes to a small number of SADIS 2G users. These initial trials demonstrated that a 50MB data volume (uncompressed GRIB 2 WAFS data) would take almost 2 hours to disseminate across the existing SADIS 2G infrastructure. Compare this is an existing GRIB 1 WAFS data set, amounting to 10MB (uncompressed), which takes in the region of 20-25 minutes to broadcast across SADIS 2G.

Further dissemination trials are planned in late 2009 pending availability of *compressed* GRIB 2 trial data from WAFC London. The WAFCs expect to achieve a compression ratio of around 2:1, thus allowing the 50MB data volume to fall to around 25MB, with a envisaged fall in transmission time on SADIS 2G to less than 1 hour. The results of the dissemination trials will be discussed within the SADISOPSG and WAFSOPSG in order to determine the future implementation of the GRIB 2 data, and any changes that may be necessary to accommodate the new data on the SADIS 2G service.

Suggested action: *Review discussions at SADISOPSG and WAFSOPSG.*

4. FORTHCOMING SADIS DEVELOPMENTS

4.1 Hardware Refresh of SADIS 2G Ground Segment Equipment

The SADIS Provider has received endorsement from SADISOPSG/14 (July 2009) and from SCRAG/10 (November 2009) to progress with a hardware refresh of the Exeter to Whitehill Ground Segment of the SADIS 2G Service.

The SADIS second-generation broadcast system (SADIS 2G) has been in operation since November 2004, and has become the sole satellite distribution service since January 2009, following the cessation of the SADIS first-generation system (SADIS 1G).

Owing to the rate of development within the telecommunications industry, and the fact that SADIS 2G hardware was installed in the months leading up to November 2004, a number of hardware components that are used as part of the SADIS 2G uplink infrastructure are now 5 years old, and considered to be nearing or already at the end of their useful life. Consequently, it became necessary for the SADIS Provider State to assess whether integral components of the SADIS 2G uplink should be replaced or upgraded as part of a hardware refresh, and to determine the associated costs that would arise from such an undertaking.

It was noted that if a hardware refresh were not undertaken, support and maintenance costs would become significantly more expensive; furthermore, a failure of a critical component could interrupt delivery of the SADIS service and leave the Provider State in breach of its obligations under the SADIS Agreement.

SADISOPSG/14 first reviewed the current SADIS 2G uplink infrastructure taking note of the costs involved to support and maintain the equipment before considering two future options: Option 1 ("a like-for-like refresh") and Option 2 ("a simplified SADIS 2G uplink topology"), their respective technical merits and related installation and support costs. It concurred with the view of the SADIS Provider State that Option 2, would be would be the most prudent proposal to implement since it would be less expensive to install and maintain/support, and would provide higher system availability (than either the present infrastructure or Option 1).

In order to progress the foregoing issues, SADISOPSG/14 formulated the following conclusion:

SADISOPS Conclusion 14/23 — Hardware refresh proposal for SADIS 2G hub equipment

That,

a) the SADIS Provider State, in coordination with the SADIS Technical Developments Team, refresh the SADIS 2G hub equipment at Exeter and Whitehill in line with the option (based on simplified topology) given in Appendix L to this report, by 31 December 2009 to benefit from reduced support and maintenance costs in 2010 onwards; and

b) the Chairman of the SADISOPSG be invited to inform the Chairman of the SCRAG of the associated costs of the order of £ 65 000 related to the SADIS 2G hardware refresh.

Note.— Refreshed hardware is to include the optional spares and splitter functionality.

Suggested action: *Note this information only.*

4.2 Further enhancements to the SADIS FTP service

The SADIS Provider has received endorsement from SADISOPSG/14 (July 2009) to progress with the development of a second phase of SADIS FTP enhancements. This second phase will be aimed at delivering a *SADIS FTP Secure* service in 2010. Some of the technology utilised to deliver the initial phase of developments (outlined above) will be used to deliver the phase two enhancements – e.g. virtual server environment.

Once operational, the SADIS FTP Secure service will be provided in parallel with the existing SADIS FTP service for a period of at least 12 months, to allow users the opportunity to migrate to the new (more secure) service. Existing usernames/passwords and IP/host address will change in order to access the new SADIS FTP Secure service.

Suggested action: *Monitor the development of a SADIS FTP Secure service through the SADISOPSG.*

4.3 Distribution of GRIB 2 WAFS data on SADIS

Further to the discussion above relating to the development of GRIB 2 WAFS data and the likely transmission performance of this data on the SADIS 2G satellite broadcast, the SADIS Provider is expected to make the new data available (initially) on the SADIS FTP service in early 2010.

The SADISOPSG will be expected to determine whether any changes are necessary to the existing SADIS 2G infrastructure in order to accommodate GRIB 2 WAFS data via satellite.

Suggested action: *Access the GRIB 2 data on SADIS FTP (when available) and monitor discussions at SADISOPSG relating to the availability of the gridded data via SADIS 2G.*

SUMMARY OF THE STRATEGIC ASSESSMENT TABLES: CURRENT AND PROJECTED DATA VOLUMES 2010-2013

Table 1. OPMET Data Volumes Per Day (in K bytes)

Region	***Current 2009***	*Projected 2010*	*Projected 2011*	*Projected 2012*	*Projected 2013*
MID	**327**	340	352	374	386

Table 2. PNG Data Volumes Per Day (in K bytes)

Region	***Current 2009***	*Projected 2010*	*Projected 2011*	*Projected 2012*	*Projected 2013*
MID	**0**	0	0	0	0

Table 3. AIS Data Volumes Per Day (in K bytes)

Region	***Current 2009***	*Projected 2010*	*Projected 2011*	*Projected 2012*	*Projected 2013*
MID	**0**	1	1	1	1

SADIS STRATEGIC ASSESSMENT TABLES CURRENT AND PROJECTED DATA VOLUMES 2010-2013

Note.— 1 octet = 1 byte = 1 character.

Table 1. MID— OPMET Data Volumes

OPMET data	***Current 2009***	*Projected 2010*	*Projected 2011*	*Projected 2012*	*Projected 2013*
ALPHANUMERIC DATA					
Number of **FC bulletins** issued per day	**23**	0	0	0	0
Number of **FT bulletins** issued per day	**185**	215	225	235	245
Number of **SA bulletins** issued per day	**772**	800	825	850	875
Number of **SP bulletins** issued per day	**1**	5	7	10	12
Number of **SIGMET** bulletins issued per day	**9**	10	10	40	40
BINARY DATA					
Number of other bulletins issued per day	**0**	0	0	0	0
TOTALS					
Total number of OPMET bulletins per day	**990**	1030	1067	1135	1172
Average size of OPMET bulletin (bytes)	**330**	330	330	330	330
Total estimated OPMET data volume per day (K bytes)	**327**	**340**	**352**	**374**	**386**

Note: No provision is being made for the distribution of BUFR-coded OPMET data. Capacity for this data may need to be included in future depending on the issuance of this data in the region.

Table 2. MID — PNG Data Volumes

Graphical information in the PNG chart form	***Current 2009***	*Projected 2010*	*Projected 2011*	*Projected 2012*	*Projected 2013*
TOTALS Total number of PNG charts per day	**0**	0	0	0	0
Average size of charts (bytes)	**100000**	100000	100000	100000	100000
Total estimated volume of PNG charts per day (in K bytes)	**0**	**0**	**0**	**0**	**0**

Note. – No distribution of PNG-encoded VAG expected as no VAAC are located in the MID Region.

Table 3. MID — AIS Data Volumes

AIS data	***Current 2009***	*Projected 2010*	*Projected 2011*	*Projected 2012*	*Projected 2013*
ALPHANUMERIC AIS DATA (NOTAM related to volcanic ash, ASHTAM) Number of ASHTAM bulletins issued per day	**0**	1	1	1	1
Number of NOTAM bulletins issued per day	**0**	1	1	1	1
TOTALS Total number of AIS bulletins per day	**0**	2	2	2	2
Average size of AIS bulletin (byte)	**600**	600	600	600	600
Total estimated volume of AIS data per day (in K bytes)	**0**	**1**	**1**	**1**	**1**

Note. — Modest provision is made for the distribution of ASHTAM and NOTAM related to volcanic ash.

REPORT ON AGENDA ITEM 4: STATUS OF IMPLEMENTATION OF THE METEOROLOGICAL SERVICES IN THE MID REGION

4.2: REVIEW IMPLEMENTATION OF THE METEOROLOGICAL ADVISORIES AND WARNINGS

4.2.1 The meeting was informed of the outcome of the IAVWOPSG/4 meeting (15 to 19 September 2008), as well as considered issues related to the implementation of the International Airways Volcano Watch (IAVW), International Tropical Cyclone Watch (ITCW), SIGMET information and other warnings. The meeting was reminded that AIRMET messages were not issued within the MID Region, in accordance with the Regional Air Navigation Plan, and therefore did not need to be addressed under this agenda item.

4.2.2 The meeting recalled discussions at its first meeting (MET SG/1) where it had agreed that the implementation of the procedures prescribed by the IAVWOPSG should be promoted, involving the raising of awareness of the MET and ATS service providers in the MID States on the procedures for issuance and exchange of the required information in the case of a volcanic ash incident/encounter – such as volcanic ash advisories, volcanic ash SIGMET and volcanic ash NOTAM or ASHTAM. Such raising of awareness was entirely in keeping with MIDANPIRG/10 Conclusion 10/72 formulated in 2007.

4.2.3 The meeting also noted that MIDANPIRG/11 Decision 11/78 (*Finalising the MID SIGMET Test Procedures*) had remained open, since the ad-hoc group responsible for finalising the Test Procedures had not undertaken the expected follow-up action.

4.2.4 In order to correct the situation, the Secretariat had prepared MID SIGMET Test Procedures on behalf of the ad-hoc working group, and presented the procedures to the meeting for consideration. The meeting acknowledged that the SIGMET Test Procedures included guidance related to the issuance of WS- and WV-SIGMET test messages; however, that procedures related to WC-SIGMET test messages (for tropical cyclone) had been excluded at the present time since they would require close coordination and cooperation with TCAC New Delhi and the ICAO APAC Regional Office.

4.2.5 The meeting acknowledged that there was a need to undertake follow-up action with regards to parts a) to d) of MIDANPIRG/11 Conclusion 11/79 (*Conducting regular SIGMET tests in the MID Region*). These follow-up actions included the circulation of the SIGMET Test Procedures to States in the MID Region; the designation of focal points by States; and, the conducting of regular tests in order for the results to be reported to the each MET SG meeting.

4.2.6 Until now, it had proved impossible to conduct SIGMET tests in the MID Region – not least due to the lack of supporting guidance material. In view of the foregoing, the meeting agreed that it would be prudent to conduct the first MID SIGMET test in September 2010 *provided that* the following steps were completed:

a) the finalised SIGMET Test Procedures (as presented in **Appendix 4.2A** to the Report on Agenda Item 4) be circulated to MID States early in 2010, thus completing the follow-up action of MIDANPIRG Conclusion 11/79 part a);

b) MID States be urged to participate in the regular SIGMET tests, thus completing the follow-up action of MIDANPIRG Conclusion 11/79 part b). The WS- and WV-SIGMET tests in the MID Region would be designed to coincide with when the EUR Region conducts their routine monitoring exercises; and

c) MID States be urged to designate SIGMET focal points to facilitate the conducting of the SIGMET tests, thus completing the follow-up action of MIDANPIRG Conclusion 11/79 part c).

4.2.7 To expedite the collection of SIGMET focal points, a provisional list was prepared by the meeting, as shown at **Appendix 4.2B** to the Report on Agenda Item 4. It was also agreed that SIGMET focal points from remaining States would be collated by the Regional Office in 2010.

4.2.8 Having conducted a review of the MID SIGMET Test Procedures, the meeting agreed that they should be considered final in respect of WS- and WV-SIGMET tests, and included in **Appendix 4C** to the Report on Agenda Item 4. In addition, in considering the follow-up action necessary in respect of MIDANPIRG Conclusion 11/79 outlined above, the meeting agreed to the following Draft Conclusion to replace and supersede both MIDANPIRG Decision 11/78 and MIDANPIRG/11 Conclusion 11/79:

DRAFT CONCLUSION 2/3 – FINALIZED SIGMET TEST PROCEDURES AND CONDUCTING OF REGULAR SIGMET TESTS IN THE MID REGION

That,

*a) the MID SIGMET Test Procedures, at **Appendix 4.2A** to the Report on Agenda Item 4, be adopted and forwarded to States for implementation;*

b) MID States be urged to participate in the conducting of regular WS- and WV-SIGMET tests in 2010 onwards and nominate SIGMET Focal Points if they have not already done so; and

c) *the results of the SIGMET tests be reported to each MET Sub-Group meeting, with feedback provided on any identified deficiencies provided to States concerned with proposed corrective actions.*

4.2.9 The meeting noted that the intention of the first MID SIGMET test in September 2010 would be to assess the generation and promulgation of WS- and WV-SIGMET test messages. In noting that there would be a need to engage with TCAC New Delhi before considering WC-SIGMET tests, and the fact that WC-SIGMET test guidance had been *excluded* from the MID SIGMET Test Procedures discussed above, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 2/4 – INITIATING TROPICAL CYCLONE SIGMET TESTS IN THE MID REGION

That, with a view to initiate tropical cyclone SIGMET tests in the MID Region, the ICAO MID Regional Office carry out the necessary coordination with Tropical Cyclone Advisory Centre New Delhi, India to secure their cooperation in the regular MID SIGMET tests (expected from September 2010 onwards).

4.2.10 The meeting acknowledged that once the involvement of TCAC New Delhi had been secured, it would then be possible to expand the regular tests to include WC-SIGMET messages. Furthermore, the meeting recognised that there would be a need to determine on which days to hold any future WC-SIGMET tests, since the first Wednesday and Thursday of each planned monitoring period were assigned to WS- and WV-SIGMET tests respectively. It was recognized that it was premature at this stage to agree on such details, and that the discussions would take place between the MID Regional Office, the MID OPMET BMG, the EUR OPMET BMG, the APAC Regional Office and TCAC New Delhi, once the latter party had confirmed its willingness to participate in MID SIGMET test activities.

4.2.11 The meeting noted that follow-up action was required in respect of MIDANPIRG Conclusion 11/80 (*Improving the tropical cyclone advisories and warnings for aviation*), and agreed to the following Draft Conclusion to replace and supersede MIDANPIRG Conclusion 11/80:

DRAFT CONCLUSION 2/5 – IMPROVING THE TROPICAL CYCLONE ADVISORIES AND WARNINGS FOR AVIATION

That, in order to improve the quality and timeliness of the Tropical Cyclone Advisories and SIGMETs, MID States having the capability to forecast tropical cyclones tracks in the Arabian Sea and related hazardous aviation weather, be encouraged to establish close collaboration with the Tropical Cyclone Advisory Centre (TCAC) New Delhi, India, and provide feedback to the TCAC in case of identified forecast errors or other operational problems.

4.2.12 The meeting recognized that the MID SIGMET Test Procedures did not go into specific detail regarding the content and format of *routine* SIGMET messages – i.e. those SIGMET messages which should be issued as part of a MWOs overall continuous weather watch.

4.2.13 To offer such detail, it was noted with appreciation that the Secretariat had prepared a *working draft* SIGMET Guide for the MID Region, similar to SIGMET Guides present in other ICAO Regions. The main purpose of the SIGMET Guide was to provide guidance for standardization and harmonization of the procedures and formats related to the aeronautical meteorological warnings for hazardous en-route meteorological phenomena (SIGMET), including volcanic ash and tropical cyclone. The guidance would complement Annex 3 Standards and Recommended Practices and provisions in the MID ANP (ICAO Doc 9708) regarding SIGMET.

4.2.14 The meeting was informed that the Air Navigation Commission (ANC) had expressed concern that the worldwide implementation of SIGMET (particularly WS-SIGMET) was poor. The availability of a regional SIGMET Guide would go some way towards improving the production and dissemination of SIGMET messages in the MID Region. The meeting was informed that the MET Warnings Study Group (METWSG), in response to the ANC's expressed concern, was considering the conducting of a trial within the Asia-Pacific (APAC) and Africa (AFI) Regions to determine whether regional WS-SIGMET advisory messages could be an effective way to overcome the existing deficiencies in WS-SIGMET provision. The trial was not expected to take place until 2011 at the earliest, with results evaluated by the METWSG as appropriate.

4.2.15 In noting that SIGMET are critical to the safety of international air navigation, WMO expressed full support for the efforts of all concerned to improve the issuance of SIGMET messages, and shared the concerned that the provision of SIGMET was unsatisfactory in all parts of the world, including the MID Region.

4.2.16 In view of the discussion, and having reviewed the *working draft* of the MID SIGMET Guide, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 2/6 – SIGMET GUIDE FOR THE MID REGION

That, the ICAO MID Regional Office, circulate the working draft of the MID SIGMET Guide, as presented at ***Appendix 4.2C*** *to the Report on Agenda Item 4, to MID States in order to:*

a) obtain the necessary WS-, WV- and WC-SIGMET headers for Appendix B of the document; and

b) finalize the document in time for the MET SG/3 meeting.

MET SG/2
Appendix 4.2A to the Report on Agenda Item 4

SIGMET TEST PROCEDURES FOR THE MID REGION
(VERSION 1.0, DECEMBER 2009)

1. INTRODUCTION

1.1. Regular SIGMET monitoring exercises are used to check the routing of SIGMET messages within the ICAO MID Region. Based on the results, the routings are updated to ensure the dissemination to all centres within the region.

1.2. The SIGMET monitoring exercises are carried out two times per year during the Bulletin Management Group (BMG) OPMET monitoring periods. The BMG OPMET monitoring periods are **1 to 14 February and 1 to 14 September** each year.

1.3. A WS-SIGMET monitoring test is conducted on the **first Wednesday** of these periods. A WV-SIGMET monitoring test is conducted on the **first Thursday** of these periods (i.e. the day immediately following the WS monitoring exercise).

1.4. The exact date is promulgated by the SIGMET monitoring focal point two weeks in advance of each exercise to all participants via email. The monitoring for both WS-SIGMET and WV-SIGMET starts at 0800 UTC and ends at 1200 UTC each day.

1.5. For WS-SIGMET monitoring, the Meteorological Watch Offices (MWOs) are requested to **send their test WS-SIGMET bulletin(s) at 1000 UTC**. One SIGMET should be issued for each FIR under MWO area of responsibility. The format of the test messages is explained under section 2.

1.6. For WV-SIGMET monitoring, the MWOs are requested to **send their test WV-SIGMET bulletin(s) as soon as they received a test Volcanic Ash Advisory bulletin (FV) from VAAC Toulouse**. Again, one SIGMET should be issued for each FIR under MWO area of responsibility. The format of the test messages is explained under section 3.

1.7. The format to be used by monitoring centres to send the monitoring results to the Focal Point can be found under paragraph 4.

2. FORMAT OF WS-SIGMET TEST MESSAGES

2.1. There are a few rules that test WS-SIGMET messages should adhere to:

*One SIGMET should be issued for **each FIR** under the responsibility of the MWO;*

*The **correct format** should be used;*

*It should be sent at **1000 UTC**; and*

*The validity period should be from **1100 to 1105 UTC** in order to not lose delayed test messages.*

2.2. There now follows some examples on how test WS-SIGMET messages should be composed:

If no current or previously valid WS SIGMET has been issued for the FIR concerned

2.2.1. If there is no current or previously valid WS-SIGMET for the FIR concerned (i.e. if no WS-SIGMET has been issued prior to the test commencing), then a test WS- SIGMET shall be transmitted with sequence number (n) = **1** or **01** or **N1**. Please also take care of including the **FIR indicator** and **FIR name** on the third line as this is the correct format for SIGMET messages according to ICAO Annex 3 – *Meteorological Service for International Air Navigation*.

2.2.2. Example:

```
WSEG31 HECA 131000
HECC SIGMET 1 VALID 131100/131105 HECA-
HECC CAIRO FIR TEST SIGMET PLEASE DISREGARD=
```

If a currently valid WS SIGMET is in force for the FIR concerned

2.2.3. If there is a currently valid WS-SIGMET in force for the FIR concerned, the test WS-SIGMET has to be issued with the next consecutive sequence number.

2.2.4. Example valid WS-SIGMET:

```
WSEG31 HECA 130800
HECC SIGMET 2 VALID 130800/131200 HECA-
HECC CAIRO FIR text=
```

2.2.5. Example test WS-SIGMET:

```
WSEG31 HECA 131000
EGTT SIGMET 3 VALID 131100/131105 HECA-
HECC CAIRO FIR TEST SIGMET PLEASE DISREGARD=
```

2.2.6. There is no need to send out another SIGMET with the next consecutive number to reissue SIGMET number 2 as, according to ICAO Annex 3, it is possible to have more than one valid SIGMET available at the same time.

3. FORMAT OF WV-SIGMET TEST MESSAGES

3.1. As with WS-SIGMET test messages, there are also rules for WV-SIGMET messages which should be adhered to.

*One SIGMET should be issued for **each FIR** under the responsibility of the MWO;*

*The **correct format** should be used;*

*It should be sent **shortly after** the test Volcanic Ash Advisory (FV) has been received from VAAC Toulouse; and*

*The validity period should be **5 minutes** starting at **issuance time plus one hour**, in order not to lose delayed test messages.*

3.2. There now follows some examples on how test Volcanic Ash Advisories (FV) and test volcanic ash SIGMET (WV) messages should be composed:

Volcanic Ash Advisory (FV) test message

3.2.1. On the monitoring day VAAC Toulouse will send out a test FV message. It can be expected anytime during the period 0800 to 1200 UTC. The message itself will look like the following example. **Note that the 'ii' used for the message can vary between 01 and 05**.

3.2.2. Example:

```
FVXX01 LFPW 071020
VA ADVISORY
DTG: 20100207/1020
VAAC: TOULOUSE
VOLCANO: UNKNOWN
PSN: UNKNOWN
AREA: MID REGION
SUMMIT ELEV: UNKNOWN
ADVISORY NR: 2010/00
INFO SOURCE: TEST MID BMG
AVIATION COLOUR CODE: UNKNOWN
ERUPTION DETAILS: TEST MID BMG
OBS VA DTG: 07/1020Z
OBS VA CLD: NO VA EXP
FCST VA CLD +6 HR: 07/1620Z NO VA EXP
FCST VA CLD +12 HR: 07/2220Z NO VA EXP
FCST VA CLD +18 HR: 08/0420Z NO VA EXP
RMK: REGULAR BMG VA TEST
TEST TEST TEST TEST TEST TEST TEST TEST TEST TEST TEST
TEST
NXT ADVISORY: NO FURTHER ADVISORIES=
```

If no current or previously valid WV SIGMET has been issued for the FIR concerned

3.2.3. If there is no current or previously valid WV-SIGMET for the FIR concerned (i.e. if no WV-SIGMET has been issued prior to the test commencing), then a test WV-SIGMET shall be transmitted with sequence number (n) = **1** or **01** or **N1**. Please also take care of including the **FIR indicator** and **FIR name** on the third line as this is the correct format for SIGMET messages according to ICAO Annex 3 – *Meteorological Service for International Air Navigation.*

3.2.4. Example:

```
WVEG31 HECA 071025
HECC SIGMET 1 VALID 071125/071130 HECA-
HECC CAIRO FIR TEST SIGMET PLEASE DISREGARD=
```

If a currently valid WV SIGMET is in force for the FIR concerned

3.2.5. If there is a currently valid WV-SIGMET in force for the FIR concerned, the test WV-SIGMET has to be issued with the next consecutive sequence number.

3.2.6. Example valid WV-SIGMET:

```
WVEG31 HECA 070800
HECC SIGMET 2 VALID 070800/071200 HECA-
HECC CAIRO FIR text=
```

3.2.7. Example test WV-SIGMET:

```
WVEG31 HECA 071025
HECC SIGMET 3 VALID 071125/071130 HECA-
HECC CAIRO FIR TEST SIGMET PLEASE DISREGARD=
```

3.2.8. There is no need to send out another SIGMET with the next consecutive number to reissue SIGMET number 2 as, according to ICAO Annex 3, it is possible to have more than one valid SIGMET available at the same time.

4. FORMAT OF SIGMET TEST MESSAGE MONITORING RESULTS

4.1. The monitoring of SIGMET messages starts at 0800 UTC until 1200 UTC. The reason for this period is to gather also actual SIGMET messages, as not all centres participate by sending test messages.

4.2. If centres intend to participate by sending monitoring results, there are two ways to send the data:

Via fax

4.2.1. In case of using fax to send your data, please send it in the following structure:

TTAAii	CCCC	YYGGgg	FIR	Reception time	Type of reception
Example					
WSOS31	LOWW	131000	LOVV	1003	A
WSBX31	EBBR	131000	EBBU	1001	G/current

4.2.2. There are the following possible entries for the kind of reception:

A .....Received via AFTN, CIDIN/AFTN or CIDIN/OPMET
G .....Received via GTS
S .....Received via SADIS
X .....Others

4.2.3. If no test SIGMET has been received during the monitoring period but an actual one has been received, please indicate the kind of reception plus /current e.g. A/current (see above example).

Via email

4.2.4. This is the most efficient way to receive results, saving BMG considerable time, and meaning that the analysis can start much earlier. If respondents wish to reply via email, they **must** use the two empty excel spreadsheets transmitted together with information letter. One spreadsheet is for WS-SIGMET monitoring, and the other is for volcanic ash advisory (FV) and WV-SIGMET monitoring.

4.2.5. The fields are filled out in the following way:

Reception Time / **Received Via** (/**current**)

4.2.6. As an example on how to fill out the spreadsheets, results from a previous monitoring period can be provided upon request from the SIGMET monitoring focal point (outlined below). In addition, requests for blank excel spreadsheets should also be made to the SIGMET monitoring focal point.

4.2.7. For all SIGMET bulletins received which are not in the excel spreadsheet, respondents may add additional columns after the FV-entries. **This is especially necessary for non-MID SIGMET bulletins.**

4.3. There are some formal rules which should be followed when compiling a report for presentation to the SIGMET monitoring focal point (via fax or email), as follows:

4.3.1. If a SIGMET is received more than once via the same medium (e.g. AFTN, GTS, etc), please indicate **only the reception time and method that the first message was received**.

4.3.2. If a certain SIGMET is not requested to be received by your centre, please add **NO RQ** in the respective field. This will then be kept in the sheet for all consecutive monitoring exercises.

4.3.3. In case you receive a SIGMET from the MID Region ***not presently included*** in the excel spreadsheet, please **do not add a new column** to the spreadsheet in between. Instead, pass this information to the SIGMET monitoring focal point by including it in the text of your fax or email response, or add it at the end of the spreadsheet.

4.3.4. It would be appreciated very much if respondents could send their monitoring results as soon as possible to the SIGMET monitoring focal point, and in any case **NO LATER THAN ONE MONTH AFTER THE MONITORING DATE.**

5. FOCAL POINTS OF CONTACT

5.1. The Inter-regional OPMET Gateway (IROG) in Vienna is the responsible centre for organising the regular SIGMET tests and collating the results.

5.2. IROG Vienna contact details are as follows:

Fax: +43 5 1703 4006
Email: sigmet@austrocontrol.at

5.3. For any further information you can also contact Mr. Michael Pichler (IROG Vienna, SIGMET monitoring focal point) or Mr. Greg Brock (ICAO Regional Officer, MET):

Fax: +43 5 1703 4050
Email: Michael.Pichler@austrocontrol.at

Fax: +33 1 46 41 8585
Email: gbrock@paris.icao.int

MET SG/2
Appendix 4.2B to the Report on Agenda Item 4.2

SIGMET FOCAL POINTS IN THE MID REGION

State	Name of SIGMET Focal Point	Organisation	Contact email	Contact telephone*	Contact fax*
BAHRAIN					
EGYPT					
IRAN (ISLAMIC REPUBLIC OF)					
IRAQ					
ISRAEL					
JORDAN					
KUWAIT					
LEBANON					
OMAN	Ali Khalaf Al-Yarobi	Directorate General of Meteorology and Air Navigation	a.alyarabi@met.gov.om	+968 2451 8572	+968 2451 9363
QATAR					
SAUDI ARABIA					
SYRIAN ARAB REPUBLIC	Monif Abdulla	ATC Damascus Airport	monif77@hotmail.com	+963 032 710 351	+963 115 400 312
UNITED ARAB EMIRATES					
YEMEN					

* Including international dialling code

MET SG/2
Appendix 4.2C to the Report on Agenda Item 4.2

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Working Draft of the

MID SIGMET GUIDE

FIRST EDITION
2009

PREPARED BY THE MIDDLE EAST OFFICE OF ICAO

The designations and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

First Edition
December 2009

RECORD OF AMENDMENTS AND CORRIGENDA

Amendments			
No.	Date of issue	Date entered	Entered by

Corrigenda			
No.	Date of issue	Date entered	Entered by

TABLE OF CONTENTS

PART 1. INTRODUCTION

1.1 The main purpose of this document is to provide guidance for standardization and harmonization of the procedures and formats related to the occurrence or expected occurrence of specified hazardous en-route weather conditions which may affect the safety of aircraft and low-level aircraft operations, known as SIGMET information. The guidance is complementary to the Annex 3 standards and recommended practices (SARPS) regarding SIGMET, and to the SIGMET related provisions of the MID ANP/FASID (ICAO Doc 9708).

1.2 In respect of SIGMET messages, this document includes guidance concerning SIGMET messages for significant en-route weather phenomena, volcanic ash and tropical cyclone SIGMET messages.

1.3 ICAO provisions concerning the issuance and dissemination of SIGMET information are contained in:

- Annex 3 - *Meteorological Service for International Air Navigation*, Part I, Chapter 3, paragraphs 3.4 – 3.7, Chapter 7, paragraphs 7.1 – 7.2, and Part II, Appendix 6.

- MID Basic ANP, Part VI and FASID Table MET 1B , MET 2B, MET 3A and MET 3B.

- Annex 11 - *Air Traffic Services*, Chapter 4, paragraph 4.2.1 and Chapter 7, paragraph 7.1.

- PANS – *Air Traffic Management*, Doc 4444, Chapter 9, paragraph 9.1.3.2.

Additional guidance on the SIGMET procedures is contained in the *Manual of Aeronautical Meteorological Practice*, Doc 8896, and *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services*, Doc 9377.

1.4 The SIGMET Guide is intended mainly to assist the meteorological watch offices (MWOs) in the MID Region in preparing and disseminating SIGMET information. It provides detailed information on the format of SIGMET messages as specified by Annex 3. The explanations of the format are accompanied by a number of examples based on region-specific meteorological phenomena. The guide also provides information regarding the necessary coordination between the MWOs, the ATS units and the pilots, and their respective responsibilities.

1.5 This document is prepared by the ICAO MID Regional Office. It should be reviewed and updated regularly in order to be kept in line with the ICAO SARPs and regional procedures.

PART 2. RESPONSIBILITIES AND COORDINATION

2.1 General

2.1.1 SIGMET is warning information, hence it is of highest priority among other types of OPMET information provided to aviation users. The primary purpose of SIGMET is for in-flight service, which requires timely transmission of the SIGMET messages to pilots by the ATS units and/or through VOLMET and D-VOLMET.

2.1.2 Airlines are the main users of the SIGMET information. Pilots contribute to the effectiveness of the SIGMET service through issuance of special air-reports to the ATS units. Special air-reports are among the most valuable sources of information for the Meteorological Watch Offices (MWO) in the preparation of SIGMET. The ATS units receiving special air-reports should forward them to the associated MWOs without delay.

2.1.3 As seen from the above, the SIGMET service involves MET, ATS and pilots. In order for the SIGMET service to be effective, close coordination between these parties, as well as mutual understanding of the needs and responsibilities, should be maintained.

2.1.4 For the special case of SIGMET for volcanic ash, the MWOs are provided with advisories from the volcanic ash advisory centres (VAAC) designated in the Regional ANP.

2.1.5 SIGMET is also used for the flight planning. This requires global dissemination of SIGMET through the international OPMET data banks and the satellite broadcasts: ISCS and SADIS. SIGMET should also be distributed to the World Area Forecast Centres (WAFC) London and Washington for use in the preparation of the significant weather (SIGWX) forecasts.

2.1.6 In the next paragraphs, the main responsibilities and coordination links between MET, ATS and pilots are described.

2.2 Meteorological Watch Office - responsibilities and procedures related to SIGMET

2.2.1 SIGMET information is issued by the MWO in order to provide timely warning for the occurrence or expected occurrence of specified en-route weather phenomena, affecting the safety of the flight operations in the MWO's area of responsibility (AOR). SIGMET provides information concerning the location, extent, intensity and expected evolution of the specified phenomena.

2.2.2 Information about the provision of SIGMET service, including details on the designated MWO(s), should be included in the State's Aeronautical Information Publication (AIP) as specified in Annex 15, Aeronautical Information Service, Appendix 1, GEN 3.5.8.

2.2.3 All designated MWOs in the MID Region are listed in the FASID Table MET 1B of the MID FASID.

2.2.4 If, for some reason, a MWO is not able to meet its obligations, including the provision of SIGMET, arrangements have to be made by the meteorological authority concerned, that another MWO takes over these responsibilities for a certain period of time. Such delegation of responsibilities has to be notified by a NOTAM and a letter to the ICAO Regional Office.

2.2.5 Since the MWO is normally not a separate administrative unit, but part of the functions of an aerodrome meteorological office or another meteorological office, the meteorological authority concerned should ensure that the MWO obligations and responsibilities are clearly defined and assigned to the unit designated to serve as MWO. The corresponding operational procedures have to be established and the meteorological staff should be trained accordingly.

2.2.6 In preparing SIGMET information, the MWOs have to strictly follow the format determined in Annex 3 (detailed format description is provided in Appendix 6, Table A6-1 of Annex 3). SIGMET should be issued only for those weather phenomena listed in Annex 3 and only when specified criteria for intensity and spatial extent are met.

2.2.7 The MWOs should be adequately equipped in order to identify, analyse and forecast (to the extent required) those phenomena for which SIGMET is required. The MWO should make use of all available sources of information, such as special air-reports, information from meteorological satellites and weather radars, numerical predictions, etc.

2.2.8 On receipt of a special air-report from the associated ACC or FIC, the MWO should :

a) issue the corresponding SIGMET information; or

b) send the special air-report for on-ward transmission in case that the issuance of SIGMET information is not warranted (e.g., the phenomenon reported is of transient nature).

2.2.9 Appropriate telecommunication means have to be available at the MWO in order to ensure timely dissemination of SIGMETs according to a dissemination scheme, which includes transmission to:

- local ATS users;
- aeronautical MET offices within the AOR;
- other MWOs concerned (it should be ensured that SIGMET is sent to all MWOs whose AORs are, at least partly, within the 925 km (500 NM) range from the reported phenomenon);
- centres designated for transmission of VOLMET or D-VOLMET where SIGMET is required for transmission;
- the responsible MOTNE centre and international OPMET data banks (it should be arranged through the MOTNE scheme, that SIGMETs are sent to the designated OPMET data banks in other ICAO Regions, to the WAFCs and to the uplink stations of SADIS and ISCS);
- responsible TCAC or VAAC (if applicable) according to FASID Table MET 3A and MET 3B respectively; and
- Vienna MOTNE centre (LOZZMMSS), especially for WV and WC SIGMETs, for further dissemination within the region.

2.2.10 In issuing SIGMET for volcanic ash or tropical cyclone, the MWOs have to include as appropriate the advisory information received from the responsible VAAC or TCAC. In addition to the information received from the VAAC or TCAC, the MWOs may use available complementary information from other reliable sources. In such a case the responsibility for this additional information would lie completely on the MWO concerned.

2.3 Responsibilities of ATS units

2.3.1 Close coordination should be established between the MWO and the corresponding ATS unit (ACC or FIC), including arrangements in order to ensure:

- receipt without delay and display at the relevant ATS units of SIGMETs issued by the associated MWO;

- receipt and display at the ATS unit of SIGMETs issued by MWOs responsible for the neighbouring FIRs /ACCs if these SIGMETs are required according to paragraph 2.3.4 below ; and

- transmission without delay of special air-reports received through voice communication to the associated MWO.

2.3.2 SIGMET information should be transmitted to aircraft with the least possible delay on the initiative of the responsible ATS unit, by the preferred method of direct transmission followed by acknowledgement or by a general call when the number of aircraft would render the preferred method impracticable.

2.3.3 SIGMET information passed to aircraft should cover a portion of the route up to a flying time of two hours ahead of the aircraft.

2.3.4 Air traffic controllers should ascertain whether any of the currently valid SIGMETs may affect any of the aircraft they are controlling, either within or outside their AOR up to a flying time of two hours ahead of the current position of the aircraft. If this is the case, the controllers should transmit the SIGMET promptly to the aircraft-in-flight likely to be affected.

2.3.5 The ATS units have to transmit to the concerned aircraft-in-flight the special air reports received, for which SIGMET has not been issued. Once a SIGMET for the weather phenomenon reported in the special air report is made available, this obligation of the ATS unit expires.

2.4 Responsibilities of pilots

2.4.1 Timely issuance of SIGMET information is largely dependent on the prompt receipt by MWOs of special air reports. That is why, it is essential that pilots prepare and transmit such reports to the ATS units whenever any of the specified en-route conditions are encountered or observed.

2.4.2 It should be emphasized that, even when automatic dependent surveillance (ADS) is being used for routine air reports, pilots should continue to make special air reports.

2.5 Coordination between MWOs and the VAACs and TCACs

2.5.1 Amongst the phenomena for which SIGMET information is required, the volcanic ash clouds and tropical cyclones are of particular importance for the planning of long-haul flights.

2.5.2 Since the identification, analysis and forecasting of volcanic ash and tropical cyclones requires considerable technical and human resource, normally not available at each MWO, the Volcanic Ash Advisory Centres (VAAC) and Tropical Cyclone Advisory Centres (TCAC) have been designated to provided VA and TC advisories to the users and assist the MWOs in the preparation of the forecast part of the SIGMETs for those phenomena. Close coordination should be established between the MWO and its responsible TCAC and/or VAAC.

2.5.3 Information regarding the VAACs and TCACs serving the MID Region with their corresponding areas of responsibility and lists of MWOs to which advisories are to be sent is provided in the MET FASID Tables MET 3A and MET 3B.

2.5.4 TC and VA advisories are required for global exchange through the satellite distribution systems, SADIS and ISCS. They are used by the operators during the pre-flight planning. Nevertheless, it should be emphasized that SIGMET information is still of higher operational status and is required especially for in-flight re-planning. SIGMETs should be transmitted to aircraft-in-flight through voice communication or VOLMET or D-VOLMET thus providing vital information for making in-flight decisions regarding large-scale route deviations due to volcanic ash clouds or tropical cyclones.

PART 3. RULES FOR PREPARATION OF SIGMET INFORMATION

3.1 General

3.1.1 SIGMET information is prepared in abbreviated plain language using approved ICAO abbreviations, a limited number of non-abbreviated words, geographical names and numerical values of self-explanatory nature. All abbreviations and words to be used in SIGMET are given in **Appendix A.**

3.1.2 The increasing use of automated systems for handling MET information by the MET offices and the aviation users makes it essential that all types of OPMET information, including SIGMET, are prepared and transmitted in the prescribed standardized formats. Therefore, the structure and format of the SIGMET message, as specified in Annex 3, Part II, Appendix 6, should be followed strictly by the MWOs. Appendix 6 provides detailed information regarding the content and order of elements in the SIGMET message.

3.1.3 SIGMET is intended for transmission to aircraft in flight either by ATC or by VOLMET or D-VOLMET. Therefore, SIGMET messages should be kept short and clear, without additional descriptive text other than that prescribed in Annex 3.

3.1.4 After issuing a SIGMET, the MWO maintain watch over the evolution of the phenomenon for which the SIGMET has been issued and issue a new updated SIGMET when necessary. VA SIGMETs have to be updated at least every 6 hours.

3.1.5 SIGMETs should be promptly cancelled when the phenomenon is no longer occurring or no longer expected to occur in the MWO's area of responsibility. The SIGMET is understood to cancel itself automatically at the end of its validity period. If the phenomenon persists a new SIGMET message for a further period of validity has to be issued.

3.2 Types of SIGMET

3.2.1 Although Annex 3 provides one general SIGMET format, which encompasses all weather phenomena, it is convenient when describing the structure and format of the messages to distinguish between three types of SIGMET, as follows:

- SIGMET for en-route weather phenomena other than volcanic ash or tropical cyclones (this includes: TS, TURB, ICE, MTW, DS and SS); this SIGMET will be referred as WS SIGMET;
- SIGMET for volcanic ash (VA SIGMET) (to be referred also as WV SIGMET)
- SIGMET for tropical cyclones (TC SIGMET (to be referred also as WC SIGMET).

3.2.2 The three types of SIGMET can be identified through the data type designator included in the WMO abbreviated heading of the SIGMET message, as explained in the following paragraphs.

3.3 Structure of the SIGMET message

3.3.1 A SIGMET message consists of:

- *WMO heading* – all SIGMETs are preceded by an appropriate WMO heading;
- *First line*, containing location indicators of the relevant ATS unit and MWO, sequential number and period of validity;
- *Meteorological part*, containing meteorological information concerning the phenomenon for which the SIGMET is issued;

3.3.2 The first two parts of the SIGMET message are common for all types of SIGMETs. The content and format of the meteorological part is different depending on the type of SIGMET. Therefore, in the following paragraphs, the meteorological part of the WS, WV and WC types of SIGMET is described separately.

3.4 Format of SIGMET

Note: In the following text, square brackets - [ ] - are used to indicate an optional or conditional element, and angled brackets - < > - for symbolic representation of a variable element, which in the real SIGMETs accepts concrete numerical values.

3.4.1 WMO Header

$T_1T_2A_1A_2$ii CCCC YYGGgg [CCx]

3.4.1.1 The group **$T_1T_2A_1A_2$ii** is the bulletin identification for the SIGMET message. It is constructed in the following way:

T_1T_2	Data type designator	**WS** – for SIGMET **WV** – for SIGMET for volcanic ash **WC** – for SIGMET for tropical cyclone
A_1A_2	Country or territory designators	Assigned according to Table C1, Part II of Manual on the Global Telecommunication System, Vol I – Global Aspects (WMO - No. 386)
ii	Bulletin number	Assigned on national level according to paragraph 2.3.2.2, Part II of Manual on the Global Telecommunication System, Vol I – Global Aspects (WMO - No. 386)

3.4.1.2 **CCCC** is the ICAO location indicator of the communication centre disseminating the message (could be the same as the MWO).

3.4.1.3 **YYGGgg** is the date/time group, where YY is the date and GGgg is the time in hours and minutes UTC, of the transmission of the SIGMET (normally this is the time assigned by the AFTN centre which disseminates the message).

3.4.1.4 It is recommended to assign a unique WMO header for each SIGMET bulletin per FIR, CTA or UIR. The distinction between different SIGMET bulletins issued by the State's MWOs should be through the respective data type designator (T_1T_2) and bulletin number (ii**).**

Examples (fictitious AHL):

WSOM50 OOMS 231100
WVOM50 OOMS 011400
WCOM50 OOMS 161700

*Note: A table with WMO SIGMET headers used by the MID Meteorological Watch Offices is included in **Appendix B***

3.4.2 First line of SIGMET

CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg CCCC-

3.4.2.1 The meaning of the groups in the first line of the SIGMET is as follows:

CCCC	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET refers
SIGMET	Message identifier
[nn]n	Daily sequence number (see paragraph 3.4.2.2)
VALID	Period of validity indicator
YYGGgg/YYGGgg	Validity period of the SIGMET given by date/time group of the beginning and date/time group of the end of the period (see paragraph 3.4.2.3)
CCCC-	ICAO location indicator of the MWO originating the message and – (hyphen, without space, to separate the preamble from the text)

3.4.2.2 The numbering of SIGMETs should start every day at 0001 UTC. The sequence number should consist of up to three symbols and may be a combination of letters and numbers, such as:

- 1, 2, …
- 01, 02, …
- A01, A02, …

Examples:

OOMM SIGMET 1 VALID 121100/121500 OOMS-
OEJD SIGMET 01 VALID 231300/231700 OEJD-

Note 1: No other combinations should be used, like "CHARLIE 05" or "NR7".

Note 2: Correct numbering of SIGMET is very important since the number is used for reference in the communication between ATC and pilots and in VOLMET and D-VOLMET.

3.4.2.3 The following has to be considered when determining the validity period:

- the period of validity of WS SIGMET should not exceed 4 hours;
- the period of validity of WV and WC SIGMET should be up to 6 hours;
- in case of a SIGMET for an observed phenomenon the filing time (date/time group in the WMO heading) should be same or close to the date/time group indicating the start of the SIGMET validity period;
- when the SIGMET is issued for an expected (forecast) phenomenon:
    - the beginning of validity period should be the time of expected commencement (occurrence) of the phenomenon;
    - the lead time (the time of issuance of the SIGMET) should be not more than 4 hours before the start of validity period (i.e., expected time of occurrence of the phenomenon); for VA and TC SIGMETs the lead time may be up to 12 hours.

3.4.2.4 The period of validity is the period during which the SIGMET is valid for transmission to aircraft in flight.

Examples:

1. SIGMET for an observed phenomenon:

WSSD20 OEJD 231300
OEJD SIGMET 01 VALID 231300/231700 OEJD-

2. SIGMET for a forecast phenomenon (expected time of occurrence 1530)

WSSD20 OEJD 231300
OEJD SIGMET 01 VALID 231530/231930 OEJD-

3.4.3 *Format of the meteorological part of SIGMET messages for weather phenomena other than VA and TC*

3.4.3.1 The meteorological part of a SIGMET consists of eight elements as shown in the table below.

Start of the second line of the message

1	2	3	4	5	6
Location indicator of the FIR/UIR or CTA	Name of the FIR or UIR or FIR/UIR or CTA	Description of the phenomenon	Observed or forecast	Location	Level
<CCCC>	<name> FIR [UIR, FIR/UIR, CTA]	<Phenomenon>	OBS [AT <GGggZ>] FCST	Geographical location of the phenomenon given by coordinates, or geographical objects, or location indicators	FL<nnn> FL<nnn/nnn> [TOP, ABV, BLW]

7	8
Movement or expected movement	Changes in intensity
MOV <direction, speed> KMH[KT], or STNR	INTSF or WKN or NC

3.4.3.1.1 Location indicator and name of the FIR, UIR, FIR/UIR or CTA

location indicator <name> FIR
or
location indicator <name> UIR
or
location indictor <name> FIR/UIR
or
location indicator <name> CTA

Example:

OOMM MUSCAT FIR

3.4.3.1.2 Phenomenon

The description of the phenomenon consists of a qualifier and a phenomenon abbreviation. SIGMET shall be issued only for the following phenomena (with only one phenomenon in each SIGMET):

at cruising levels (irrespective of altitude):

- thunderstorms – if they are OBSC, EMBD, FRQ or SQL with or without hail;
- turbulence – only SEV
- icing – only SEV with or without FZRA
- mountain waves – only SEV
- dust storm – only HVY
- sand storm – only HVY
- radioactive cloud – RDOACT CLD

The appropriate abbreviations and combinations thereof, and their meaning are given in **Appendix C**.

3.4.3.1.3 Indication if the phenomenon is observed or forecast

OBS [AT <GGggZ>]
or
FCST

The indication whether the information is observed or forecast is given by the abbreviations OBS and FCST. OBS is optionally followed by a time group in the form AT GGggZ, where GGgg is the time of the observation in hours and minutes UTC. If the exact time of the observation is not known the time is not included. When FCST is used, it is assumed that the time of occurrence or commencement of the phenomenon coincides with the beginning of the period of validity included in the first line of the SIGMET.

Examples:

OBS AT 0140Z
FCST

3.4.3.1.4 Location of the phenomenon

The location of the phenomenon is given with reference to geographical coordinates (latitude and longitude) or with reference to geographical features well known internationally. The MWOs should try to be as specific as possible in reporting the location of the phenomenon and, at the same time, to avoid overwhelming geographical information, which may be difficult to process or perceive.

The following are the most common ways to describe the location of the phenomenon:

- Indication of a part of the FIR with reference to latitude:
  N OF or S OF <Nnn[nn]> or <Snn[nn]>

- indication of a part of the FIR with reference to a longitude:
  E OF or W OF <Ennn[nn]> or <Wnnn[nn]>

- indication of a part of the FIR with reference to a latitude and longitude:
  any combination of the above two cases;

- with reference to a location with ICAO location indicator CCCC (normally, this should be the case in a SIGMET based on a special air-report in which the reported phenomenon is given with reference to an airport or another object with an ICAO location indicator CCCC), or

- with reference to geographical features well known internationally.

More details on reporting of the location of the phenomenon are given in Appendix 6 to Annex 3 and in **Appendix D** to this Guide.

3.4.3.1.5 Flight level and extent

FL<nnn>
or FL<nnn/nnn>
or TOP FL<nnn>
or [TOP] ABV FL<nnn>
or [TOP] BLW FL<nnn>

The location or extent of the phenomenon in the vertical is given by one or more of the above abbreviations, as follows:

- reporting of single level – **FL<nnn>**
- reporting a layer – **FL<nnn/nnn>**, where the lower level is reported first; this is used particularly in reporting turbulence and icing;
- reporting a level or layer with reference to one FL using ABV or BLW
- reporting the level of the tops of the TS clouds using the abbreviation TOP.

Examples:

EMBD TS … TOP ABV FL340
SEV TURB … FL180/210
SEV ICE … BLW FL150
SEV MTW … FL090

3.4.3.1.6 Movement

MOV <direction> <speed> KMH[KT]
or
STNR

Direction of movement is given with reference to one of the eight points of compass. Speed is given in KMH or KT. The abbreviation STNR is used if no significant movement is expected.

Examples:

MOV NW 30KMH
MOV E 25KT

3.4.3.1.7 Expected changes in intensity

The expected evolution of the phenomenon's intensity is indicated by one of the following abbreviations:

INTSF – intensifying
WKN – weakening
NC – no change

3.4.4 Structure of the meteorological part of VA SIGMET

3.4.4.1 The general structure of the meteorological part of the SIGMET message is given in the table below:

Start of the second line of the message

1	2	3			4
Location indicator of the FIR/UIR or CTA	Name of the FIR or UIR or FIR/UIR or CTA	Phenomenon	Volcano		Volcanic ash cloud
			Name	Location	
<CCCC>	<name> FIR [UIR, FIR/UIR, CTA]	VA	[ERUPTION] [MT <name>]	[LOC <location>]	VA CLD OBS AT <GGggZ> VA CLD FCST

5			6
Extent of the cloud			Expected movement
Vertical	Horizontal	Position	
FL <nnn/nnn>	APRX <nnn> BY <nnn> KM	<lat,lon> - <lat,lon> - …	MOV <direction> <speed>

7	
Volcanic ash cloud forecast at the end of the period of validity	
FCST time	Position
FCST <GGggZ>	VA CLD APRX [FL<nnn/nnn>] <lat,lon> - <lat,lon> - …

3.4.4.2 Name and location of the volcano and/or indicator for VA cloud

VA [ERUPTION] [MT <name>] [LOC <lat,lon>] VA CLD
or
VA CLD

3.4.4.2.1 The description of the volcano injecting volcanic ash consists of the following elements:

- starts with the abbreviation **VA** – volcanic ash;
- the word **ERUPTION** is used when the SIGMET is issued for a known volcanic eruption;
- geographical/location information:
  i. if the name of the volcano is known, it is given by the abbreviation **MT** – mountain, followed by the name;
  e.g., **MT RABAUL**
  ii. location of the volcano is given by the abbreviation **LOC** – location, followed by the latitude and longitude in degrees and minutes;
  e.g., **LOC N3520 E09040**
- this section of the message ends with the abbreviation **VA CLD** – volcanic ash cloud.

3.4.4.2.2 If the FIR is affected by a VA cloud with no information about the volcanic eruption which generated the cloud, only the abbreviation **VA CLD** shall be included in the SIGMET.

3.4.4.3 Time of observation or expected commencement of the VA CLD

VA CLD OBS AT <GGgg>Z
or
VA CLD FCST

The time of observation is taken from the source of the observation – satellite image, special air- report, report from a ground volcano logical station, etc. If the VA cloud is not yet observed over the FIR

but the volcanic ash advisory received from the responsible VAAC indicates that the cloud is affecting the FIR after certain time, SIGMET shall be issued, and the abbreviation VA CLD FCST shall be used.

Examples:

VA CLD OBS AT 0100Z
VA CLD FCST

3.4.4.4 Level and extent of the volcanic ash cloud

FL<nnn/nnn> [APRX <nnn>KM BY <nnn>KM] <P1(lat,lon) - P2(lat,lon) - … >
or
FL<nnn/nnn> [APRX <nnn>NM BY <nnn>NM] <P1(lat,lon) - P2(lat,lon) - … >

FL<nnn/nnn>	The layer of the atmosphere where the VA cloud is situated, given by two flight levels from the lower to the upper boundary of the cloud
[APRX <nnn>KM BY <nnn>KM] or [APRX <nnn>NM BY <nnn>NM]	Approximate horizontal extent of the VA cloud in KM or NM
<P1(lat,lon) – P2(lat,lon) - … >	Approximate description of the VA cloud by a number of points given with their geographical coordinates[1]; the points shall be separated by hyphen

If the VA cloud spreads over more than one FIR, separate SIGMETs shall be issued by all MWOs whose FIRs are affected. In such a case, the description of the volcanic ash cloud by each MWO should encompass the part of the cloud, which lies over the MWO's area of responsibility. The MWOs should try to keep the description of the volcanic ash clouds consistent by checking the SIGMET messages received from the neighbouring MWOs.

Examples:

FL100/180 APRX 10KM BY 50KM N0100 E09530 – N1215 E11045
FL 150/210 S0530 E09300 – N0100 E09530 – N1215 E11045

3.4.4.5 Movement or expected movement of the VA cloud

MOV <direction> <speed>

The direction of movement is given by the abbreviation **MOV** – moving, followed by one of compass: N, NE, E, SE, S, SW, W, NW. The speed of movement is given in KMH or KT.

Examples:

MOV E 35 KMH
MOV SW 20 KT
STNR

3.4.4.6 Forecast position of the VA cloud at the end of the validity period of the SIGMET message

FCST <GGggZ> VA CLD <P1(lat,lon) - P2(lat,lon) - … >

[1] The format of geographical coordinates reporting in SIGMET is given in **Appendix D.**

3.4.4.6.1 The **GGggZ** group should indicate the end of the validity period given in the first line of the SIGMET message. The description of the expected position of the volcanic ash cloud is given by a number of points forming a simplified geometrical approximation of the cloud.

3.4.4.6.2 In describing the VA cloud, up to four different layers can be used, indicated by flight levels in the form FL<nnn/nnn>. The use of more than one level is necessary when the wind direction changes with height which causes the VA cloud to spread into different directions at different heights.

3.4.5 ***Structure of the meteorological part of TC SIGMET***

3.4.5.1 The general structure of the meteorological part of the TC SIGMET is given in the table below:

Start of the second line of the message

1	2	3	4		5
Location indicator of the FIR/UIR or CTA	Name of the FIR or UIR or FIR/UIR or CTA	TC name	Observed or forecast		Extent
			Time	Location of TC centre	
<CCCC>	<name> FIR [UIR, FIR/UIR, CTA]	TC <name>	OBS AT <GGgg>Z [FCST]	<lat,lon>	CB TOP [ABV or BLW] FL<nnn> WI <nnn>KM[NM] OF CENTRE

6	7	8
Expected movement	Intensity change	Forecast of the centre position at the end of the validity period
MOV <direction> <speed> KMH[KT] or STNR	INTSF or WKN or NC	FCST <GGgg>Z TC CENTRE <lat,lon>

3.4.5.2 Name of the tropical cyclone

TC <name>

The description of the tropical cyclone consists of the abbreviation TC followed by the international name of the tropical cyclone given by the corresponding WMO RSMC.

Examples:

TC GLORIA
TC 04B

3.4.5.3 Time of observation or indication of forecast

OBS AT <GGgg>Z
or
FCST

The time in UTC is given in hours and minutes, followed by the indicator Z. Normally, time is taken from own observations or from a TC advisory received from the responsible TCAC. If the TC is not yet observed in the FIR but the tropical cyclone advisory received from the responsible TCAC, or any other TC forecast used by the MWO, indicates that the TC is going to affect the FIR within the next 12 hrs, SIGMET should be issued, according to paragraph 2.4 above, and the abbreviation FCST should be used.

Examples:

OBS AT 2330

3.4.5.4 Location of the TC centre

<location>

The location of the TC centre is given by its lat, lon coordinates in degrees and minutes.

Examples:

N1535 E14230

3.4.5.5 Vertical and horizontal extent of the CB cloud formation around TC centre

CB TOP [ABV or BLW] <FLnnn> WI <nnnKM or nnnNM> OF CENTRE

Examples:

CB TOP ABV FL450 WI 200NM OF CENTRE
CB TOP FL500 WI 250KM OF CENTRE

3.4.5.6 Movement or expected movement

MOV <direction> <speed>KMH[KT]
or
STNR

Direction of movement is given with reference to one of the eight points of compass. Speed is given in KMH or KT. The abbreviation STNR is used if no significant movement is expected.

Examples:

MOV NW 30KMH
MOV E 25KT

3.4.5.7 Intensity change

The expected change of the intensity of the tropical cyclone is indicated by one of the following abbreviations:

INTSF – intensifying
WKN – weakening
NC – no change

3.4.5.8 Forecast location of the TC centre at the end of the validity period of the SIGMET Message

FCST <GGgg>Z TC CENTRE <location>

Normally, the time given by GGggZ should be the same as the end of validity period indicated in the first line of the SIGMET message. Since the period of validity is up to 6 hours (normally, 6 hours), this is a 6-hour forecast of the position of the TC centre.

The location of the TC centre is given by its lat, lon coordinates following the general rules of reporting lat, lon information provided in **Appendix D** to this Guide.

Examples:

FCST 1200Z TC CENTRE N1430 E12800

3.4.6 ***Cancellation of SIGMET***

3.4.6.1 If, during the validity period of a SIGMET, the phenomenon for which the SIGMET had been issued is no longer occurring or no longer expected, this SIGMET should be cancelled by the issuing MWO. The cancellation is done by issuing the same type of SIGMET with the following structure:

- WMO heading with the same data type designator;
- first line, including the next sequence number followed by a new validity period, and
- second line, which contains the location indicator and name of the FIR or CTA, the combination CNL SIGMET, followed by the sequential number of the original SIGMET and its validity period.

Examples:

1. Cancellation of a WS or WC SIGMET with the following first line

WSXY31 YUSO 101200
YUDD SIGMET 5 VALID 101200/101600 YUSO-
YUDD SHANLON FIR …

Cancellation SIGMET:

WSXY31 YUSO 101430
YUDD SIGMET 6 VALID 101430/101600 YUSO-
YUDD SHANLON FIR CNL SIGMET 5 101200/101600=

2. Cancellation of a VA SIGMET

WVXY31 YUSO 131518
YUDD SIGMET 03 VALID 131515/132115 YUSO-
YUDD SHANLON FIR …

Cancellation SIGMET:

WVXY31 YUSO 132000
YUDD SIGMET 04 VALID 132000/132115 YUSO-
YUDD SHANLON FIR CNL SIGMET 03 13151500/132115 VA MOV TO YUDO FIR=

APPENDIX A

List of the abbreviations and decode used in SIGMET

Abbreviation	Decode
ABV	Above
AND*	And
APRX	Approximate or approximately
AT	At *(followed by time)*
BLW	Below
BY*	By
CB	Cumulonimbus
CENTRE*	Centre *(used to indicate tropical cyclone centre)*
CLD	Cloud
CNL	Cancel *or* cancelled
CTA	Control area
DS	Duststorm
E	East *or* eastern longitude
ERUPTION*	Eruption *(used to indicate volcanic eruption)*
EMBD	Embedded in layer *(to indicate CB embedded in layers of other clouds)*
FCST	Forecast
FIR	Flight information region
FL	Flight level
FRQ	Frequent
FZRA	Freezing rain
GR	Hail
HVY	Heavy *(used to indicate intensity of weather phenomena)*
ICE	Icing
INTSF	Intensify *or* intensifying
ISOL	Isolated
KM	Kilometres
KMH	Kilometres per hour
KT	Knots
LINE*	Line
MOD	Moderate *(used to indicate intensity of weather phenomena)*
MOV	Move *or* moving *or* movement
MT	Mountain
MTW	Mountain waves
N	North *or* northern latitude
NC	No change
NE	North-east
NM	Nautical miles
NW	North-west
OBS	Observe *or* observed *or* observation
OBSC	Obscure *or* obscured *or* obscuring
OCNL	Occasional *or* occasionally
OF*	Of … *(place)*
RA	Rain
RDOACT*	Radioactive
S	South *or* southern latitude
SE	South-east
SEV	Severe *(used e.g. to qualify icing and turbulence reports)*
SIGMET	Information concerning en-route weather phenomena which may affect the safety of aircraft operations
SQL	Squall line

Abbreviation	Decode
SS	Sandstorm
STNR	Stationary
SW	South-west
TC	Tropical cyclone
TO	To … *(place)*
TOP	Cloud top
TS	Thunderstorm
TURB	Turbulence
UIR	Upper flight information region
VA	Volcanic ash
VALID*	Valid
W	West *or* western longitude
WI	Within
WID	Width
Z	Coordinated Universal Time *(used in meteorological messages)*

** not in the ICAO Doc 8400, ICAO Abbreviations and Codes*

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APPENDIX B

List of MID SIGMET (WS, WV and WC) headers

State	MWO name (Doc 7910)	MWO Loc. Ind.	WS AHL	WV AHL	WC AHL	FIR Name (Doc 7910)	FIR Loc. Ind.	ATSU serving the FIR
BAHRAIN	BAHRAIN INTERNATIONAL	OBBI	WS[AAii] [CCCC]	WV[AAii] [CCCC]	N/A	BAHRAIN	OBBB	OBBB
EGYPT	CAIRO/INTL	HECA	WS[AAii] [CCCC]	WV[AAii] [CCCC]	N/A	CAIRO	HECC	HECC
IRAN (ISLAMIC REPUBLIC OF)	TEHRAN/MEHRABAD INTL	OIII	WS[AAii] [CCCC]	WV[AAii] [CCCC]	WC[AAii] [CCCC]	TEHRAN	OIIX	OIIX
IRAQ	BAGHDAD INTERNATIONAL AIRPORT	ORBI	WS[AAii] [CCCC]	WV[AAii] [CCCC]	N/A	BAGHDAD	ORBB	ORBS
ISRAEL	TEL-AVIV/BEN GURION AIRPORT	LLBG	WS[AAii] [CCCC]	WV[AAii] [CCCC]	N/A	TEL AVIV	LLLL	LLAD
JORDAN	AMMAN/QUEEN ALIA	OJAI	WS[AAii] [CCCC]	WV[AAii] [CCCC]	N/A	AMMAN	OJAC	OJAC
KUWAIT	KUWAIT/INTL AIRPORT	OKBK	WS[AAii] [CCCC]	WV[AAii] [CCCC]	WC[AAii] [CCCC]	KUWAIT	OKAC	OKAC
LEBANON	BEIRUT/BEIRUT INTL	OLBA	WS[AAii] [CCCC]	WV[AAii] [CCCC]	N/A	BEIRUT	OLBB	OLBA
OMAN	MUSCAT/SEEB INTL	OOMS	WS[AAii] [CCCC]	WV[AAii] [CCCC]	WC[AAii] [CCCC]	MUSCAT	OOMM	OOMM
SAUDI ARABIA	JEDDAH/KING ABDULAZIZ INTL	OEJN	WS[AAii] [CCCC]	WV[AAii] [CCCC]	WC[AAii] [CCCC]	JEDDAH	OEJD	OEJD
SYRIAN ARAB REPUBLIC	DAMASCUS/INTL	OSDI	WS[AAii] [CCCC]	WV[AAii] [CCCC]	N/A	DAMASCUS	OSTT	OSDI
UNITED ARAB EMIRATES	ABU DHABI INTERNATIONAL	OMAA	WS[AAii] [CCCC]	WV[AAii] [CCCC]	WC[AAii] [CCCC]	EMIRATES	OMAE	OMAE
YEMEN	SANAA/INTL	OYSN	WS[AAii] [CCCC]	WV[AAii] [CCCC]	WC[AAii] [CCCC]	SANAA	OYSC	OYSN

Note 1: Qatar is not indicated in the above table, since it has no FIR area if responsibility.

Note 2: The AHL for each of the WS, WV and WC SIGMETs (highlighted above) is to be completed based on information provided by the State(s) concerned following consultation.

APPENDIX C

Meteorological phenomena to be reported by SIGMET

Phenomenon	Description	Meaning
Thunderstorm (TS)	OBSC[2] TS EMBD[3] TS FRQ[4] TS SQL[5] TS OBSC TSGR EMBD TSGR FRQ TSGR SQL TSGR	Obscured thunderstorm(s) Embedded thunderstorm(s) Frequent thunderstorm(s) Squall line thunderstorm(s) Obscured thunderstorm(s) with hail Embedded thunderstorm(s) with hail Frequent thunderstorm(s) with hail Squall line thunderstorm(s) with hail
Tropical cyclone (TC)	TC (+ TC name)	Tropical cyclone (+ TC name)
Turbulence (TURB)	SEV TURB[6]	Severe turbulence
Icing (ICE)	SEV ICE SEV ICE (FZRA)	Severe icing Severe icing due to freezing rain
Mountain wave (MTW)	SEV MTW[7]	Severe mountain wave
Duststorm (DS)	HVY DS	Heavy duststorm
Sandstorm (SS)	HVY SS	Heavy sandstorm
Volcanic ash cloud (VA)	VA (+ volcano name, if known)	Volcanic ash (+ volcano name)
Radioactive cloud	RDOACT CLD	Radioactive cloud

Notes:

1. Only one of the weather phenomena listed should be selected and included in each SIGMET

*2. Obscured (**OBSC**) indicates that the thunderstorm is obscured by haze or smoke or cannot be readily seen due to darkness*

*3. Embedded (**EMBD**) – indicates that the thunderstorm is embedded within cloud layers and cannot be readily recognized*

*4. Frequent (**FRQ**) indicates an area of thunderstorms within which there is little or no separation between adjacent thunderstorms with a maximum spatial coverage greater than 75% of the area affected, or forecasts to be affected, by the phenomenon (at a fixed time or during the period of validity)*

*5. Squall line (**SQL**) indicates thunderstorms along a line with little or no space between individual clouds*

*6. Severe (**SEV**) turbulence (**TURB**) refers only to:*
- *low-level turbulence associated with strong surface winds;*
- *rotor streaming;*
- *turbulence whether in cloud or not in cloud (CAT) near to jet streams.*
- *Turbulence is considered severe whenever the peak value of the cube root of the eddy dissipation rate (EDR) exceeds 0.7.*

*7. A mountain wave (**MTW**) is considered:*
- *severe – whenever an accompanying downdraft of 3.0 m/s (600 ft/min) or more and/or severe turbulence is observed or forecasted..*

APPENDIX D

Guidelines for reporting geographical coordinates in SIGMET

When reporting geographical coordinates of points in SIGMET the following should apply:

1. Each point is represented by latitude/longitude coordinates in whole degrees or degrees and minutes in the form:

N(S)nn[nn] W(E)nnn[nn]

Note: There is a space between the latitude and longitude value.

Examples:

N3623 W04515

S1530 E12500

N42 E023

2. In describing lines or polygons, the latitude, longitude coordinates of the respective points are separated by the combination space-hyphen-space, as in the following examples:

S0530 E09300 – N0100 E09530 – N1215 E11045 – S0820 E10330

S05 E093 – N01 E095 – N12 E110 – S08 E103

Note: It is not necessary to repeat the first point when describing a polygon.

3. When describing a volcanic ash cloud approximate form and position, a limited number of points, which form a simplified geometric figure (a line, or a triangle, or quadrangle, etc.) should be used in order to allow for a straightforward interpretation by the user.

REPORT ON AGENDA ITEM 4: STATUS OF IMPLEMENTATION OF THE METEOROLOGICAL SERVICES IN THE MID REGION

4.3: REVIEW OF REQUIREMENTS FOR OPMET DATA AND STATUS OF OPMET DATA EXCHANGE

4.3.1 The meeting recalled that Amendment 74 to Annex 3 allowed for the issuance of 30-hour aerodrome forecasts (TAF). IATA expressed that a list of requirements for 30 hour TAF had been generated in 2008, and that in respect of the MID Region, 30-hour TAF were required at eighteen aerodromes. The meeting noted that recent monitoring had identified that 30 hour TAF were provided at only fifteen of the aerodromes concerned. The outstanding three aerodromes, all in the Islamic Republic of Iran, were issuing 18-hour TAFs.

4.3.2 In view of the foregoing, the meeting encouraged the Islamic Republic of Iran to provide 30-hour TAF according to the IATA requirement, and as shown in FASID Table MET 1A of the MID ANP, as a matter of priority, for the following AOP aerodromes: OIFM (Isfahan/Esfahan), OISS (Shiraz/Shahid Dastghaib International) and OITT (Tabriz). In addition, the meeting agreed that the non-provision of 30-hour TAF for these AOP aerodromes should be reflected as a deficiency in the MIDANPIRG Air Navigation Deficiency Database until the requirement had been met.

4.3.3 The meeting acknowledged that according to Amendment 74 to Annex 3, only one type of TAF should be valid for each aerodrome. Each State decides, taking into consideration the user requirements, which type of TAF should be issued for each aerodrome – short-TAF (FC bulletin) or long-TAF (FT bulletin).

4.3.4 In the MID Region, States were reported to be issuing 18, 24 or 30-hour TAF. Some airlines from the APAC and MID Regions had expressed their requirements for additional 30-hour TAF for AOP aerodromes in Jordan and the Syria – namely OJAI (Amman/Queen Alia) and OSDI (Damascus) respectively. The motive for these new TAF requirements stemmed from their use as alternate aerodromes by ultra long haul carriers. In order for these new requirements to be fulfilled, the meeting agreed that Jordan and the Syria should be invited to provide 30-hour TAF accordingly, and noted that FASID Table MET 1A of the MID Air Navigation Plan would require amendment in this regard.

4.3.5 The meeting was informed that the new OPMET provisions as introduced under Amendment 74 to Annex 3 in November 2008 had still not been fully implemented by all States in the MID Region. Consequently, States were urged to apply the Standards and Recommended Practices as described in Annex 3, since continuous monitoring of OPMET exchange had revealed some deficiencies in this regard.

4.3.6 The meeting noted that for several aerodromes in the MID Region, two different types of TAF were being issued – one short-TAF (FC bulletin) and one long-TAF (FT bulletin). The States (and aerodromes) concerned were Jordan (OJAI, OJAM and OJAQ) and Syria (OSAP, OSDI and OSLK).

4.3.7 The meeting identified that occasionally the generation of two types of TAF was due to a local agreement between the meteorological and air traffic service providers. However, the meeting acknowledged that *only* the long-TAFs should be exchanged internationally, and that short-TAFs should *only* be circulated locally within the MID Region, as necessary.

4.3.8 The meeting agreed that the States concerned (Jordan and Syria) would be added to the MIDANPIRG Air Navigation Deficiency Database from February 2010 unless action was taken to ensure that only long-TAF were available to international exchange.

4.3.9 The meeting noted that for four aerodromes in Saudi Arabia, monitoring had revealed a mix-up of the issuance of short-TAF and long-TAF. In the morning, short-TAF of 9-hour validity were issued, whilst later long-TAF of 30 hour validity were issued. According to Annex 3, only a short-TAF or a long-TAF should be issued, not a mixture of the two. Furthermore, the meeting acknowledged that there was no international exchange requirement for 30-hour long-TAF for the aerodromes concerned (namely OEAB, OEGN, OETB and OEYN), and no requirement at all for 9-hour short-TAF for *any* aerodromes in the MID Region. The meeting agreed that Saudi Arabia would be added to the MIDANPIRG Air Navigation Deficiency Database from February 2010 unless action was taken in this regard.

4.3.10 The meeting noted that during a seven day monitoring period, no SIGMET messages were available on international exchange system for flight information regions (FIRs) in the MID Region. The meeting acknowledged that either no SIGMET messages had been considered necessary for issuance by MWOs, or that there was a problem in the communication networks. The meeting agreed that would be necessary for States to investigate the reasons for the absence of SIGMET messages, including problems with message generation and transmission.

4.3.11 In view of the discussion, and in addition noting that follow-up action was required in respect of MIDANPIRG/11 Conclusion 11/78 b) the meeting agreed to formulate the following draft Conclusion:

DRAFT CONCLUSION 2/7 — IMPROVING OPMET DATA IN THE MID REGION

That, in order to improve the quality and availability of OPMET data in the MID Region, MID States be urged, if they have not already done so, to:

a) fully implement ICAO Annex 3 provisions relating to OPMET data, including TAF;

b) investigate the reasons for the absence of SIGMET messages and reconsider their procedures for SIGMET generation and transmission;

c) consider the need for establishing local quality control and format verification procedures for OPMET data; and

d) undertake all efforts to reduce the errors in OPMET data significantly, the aim of which should be that less than 5% of all issued OPMET data being incorrect.

4.3.12 With regards to the coding accuracy of OPMET data (principally TAF) originating from the MID Region, the meeting noted with concern that since the adoption of Amendment 74 to Annex 3, the number of incorrectly coded OPMET messages has increased. Such incorrect coding within TAFs for the MID Region included:

a) Old (HHHH) and new (DDHH/DDHH) date-time formats used in one TAF message Example: `.... TEMPO 0812.0824 12012KT ....;`

b) MAIN, BECMG or FM period used without valid time token given Example: `.... SCT020 BECMG 23005MPS ....;`

c) Change group period outside global validity dates Example: `TAF ABCD 071650Z 0718/0818 03006KT 9000 NSC BECMG 0720/0722 16010KT TEMPO 0722/0809 16012G22KT BECMG 0710/0712 24010KT=;`

d) Message validity period longer than 30 hours Example: `TAF ABCD 082100Z 0900/1024 24008KT ....;` and

e) Validity starts more than 12 hours in the future Example: `TAF ABCD 061940Z 0721/0706 33006MPS ....`

4.3.13 In order to enable automated systems to process OPMET data, the meeting noted that all incorrect messages must be rectified manually or the user systems must be upgraded in order to undertake automated corrections. Both actions were very costly and could be avoided if all States ensured quality control and verification of all outgoing OPMET data.

4.3.14 Within Appendix 10 of ICAO Annex 3, transit times for different OPMET data types were described. And, in order to verify these transit times, continuous monitoring of OPMET data from the MID Region, including timeliness and regularity metrics, had been undertaken from 1 October until 9 November 2009.

4.3.15 The study had revealed that monitoring regarding timeliness did not give a clear picture for all States in the MID Region. It was not easy to interpret the results, due to different understandings of how and when to issue, and how to compile and transmit OPMET data and bulletins. Monitoring highlighted that occasionally METAR or TAF were received *before* the observation or promulgation time. On other occasions, the time gap between the *promulgation* time of TAF and the *reception* time at the end user location was *more than* one or two hours. Or, the TAF was received only many minutes *after* the TAF had became effective. Furthermore, the observation time of METAR or the time of issue of TAF varied from day to day.

4.3.16 Overall, the monitoring results regarding timeliness and regularity of OPMET data from the MID Region showed that there were a number of inconsistent practices being employed by the originating centres. The variance in promulgation time, compilation time, etc, could prevent end users from being able to install automated alerting systems for missing OPMET data.

4.3.17 In order to harmonise the issuance of *scheduled* OPMET data in the MID Region, the meeting considered proposals based on well established procedures applied within the EUR Region concerning the observation time, compilation time and international exchange time of METAR; and the promulgation time, compilation time and international exchange time of TAF.

4.3.18 Having reviewed the proposals, the meeting agreed that there should be efforts to improve the timeliness and regularity of OPMET data for AOP aerodromes in the MID Region. The meeting agreed to the following Draft Conclusion accordingly:

DRAFT CONCLUSION 2/8 — HARMONIZATION OF PROCEDURES FOR OPMET DATA ISSUANCE

That, in order to improve the timeliness and regularity of OPMET data (METAR and TAF) for AOP aerodromes in the MID Region:

a) the ICAO MID Regional Office develop guidance material related to the issuance of OPMET data; and

b) MID States be urged to implement common procedures in accordance with this guidance.

REPORT ON AGENDA ITEM 4: STATUS OF IMPLEMENTATION OF THE METEOROLOGICAL SERVICES IN THE MID REGION

4.4: REVIEW IMPLEMENTATION OF MET SERVICE FOR LOW-LEVEL FLIGHTS

4.4.1 The meeting considered the development of regional guidance material on the provision of meteorological service for low-level flights, and noted that flight documentation in this regard could be provided either in chart format (i.e. a combination of a low-level significant weather forecast, and an upper wind and upper-air temperature forecast) or in abbreviated plain language (i.e. GAMET) for flight levels up to 100 (or up to flight level 150 in mountainous areas, or higher, where necessary), using approved ICAO abbreviations and numerical values. In the context of the discussion, only the provision of low-level significant weather (SIGWX) forecasts in chart form was considered; however, the meeting acknowledged that when a route is to be flown that involves the use of GAMET and a combination of low-level SIGWX forecast and an upper wind and upper-air temperature forecast, the users' attention should be drawn to the differences in the information content in these forecasts

4.4.2 The meeting noted that many meteorological offices in the MID Region prepared low-level SIGWX forecasts in chart form, and recognized that the frequency of issue, the form and the fixed time or period of validity of such forecasts, and the criteria for amendments thereto, was determined by the Meteorological Authority of the State concerned in consultation with the users.

4.4.3 The meeting agreed that there was no need to amplify the information presented to the meeting in this regard, but noted that a problem occasionally faced by meteorological offices related to the *distribution* of the low-level SIGWX forecasts rather than their *preparation*. The meeting acknowledged that since the distribution of low-level SIGWX forecasts was a local matter (i.e. they were not required for international exchange), it was vital that the Meteorological Authority engage with meteorological service providers and the users on a regular basis to determine requirements regarding the (content and) dissemination of such forecasts.

REPORT ON AGENDA ITEM 5: REVIEW OF THE MET PROVISIONS IN THE MID BASIC ANP AND FASID

5.1 The meeting noted that in order for the MIDANPIRG/11 Decision 11/75 (*Review and amendment of the FASID MET Tables*) to be initiated, urgent activation of the MID OPMET BMG was required. The meeting acknowledged that MIDANPIRG/11 Decision 11/82 (*Activation of the MID OPMET Bulletin Management Group*) endorsed the activation of the group, with the Terms of Reference as presented in Appendix 5.6C of the MIDANPIRG/11 report, however noted that a State Letter in this regard had not been issued. The meeting agreed to return to this discussion under Agenda Item 9.

5.2 The meeting noted that in order to conduct a comprehensive review of Part VI (MET) of the MID Air Navigation Plan Volume I (Basic ANP) and Volume II (FASID), it was necessary to address the MET Tables highlighted by Decision 11/75 (i.e. FASID Tables MET 1A, 2A, 2C, 4A and 4B), and all the other relevant MET charts and MET Tables contained in the FASID.

5.3 The meeting reviewed an initial set of amendment proposals to Part VI (MET) of the MID Basic ANP and FASID[1], which considered:

i) Alignment of the MID Basic ANP with global provisions as determined by the International Airways Volcano Watch Operations Group (IAVWOPSG) and the World Area Forecast System Operations Group (WAFSOPSG);

ii) Alignment of the MID FASID with global provisions as determined by the IAVWOPSG and WAFSOPSG; and

iii) Amendment to MID FASID Table MET 1A relating to the requirements for 24- or 30-hour Aerodrome Forecasts (TAF) for aerodromes in the MID Region.

5.4 The representative of Egypt informed the meeting that 30-hour TAF was being provided to international exchange at the twelve aerodromes within Egypt listed in FASID Table MET 1A. In addition, the meeting acknowledged that Afghanistan should be removed from the MID ANP since Afghanistan was now a member of the Asia/Pacific (APAC) Region and would appear in the APAC ANP accordingly.

5.5 Having reviewed the proposed amendments to the MID Basic ANP and FASID, making further adjustments as appropriate (to FASID Table MET 1A), the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 2/9 – PROPOSAL FOR AMENDMENT TO PART VI (MET) OF THE MID AIR NAVIGATION PLAN VOLUME I AND VOLUME II

That, the ICAO MID Regional Office, undertake the necessary action to:

*a) Amend Part VI (MET) of the MID ANP Volume I (Basic ANP) and Volume II (FASID) as given in **Appendix 5A** and **Appendix 5B** to the Report on Agenda Item 5 respectively, to align regional procedures for the International Airways Volcano Watch (IAVW) and World Area Forecast System (WAFS) with global provisions; and*

[1] Appendices 5A, 5B and 5C to this Report refer respectively.

*b) Amend Table MET 1A of Part VI (MET) of the MID ANP Volume II (FASID) as given in **Appendix 5C** to the Report on Agenda Item 5 to reflect regional provision of 24- or 30-hour Aerodrome Forecasts (TAF) for aerodromes within the MID Region.*

5.6 The meeting acknowledged that a review of the remaining MET-related parts of the MID ANP would be conducted by the Secretariat, in coordination with the MID OPMET BMG as appropriate. Accordingly, further proposals for amendment could be expected before or at the next meeting. The meeting agreed to the following Draft Decision which was proposed to replace and supersede MIDANPIRG Decision 11/75:

DRAFT DECISION 2/10 – REVIEW OF PART VI (MET) OF THE MID AIR NAVIGATION PLAN VOLUME II (FASID)

That, in time for MET SG/3, the ICAO Regional Office review and propose amendments, as necessary, to:

a) FASID Tables MET 1B, 2B, 3A, 3B, 5, 6 and 7; and

b) FASID Tables MET 2A, 2C, 4A and 4B related to OPMET exchange in coordination with the MID OPMET Bulletin Management Group.

MET SG/2
Appendix 5A to the Report on Agenda Item 5

PROPOSAL FOR AMENDMENT TO

MID ANP VOLUME I (BASIC ANP) PART VI (MET)

Part VI

METEOROLOGY (MET)

INTRODUCTION

1. This part of the Middle East (MID) Basic Air Navigation Plan contains elements of the existing planning system and introduces the basic planning principles, operational requirements and planning criteria related to aeronautical meteorology (MET) as developed for the MID Region.

2. As a complement to the Statement of Basic Operational Requirements and Planning Criteria
(BORPC) set out in Part I, Part VI constitutes the stable guidance material considered to be the minimum necessary for effective planning of MET facilities and services in the MID Region. A detailed description/list of the facilities and/or services to be provided by States in order to fulfil the requirements of the Basic ANP is contained in the MID Facilities and Services Implementation Document (FASID)

3. The Standards, Recommended Practices and Procedures to be applied are contained in the following ICAO documents:
a) Annex 3 — Meteorological Service for International Air Navigation;
b) Regional Supplementary Procedures (Doc 7030), Part 3 - Meteorology.

4. Background information of importance in the understanding and effective application of the Plan is contained in the Reports of the Limited Middle East (COM/MET/RAC) Regional Air Navigation Meeting (Doc 9672, LIM MID (COM/MET/RAC)(1996)) and of the Third Middle East Regional Air Navigation Meeting (Doc 9434, MID/3 (1984)), supplemented by information appropriate to the MID Region which is contained in the Reports of the other Regional Air Navigation Meetings.

5. RAN Meeting recommendations or conclusions, Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG) conclusions and ICAO operations groups conclusions shown in brackets below a heading indicate the origin of all paragraphs following that heading; where these conclusions are shown in brackets below a paragraph they indicate the origin of that particular paragraph.

~~*Editorial Note*. — Reorganization of all the services referred to in Table MET 1A and 1B under this heading according to the master list agreed by all the ROs/MET in 2004.~~

METEOROLOGICAL SERVICE AT AERODROMES AND REQUIREMENTS FOR METEOROLOGICAL WATCH OFFICES
(FASID Tables MET 1A and MET 1B)

6. The service to be provided at the international aerodromes listed in MID Basic ANP

Table AOP1 is set out in FASID Table MET 1A.
[LIM MID (COM/MET/RAC), Rec.4/10]

7. The service to be provided for flight information regions (FIR), upper flight information regions (UIR), control areas (CTA) and search and rescue regions (SRR) is set out in FASID Table MET 1B.
[LIM MID (COM/MET/RAC), Rec. 4/10]

8. Routine observations should be made at all aeronautical stations at hourly intervals and reports issued as local routine reports and METAR, complemented by special observations issued as local special reports and SPECI.
[MID/3, Rec. 3.1/12]

9. TAF should be issued at intervals of six hours, with the period of validity beginning at one of the main synoptic hours (00, 06, 12, 18 UTC). The period of validity should be 24 or 30 hours, to meet the requirements indicated in FASID Table MET 1A. The filing time of the forecasts should be one hours before the start of the period of validity.
[MIDANPIRG/11 Report]

10. The forecast maximum temperatures should be included in aerodrome forecasts for certain stations as agreed between the meteorological authorities and the operators concerned.
[LIM MID (COM/MET/RAC) Rec. 4/10]

11. Trend forecasts should be provided at the aerodromes as indicated in FASID Table MET 1A. [LIM MID (COM/MET/RAC), Rec. 4/10]

12. Meteorological service should be provided on a 24 hour basis, except as otherwise agreed between the meteorological authority, the air traffic services authority and the operators concerned.
[MID/3, Rec.3.1/12]

13. At aerodromes with limited hours of operation, the issuance of METAR should be issued at least one hour prior to the aerodrome resuming operations to meet pre-flight and in-flight planning requirements for flights due to arrive at the aerodrome concerned as soon as it is opened for use. Furthermore, TAF should be issued with adequate periods of validity so that they cover the entire period during which the aerodrome is open for use.
[MID/3, Rec. 3.1/12]

14. When an MWO is temporarily not functioning or is not able to meet all its obligations, its responsibilities should be transferred to another MWO and a NOTAM should be issued to indicate such a transfer and the period during which the office is unable to fulfil all its obligations.
[MID/3, Rec. 3.1/12]

15. Details of the service provided should be indicated in Aeronautical Information Publications, in accordance with the provisions of Annex 15.
[MID/3, Rec. 3.1/12]

16. As far as possible, English should be among the languages used in meteorological briefing and consultation.
[MID/3, Rec. 3.1/12]

17. FASID Tables MET 1A and 1B should be implemented as soon as possible.

AIRCRAFT OBSERVATIONS AND REPORTS

18. The meteorological authority should adopt the approved list of ATS/MET reporting points, as it relates to points located within and on the boundaries of the FIR for which the State is responsible. Those ATS/MET reporting points should be published in the AIP of the State concerned.
[LIM MID (COM/MET/RAC), Rec.4/19]

Note.— The approved list of ATS/MET reporting points is published and kept up to date by the ICAO Regional Office concerned, on the basis of consultations with ATS and MET authorities in each State and the provisions of Annex 3 in this respect.

19. The meteorological watch offices (MWO) designated as the collecting centres for air-reports received by voice communications within the FIR/UIR for which they are responsible, are shown in FASID Table MET 1B.

AIRMET INFORMATION

20. AIRMET messages are not required to be issued by MWOs.
[LIM MID (COM/MET/RAC), Rec. 4/10]

TROPICAL CYCLONE ADVISORIES AND VOLCANIC ASH ADVISORIES
(FASID Tables MET 3A, 3B and 3C; FASID Charts MET1 and MET2)

21. Tropical cyclone advisory centre (TCAC) New Delhi has been designated to prepare ~~the required~~ advisory information ~~and send it to the MWOs concerned in the MID Region~~. FASID Table MET 3A sets out the area of responsibility, the period of operation of the TCAC and the MWOs to which the advisory information should be sent.
[IAVWOPSG Conclusion 3/2]

22. Volcanic ash advisory centre (VAAC) Toulouse has been designated to prepare ~~the required~~ advisory information ~~and send it to MWOs and ACCs concerned in the MID Region following notification/detection of the ash cloud~~. FASID Table MET 3B~~,~~ sets out the area of responsibility of the VAACs, ~~and~~ the MWOs and ACCs to which the advisory information should be sent.
[IAVWOPSG Conclusion 3/2]

23. In order for the VAAC to initiate the monitoring of volcanic ash from satellite data and the forecast of volcanic ash trajectories, MWOs should notify the VAAC immediately on receipt of information that a volcanic eruption has occurred or volcanic ash has been observed in the FIR for which they are responsible. In particular, any special air-reports of pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud, received by MWOs should be transmitted without delay to the VAAC Toulouse. Selected State volcano observatories have been designated for direct notification of significant pre-eruption volcanic activity, a volcanic eruption and/or volcanic ash in the atmosphere to their corresponding ACC, MWO and VAAC. FASID Table MET 3C sets out the selected State volcano observatories and the VAACs, MWOs and ACCs to which the notification should be sent by the observatories.
[IAVWOPSG Conclusion 3/2]

EXCHANGE OF OPERATIONAL METEOROLOGICAL INFORMATION

(FASID Tables MET 2A, 2B, 4A and 4B)

24. FASID Table MET 2A sets out the requirements for operational meteorological (OPMET) information, which should be made available to States and users through the AFS satellite broadcasts (SADIS and ISCS).

25. FASID Table MET 2B sets out the operational meteorological information which should be available in Saudi Arabia for the pilgrimage flights. For its implementation, ICAO should notify, in accordance with AFI/6, Recommendation 6/24, as approved by Council, meteorological offices concerned well in advance of the exact dates of the beginning and the end of the Pilgrimage Season (cf also Doc 7474, Table MET 2B).
[LIM MID (COM/MET/RAC), Rec. 5/3]

26. FASID Tables MET 4A and MET 4B set out the Regional OPMET Bulletin Exchange (ROBEX) Scheme for the collection of METAR and air reports (AIREP), and TAF, respectively. When the designated ROBEX centres are not operational for any reason, the exchanges required under the ROBEX Scheme should be carried out by direct address messages.
[LIM MID (COM/MET/RAC), Rec. 5/5]

Note.— Details of the ROBEX procedures including the exchange of OPMET information required under the scheme are given in the ROBEX Handbook prepared by the ICAO Asia and Pacific Office, Bangkok, Thailand.

27. Each MWO should arrange for the transmission to all aerodrome meteorological offices within its associated FIR of its own SIGMET messages and relevant SIGMET messages for other FIR, as required for briefing and, where appropriate, for flight documentation.
[MID/3, Rec. 3.1/12]

28. Each MWO should arrange for the transmission to its associated ACC/FIC of SIGMET messages and special air-reports received from other MWOs.

29. Each MWO should arrange for the transmission of routine air-reports received by voice communications to all meteorological offices within its associated FIR.

30. Operational meteorological information required in MID States from the EUR Region should be requested from the inter-regional OPMET Gateway (IROG), Vienna. OPMET information from the AFI Region should be requested from Jeddah (OEJNYM). OPMET information from ASIA/PAC Region should be requested from IROG Bangkok.

WORLD AREA FORECAST SYSTEM (WAFS)
(FASID Table MET 5)

31. FASID Table MET 5 sets out the MID Region requirements for WAFS forecasts to be provided by WAFC London.
[WAFSOPSG Conclusion 1/2]

32. ~~FASID Table MET 6 sets out the responsibilities of WAFCs London and Washington for the production of WAFS forecasts.~~ For back-up purposes, each WAFC should have the capability to produce WAFS forecasts for all required areas of coverage.

[WAFSOPSG Conclusion ~~1/2~~5/2]

33. WAFS ~~products~~ forecasts should be disseminated by WAFC London using the satellite distribution system (SADIS) covering the reception area shown in FASID Chart COM 7 or using the SADIS FTP service.
[WAFSOPSG Conclusion ~~2/2~~4/2]

Editorial note. – Insert "or using the SADIS FTP service" in the corresponding CNS procedure contained in Part iV of the ANP

34. Each State should make the necessary arrangements to receive and make full ~~operational~~ use of operational WAFS forecasts issued by WAFC London. ~~FASID Table MET 7~~ The lists of the authorized users of the SADIS ~~satellite broadcast~~ services in the MID Region and location of the operational VSATs and FTPs are available from the following website:~~.~~

www/icao.int/anb/sadisopsg (click: "Status of implementation") for SADIS

[WAFSOPSG Conclusion ~~1/2~~5/2]

MET SG/2
Appendix 5B to the Report on Agenda Item 5

PROPOSAL FOR AMENDMENT TO

MID ANP VOLUME II (FASID) PART VI (MET)

METEOROLOGY (MET)

1. INTRODUCTION

1.1 The Standards, Recommended Practices and Procedures to be applied are as listed in paragraph 1.2, Part VI - MET of the MID Basic ANP. The material in this part complements that contained in Part I – Statement of Basic Operational Requirements and Planning Criteria (BORPC) of the MID Basic ANP and should be taken into consideration in the overall planning processes for the MID Region.

1.2 This Part contains a detailed description/list of the facilities and/or services to be provided to fulfil the basic requirements of the Plan and are as agreed between the provider and user States concerned. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified. This element of the FASID, in conjunction with the MID Basic ANP, is kept under constant review by the MIDANPIRG in accordance with its schedule of management, in consultation with user and provider States and with the assistance of the ICAO Middle East Office, Cairo.

2. METEOROLOGICAL SERVICE REQUIRED AT AERODROMES AND REQUIREMENTS FOR METEOROLOGICAL WATCH OFFICES
(FASID Tables MET 1A and 1B)

2.1 The meteorological service to be provided at aerodromes to satisfy international flight operations is outlined in FASID Table MET 1A.

2.2 The requirements for meteorological watch offices (MWO) together with the service to be provided to flight information regions (FIR), upper flight information regions (UIR) and search and rescue regions (SRR) are listed in FASID Table MET 1B.

3. EXCHANGE OF OPERATIONAL METEOROLOGICAL INFORMATION
(FASID Tables MET 2A, 2B, 4A and 4B)

3.1 The requirements for availability of OPMET information (METAR, SPECI and TAF) on a global basis through the AFS satellite distribution system (the SADIS and ISCS) are provided in FASID Table MET 2. This table contains the aerodromes included in the AOP Table of the Basic ANP and those non-AOP aerodromes for which the States concerned have agreed to make available the OPMET information via the satellite distribution system on a regular basis.

3.2 FASID Table MET 2B contains the operational meteorological information which should be available in Saudi Arabia for the pilgrimage flights.

3.3 FASID Tables MET 4A and 4B set out the Regional OPMET Bulletin Exchange (ROBEX) Scheme for the exchange of METAR, SPECI, air reports (AIREP) and TAF.

Note. - Details of the ROBEX procedures including the exchange of OPMET information required under the Scheme are given in the ROBEX Handbook published by the ICAO Asia and Pacific Office, Bangkok in co-ordination with the ICAO MID Office, Cairo. The ROBEX handbook is available on: http://www.bangkok.icao.int/edocs/ROBEX_Handbook2004.pdf .

4. TROPICAL CYCLONE WARNING SYSTEM AND INTERNATIONAL AIRWAYS VOLCANO WATCH

(FASID Tables MET 3A ~~and~~ MET 3B and MET 3C and FASID Chart MET 3)

4.1 The area of responsibility of the designated Tropical Cyclone Advisory Centre (TCAC) New Delhi and the MWOs to which the advisory information should be sent by the TCAC are contained in FASID Table MET 3A.

4.2 The area of responsibility of the designated Volcanic Ash Advisory Centre (VAAC) Toulouse and the MWOs and ACCs to which the advisory information should be sent by the VAAC are contained in FASID Table MET 3B. The areas of responsibility of the designated VAACs are shown on FASID Chart MET 3.

4.3 FASID Table MET 3C sets out the selected State volcano observatories in the MID Region designated for direct notification of significant pre-eruption volcanic activity and/or volcanic ash in the atmosphere and the VAACs, MWOs and ACCs to which the notification should be sent by the observatories.

Note 1. - Operational procedures to be used for the dissemination of information on volcanic eruptions and associated ash clouds in areas which could affect routes used by international flights and necessary pre-eruption arrangements as well as the list of operational contact points are provided in the document titled Handbook on the International Airways Volcano Watch (IAVW) - Operational ~~p~~Procedures and ~~list of operational c~~Contact ~~l~~List (Doc 9766).

Note 2.- Additional guidance regarding the IAVW is contained in the Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691).

5. WORLD AREA FORECAST SYSTEM (WAFS)

(FASID Table~~s~~ MET 5~~, MET 6 and; MET 7~~)

5.1 FASID Table MET 5 sets out the MID Region requirements for WAFS forecasts to be provided by WAFC London.

~~5.2 FASID Table MET 6 sets out the responsibility of the WAFCs London and Washington for the production of WAFS forecasts.~~

~~5.3 The world area forecast centre (WAFC) London provides dissemination of the WAFS forecasts and OPMET information for States in the MID Region by the Satellite Distribution System (SADIS). FASID Table MET 7 lists the authorized SADIS users in the MID Region and the location of the operational VSATs. The table is included in the FASID for information purposes and kept up-to-date by the ICAO Middle East Office, Cairo.~~

MET SG/2
Appendix 5C to the Report on Agenda Item 5

PROPOSAL FOR AMENDMENT TO

MID ANP VOLUME II (FASID) PART VI (MET)

TABLE MET 1A - METEOROLOGICAL SERVICE AT AERODROMES

EXPLANATION OF THE TABLE

Column

1. Name of the aerodrome.

2. ICAO location indicator of the aerodrome.

   ~~Designation of the aerodrome.~~

   ~~RS = international scheduled air transport, regular use~~
   ~~RNS = international non-scheduled air transport, regular use~~
   ~~RG = international general aviation, regular use~~
   ~~AS = international scheduled air transport, alternate use~~

3. ~~ICAO location indicator of the aerodrome.~~

   Designation of aerodrome:

   RG - international general aviation, regular use

   RS - international scheduled air transport, regular use

   RNS - international non-scheduled air transport, regular use

   AS - international scheduled air transport, alternate use

   ANS - international non-scheduled air transport, alternate use

4. Name of the meteorological office responsible for the provision of meteorological service at the aerodrome ~~concerned~~indicated in column 1.

5. ICAO location indicator of the responsible meteorological office.

6. Requirement for trend ~~-type~~ forecasts.

7. Requirement for aerodrome forecasts in TAF code

   T – Requirement for ~~18~~24-hour validity aerodrome forecasts in TAF code (~~18~~24H)

   X - Requirement for 30-hour validity aerodrome forecasts in TAF code (30H)~~.~~

8. ~~Requirement for 24-hour validity aerodrome forecasts in TAF code.~~ Availability of OPMET information

   F - Full : OPMET data as listed issued for the aerodrome all through the 24-hour period

   P - Partial : OPMET data as listed not issued for the aerodrome for the entire 24-hour period

   N - None : No OPMET data issued for the time being

Aerodrome where service is to be provided			Responsible MET office		Forecasts to be provided		Availability of OPMET
Name 1	ICAO Location Indicator 2	Use 3	Name 4	ICAO Location Indicator 5	TR 6	TAF 7	8
~~**AFGHANISTAN**~~							
~~KABUL INTERNATIONAL AIRPORT~~	~~OAKB~~	~~RS~~	~~KABUL INTERNATIONAL AIRPORT~~	~~OAKB~~	~~Y~~	~~T~~	~~F~~
~~KANDAHAR~~	~~OAKN~~	~~AS~~	~~KABUL INTERNATIONAL AIRPORT~~	~~OAKB~~		~~T~~	~~F~~
BAHRAIN							
BAHRAIN INTERNATIONAL	OBBI	RS	BAHRAIN INTERNATIONAL	OBBI	Y	~~T~~X	F
EGYPT							
ALEXANDRIA / INTL	HEAX	RS	CAIRO/INTL	HECA	Y	~~T~~X	F
ALMAZA AFB/MIL	HEAZ	~~ANS~~ RNS	CAIRO/INTL	HECA		X	F
ASWAN / INTL	HESN	RS	CAIRO/INTL	HECA	Y	~~T~~X	F
ASYUT/INTL	HEAT	AS	CAIRO/INTL	HECA		X	F
~~BORG EL ARAB/INTL~~	~~HEBA~~	~~RS~~					
CAIRO/INTL	HECA	RS	CAIRO/INTL	HECA	Y	~~T~~X	F
~~EL ARISH/INTL~~	~~HEAR~~	~~AS~~					
HURGHADA / INTL	HEGN	RS	CAIRO/INTL	HECA	Y	~~T~~X	F
LUXOR / INTL	HELX	RS	CAIRO/INTL	HECA	Y	~~T~~X	F
MARSA ALAM/INTL	HEMA	~~RNS~~ RS	CAIRO/INTL	HECA		~~T~~X	F
~~PORT SAID~~	~~HEPS~~	~~AS~~					
SHARK EL OWEINAT	HEOW	AS	CAIRO/INTL	HECA		X	F
SHARM EL SHEIKH / INTL	HESH	RS	CAIRO/INTL	HECA		~~T~~X	F
ST.CATHERINE / INTL	HESC	~~RS~~AS	CAIRO/INTL	HECA		~~T~~X	F
TABA / INTL	HETB	~~AS~~RS	CAIRO/INTL	HECA		~~T~~X	F
IRAN (ISLAMIC REPUBLIC OF)							
BANDAR ABBASS/INTL	OIKB	RS	TEHRAN/MEHRABAD INTL	OIII		T	F
ESFAHAN / SHAHID BEHESHTI INTL	OIFM	RS	TEHRAN/MEHRABAD INTL	OIII		~~T~~X	F
MASHHAD/SHAHID HASHEMI NEJAD INTL	OIMM	RS	TEHRAN/MEHRABAD INTL	OIII		T	F
SHIRAZ/SHAHID DASTGHAIB INTL	OISS	RS	SHIRAZ/SHAHID DASTGHAIB INTL	OISS	Y	~~T~~X	F
TABRIZ/INTL	OITT	RNS	TABRIZ/INTL	OITT		~~T~~X	F
TEHRAN/IMAM KHOMAINI INTL	OIIE	RS	TEHRAN/MEHRABAD INTL	OIII	Y	~~T~~X	F
TEHRAN/MEHRABAD INTL	OIII	RS	TEHRAN/MEHRABAD INTL	OIII	Y	T	F
ZAHEDAN/INTL	OIZH	RS	TEHRAN/MEHRABAD INTL	OIII		T	F
IRAQ							
BAGHDAD INTERNATIONAL AIRPORT	ORBI	RS	BAGHDAD INTERNATIONAL AIRPORT	ORBI	Y	T	F
BASRAH INTL AIRPORT	ORMM	RS	BAGHDAD INTERNATIONAL AIRPORT	ORBI	Y	T	F
ERBIL INTL AIRPORT	ORER	RS					F

Aerodrome where service is to be provided			Responsible MET office		Forecasts to be provided		Availability of OPMET
Name 1	ICAO Location Indicator 2	Use 3	Name 4	ICAO Location Indicator 5	TR 6	TAF 7	8
SULAYMANIYAH INTERNATIONAL AIRPORT	ORSU	RS					F
ISRAEL							
EILAT/J. HOZMAN AIRPORT	LLET	RNS	TEL-AVIV/BEN GURION AIRPORT	LLBG			F
HAIFA/U. MICHAELI AIRPORT	LLHA	RNS					F
OVDA AIRPORT	LLOV	RNS	TEL-AVIV/BEN GURION AIRPORT	LLBG	Y		F
TEL-AVIV/BEN GURION AIRPORT	LLBG	~~RS~~				T	F
TEL-AVIV/SDE-DOV AIRPORT	LLSD	~~RNS~~					F
~~JERUSALEM/JERUSALEM~~	~~OJJR~~	~~RS~~					
JORDAN							
AMMAN/MARKA	OJAM	AS	AMMAN/MARKA	OJAM	Y	T	F
AMMAN/QUEEN ALIA	OJAI	RS	AMMAN/MARKA	OJAM	Y	~~T~~X	F
AQABA/KING HUSSEIN INTERNATIONAL AIRPORT	OJAQ	RNS	AMMAN/MARKA	OJAM			F
JERUSALEM/JERUSALEM	OJJR	RS	AMMAN/MARKA	OJAM			N
KUWAIT							
KUWAIT/INTL AIRPORT	OKBK	RS	KUWAIT/INTL AIRPORT	OKBK	Y	~~T~~X	F
LEBANON							
BEIRUT/BEIRUT INTL	OLBA	RS	BEIRUT/BEIRUT INTL	OLBA	Y	~~T~~X	F
OMAN							
MUSCAT/SEEB INTL.	OOMS	RS	MUSCAT/SEEB INTL.	OOMS	Y	~~T~~X	F
SALALAH	OOSA	AS	SALALAH	OOSA		X	F
QATAR							
DOHA INTERNATIONAL	OTBD	RS	DOHA INTERNATIONAL	OTBD	Y	~~T~~X	F
SAUDI ARABIA							
DAMMAM/KING FAHD INTERNATIONAL	OEDF	RS				~~T~~X	F
JEDDAH/KING ABDULAZIZ INTL	OEJN	RS	JEDDAH/KING ABDULAZIZ INTL	OEJN	Y	~~T~~X	F
MADINAH/PRINCE MOHAMMAD BIN ABDULAZIZ	OEMA	RS	JEDDAH/KING ABDULAZIZ INTL	OEJN	Y	T	F
RIYADH/KING KHALED INTL	OERK	RS	JEDDAH/KING ABDULAZIZ INTL	OEJN	Y	~~T~~X	F
SYRIAN ARAB REPUBLIC							
ALEPPO/INTL	OSAP	RS	DAMASCUS/INTL	OSDI		T	F
BASSEL AL-ASSAD/INTL.	OSLK	RS	DAMASCUS/INTL	OSDI		T	F
LATTAKIA DAMASCUS/INTL	OSDI	RS	DAMASCUS/INTL	OSDI	Y	~~T~~X	F
UNITED ARAB EMIRATES							
ABU DHABI INTERNATIONAL	OMAA	RS	ABU DHABI INTERNATIONAL	OMAA	Y	~~T~~X	F
AL AIN	OMAL	RS	ABU DHABI INTERNATIONAL	OMAA		~~T~~X	F
DUBAI INTERNATIONAL	OMDB	RS	DUBAI INTERNATIONAL	OMDB	Y	~~T~~X	F
FUJAIRAH INTERNATIONAL	OMFJ	RS	DUBAI INTERNATIONAL	OMDB		~~T~~X	F
JEBEL ALI INTERNATIONAL	OMJA	RS					

Aerodrome where service is to be provided			Responsible MET office		Forecasts to be provided		Availability of OPMET
Name 1	ICAO Location Indicator 2	Use 3	Name 4	ICAO Location Indicator 5	TR 6	TAF 7	8
RAS AL KHAIMAH INTERNATIONAL	OMRK	RS	DUBAI INTERNATIONAL	OMDB		T	F
SHARJAH INTERNATIONAL	OMSJ	RS	DUBAI INTERNATIONAL	OMDB		T	F
YEMEN							
ADEN/INTL	OYAA	RS	SANAA/INTL	OYSN	Y	~~T~~X	F
HODEIDAH	OYHD	RS	SANAA/INTL	OYSN		T	F
MUKALLA/INTL	OYRN	RS	SANAA/INTL	OYSN		T	F
SANAA/INTL	OYSN	RS	SANAA/INTL	OYSN		T	F
TAIZ/INTL	OYTZ	RS	SANAA/INTL	OYSN		T	F

REPORT ON AGENDA ITEM 6: IDENTIFICATION, ASSESSMENT AND REPORTING OF MET DEFICIENCIES

6.1 The meeting noted that the identification and addressing of specific deficiencies in the air navigation field is part of the Terms of Reference (ToR) of the MIDANPIRG. And, in particular, that Task No. 2 of the MET SG ToR is to "*review and identify deficiencies that prevent the implementation of provision of MET service in the MID Region; and provide assistance for their correction*".

6.2 The meeting recalled that at its last meeting it had considered MIDANPIRG discussions related to deficiencies, and in particular MIDANPIRG Conclusion 10/77 which detailed the steps States in the MID Region should adopt to identify and eliminate deficiencies with assistance from ICAO.

6.3 The meeting noted that the MIDANPIRG Air Navigation Deficiency Database[1](MANDD) recorded deficiencies against two States of the MID Region – namely Iraq and Yemen.

6.4 With regards to Iraq, the meeting recalled that the OPMET exchange monitoring conducted in 2008 had identified the lack of OPMET information on the AFTN circuits from Iraq. The meeting was informed that the Inter-Regional OPMET Gateway (Vienna) and SADIS Provider State had, in October 2009, confirmed that the situation was unchanged. Accordingly, State Letter (reference AN 10/11 – 09/351) was sent to Iraq in November 2009 to expedite a resolution by the end of 2009. The meeting was informed that Iraq was expecting to install communication links with centres in other States in the MID Region to facilitate the international exchange of Iraqi OPMET; however, that full and satisfactory resolution may not be achieved in the very near future. The meeting agreed that the deficiency recorded against Iraq should remain, and further assistance would be provided as appropriate by the Regional Office.

6.5 With regards to Yemen, the meeting recalled that Yemen had not replaced its SADIS first-generation (SADIS 1G) VSAT system with a SADIS second-generation (SADIS 2G) VSAT system, and was not using the alternative SADIS FTP service, following the cessation of the SADIS 1G service in January 2009. This resulted in Yemen having no access to the WAFS forecasts and global OPMET data broadcast by SADIS, and a deficiency was recorded in the MANDD accordingly (MIDANPIRG/11 report refers).

6.6 The meeting was pleased to learn that Yemen had since procured two SADIS 2G VSAT systems during the first quarter of 2009 – one at the Civil Aviation Authority at Sana'a Airport and the other on the premises of the National MET Service in Sana'a. Therefore, the deficiency recorded against Yemen in the database could now be closed in view of the availability of access to the WAFS forecasts and global OPMET data. The meeting noted that the MANDD would be updated accordingly.

6.7 A meeting noted that a deficiency recorded against a third State (Afghanistan) related

[1] http://www.cairo.icao.int (Registration required)

to the non-provision of OPMET data to international exchange (as identified at MET SG/1 and MIDANPIRG/11) had since been deleted since Afghanistan was now a State of the APAC Region. In addition, based on evidence from the SADIS Provider State in November 2009, Afghanistan OPMET for OAKB and OAKN was now available for international exchange and appeared on the SADIS broadcast as routine. Therefore, the deficiency was closed and there was no need to reflect it in the deficiency database of the APAC Air Navigation Planning and Implementation Regional Group (APANPIRG).

6.8 As noted under Agenda Item 4, the meeting had agreed that the Islamic Republic of Iran should be added to the MANDD in order to expedite the international exchange of 30 hour TAF for OIFM, OISS, and OITT, in accordance with the user requirement and as shown in FASID Table MET 1A of the MID Air Navigation Plan. The Secretariat outlined that the MANDD would be updated in this regard.

REPORT ON AGENDA ITEM 7: INSTITUTIONAL ISSUES RELATED TO MET

7.1 The meeting discussed issues related to the organization of the meteorological services for international air navigation in the States of the MID Region.

Designation of meteorological authorities and provision of meteorological services

7.2 The meeting recalled discussions at its last meeting related to the designation of meteorological authorities, and noted that it had been common practice for the national meteorological service (NMS) to be the designated meteorological authority (MA), and at the same time the meteorological service provider (MSP). In some States, the MA and MSP were separate entities, and the trend was towards separating the regulatory functions from the service provision.

7.3 The meeting noted that MIDANPIRG/11 had formulated Conclusion 11/83, inviting the MID Regional Office to conduct a survey on the status of implementation of the meteorological services and facilities in the MID Region, including up-to-date information on the designated MAs and MSPs through a comprehensive questionnaire.

7.4 The meeting acknowledged that it had not been possible to conduct the regional survey in time for MET SG/2; but that a provisional questionnaire had been prepared for the consideration of the meeting.

7.5 WMO fully supported the identification of designated MAs and MSPs, since it can make it very difficult to assist States if the information is not available or up to date.

7.6 Having reviewed the questionnaire, presented at **Appendix 7A** to the Report on Agenda Item 7, the meeting agreed that it should be used at the basis for the conducting a regional survey of States in the MID Region at least every 18 months, in keeping with the schedule of MET SG meetings. Accordingly, the meeting agreed to the following Draft Conclusion which was proposed to replace and supersede MIDANPIRG Conclusion 11/83:

DRAFT CONCLUSION 2/11 – REGIONAL SURVEY ON THE IMPLEMENTATION OF MET SERVICES AND FACILITIES

*That, the ICAO MID Regional Office utilise the questionnaire presented at **Appendix 7A** to the Report on Agenda Item 7 as the basis of a regional survey on the implementation of MET services and facilities in the MID Region in 2010, and at least every 18 months thereafter.*

Quality assurance

7.7 The meeting recalled that in relation to the ICAO requirements for the establishment of a Safety Management System (SMS), the establishment of Quality Management System (QMS) for the provision of meteorological service for international air navigation was to be "upgraded" from a Recommended Practice to a Standard as part of Amendment 75 to Annex 3.

7.8 In order to raise the awareness of MAs and MSPs on quality assurance matters, and to foster the implementation of QMS for the provision of MET service for international air navigation, the meeting recalled MIDANPIRG/11 had formulated Conclusion 11/84 inviting ICAO, in coordination with WMO, to organise a training event on the QMS for MET in the MID Region in 2009.

7.9 The meeting was pleased to note that a two-day QMS Seminar for MET had been held at the MID Regional Office (13 to 14 December 2009), and acknowledged that the participants had expressed their appreciation to ICAO for organizing this seminar, to WMO for their support, and to Bahrain for sharing their experience on implementation of QMS for MET. Accordingly, the follow-up action on MIDANPIRG/11 Conclusion 11/83 part b) was considered complete.

7.10 The meeting reviewed the outcomes of the QMS for MET seminar, and noted that six key recommendations arose as contained in **Appendix 7B** to the Report on Agenda Item 7. The meeting agreed to the following Draft Conclusion which was proposed to replace and supersede MIDANPIRG/11 Conclusion 11/83 part a), and to ensure that the momentum gained from such an event was sustained:

DRAFT CONCLUSION 2/12 – FACILITATING THE IMPLEMENTATION OF QMS FOR MET IN THE MID REGION

*That, MID States that have not yet implemented a Quality Management System (QMS) for meteorological service to international air navigation, be invited to take necessary action to expedite the implementation of QMS in accordance with Annex 3 provisions, taking into consideration the key recommendations at **Appendix 7B** to the Report on Agenda Item 7.*

7.11 The meeting discussed whether it was necessary for the quality manager to be an expert in MET. The meeting acknowledged that the quality manager did not need to be an expert in MET, but would be expected to become an expert in QMS – in particular the ISO9000-series of requirements.

Cost recovery for the provision of meteorological services

7.12 The meeting recalled that at its last meeting it had briefly discussed issues related to the cost recovery for the provision of meteorological services by States. The last meeting had noted that such issues were very complex and may require non-technical expertise; but that such issues could be raised at MET SG meetings if they were considered of importance for the quality and sustainability of the provision of meteorological service for international air navigation. Members had been strongly encouraged to work closely with their respective (State) authorities on this issue and to share experiences with other members of the MET SG.

7.13 The meeting noted that ICAO Doc 9161 – *Manual on Service Economics* – provided a necessary outline of Article 15 of the Convention on International Civil Aviation (Doc 7300) in respect of airport and air navigation service charges. And, in particular, that Chapter 6 paragraphs 6.16 to 6.18 of Doc 9161 provides specific detail on meteorological service for air navigation.

7.14 The meeting was strongly advised, if not already done so, to review the guidance contained in Doc 9161 in order to facilitate the implementation of cost recovery for meteorological service provision at a State level.

7.15 WMO expressed that the implementation of a cost recovery mechanism was not always undertaken by States in accordance with the guidelines contained in ICAO Doc 9161 and its conjoint publication WMO No. 904. The meeting acknowledged that the implementation of a cost recovery mechanism would encourage an analytical approach to costs, encompassing all elements of Doc 9161 and WMO No. 904, and that the implementation of QMS for MET results in more efficient and streamlined operations. Improvements in quality, and fulfilment of user requirements, can be demonstrated through a quality managed system, and costs can be determined and agreed in a fair and transparent manner.

MET SG/2
Appendix 7A to the Report on Agenda Item 7

REGIONAL SURVEY ON THE IMPLEMENTATION OF METEOROLOGICAL SERVICES AND FACILITIES

A. Background

In response to Middle East Planning and Implementation Regional Group (MIDANPIRG) Conclusion 11/83, the MID Regional Office has been tasked to conduct a regional survey on the status of implementation of the meteorological services and facilities in the MID Region, including up-to-date information on the designated meteorological authorities and authorised meteorological service provider(s).

This regional survey is designed to collect information that can be used as a benchmark for measuring the success of the activities conducted by the Meteorological Sub-Group (MET SG) of the MIDANPIRG in accordance with its work programme. Such a survey will also help in the identification of MET deficiencies.

In order to ensure the relative currency of the information, the MID Regional Office expects to conduct the survey at least once every 18 months, in keeping with the schedule of MET SG meetings.

Please complete sections B1 to B3 in full. At section B4, please answer each question in turn by placing an 'X' in the appropriate box. If necessary, please provide additional remarks in the 'Comments' column.

B. Regional Survey

1. Respondent

STATE:	
Organisation:	
Name:	
Position:	
Contact address:	
Contact telephone:	
Contact fax:	
Contact email:	

2. Meteorological Authority

Organisation:	
Focal point of contact:	
Contact address:	
Contact telephone:	
Contact fax:	
Contact email:	

3. Meteorological Service Provider

Organisation:	
Focal point of contact:	
Contact address:	
Contact telephone:	
Contact fax:	
Contact email:	

4. Questionnaire (over page)

Please place an 'X' in the appropriate column. Only one answer is permissible per question. If necessary, please provide any relevant comments in the final column.

QUESTION NUMBER	QUESTION	ANSWER			COMMENTS
		YES	NO	NOT APPLICABLE OR UNSURE	
Meteorological Services - Oversight					
1.	Is the MET authority of the State also the provider of MET services?				
2.	If not, has the MET authority of the State delegated the provision of the service to a non-governmental agency or another State?				
3.	Does the State ensure that an agreement has been established between ATS authorities and MET authorities for the provision of MET services?				
4.	Does the State ensure that the MET authority employs a sufficient number of qualified MET staff in the inspectorate?				
5.	Are all the functions and responsibilities of the MET inspectorate clearly defined?				
6.	Have job descriptions been developed for MET inspectorate staff?				
7.	Has the State established minimum qualifications and experience requirements for MET inspectorate personnel?				
8.	Has the State developed a formal training programme detailing what type of training should be provided to its MET inspectorate staff?				
9.	Does the MET authority develop a periodic training plan detailing and prioritizing what type of training will be provided during the established period?				
10.	Is the training programme appropriately implemented for MET inspectorate staff?				
11.	Are MET inspectorate staff required to satisfactorily				

QUESTION NUMBER	QUESTION	ANSWER			COMMENTS
		YES	NO	NOT APPLICABLE OR UNSURE	
	complete on-the-job training prior to being assigned tasks and responsibilities?				
12.	Does the MET inspectorate have a system for the maintenance of training records for its technical staff?				
13.	Does the State effectively conduct safety oversight over the entity providing the MET service?				
14.	Has the State established a mechanism/system with time frame for elimination of deficiencies identified by MET inspectorate staff?				
Meteorological Services - Operational					
15.	Does the State ensure that the entity providing the MET service has established a properly organized quality system?				
16.	Does the State ensure that the entity providing the MET service has developed job descriptions for its technical staff?				
17.	Does the State ensure that the entity providing the MET service has established a training programme for its technical staff?				
18.	Does the State ensure that the entity providing the MET service maintains training records for its technical staff?				
19.	Does the State ensure that the wind sensors for local routine reports are appropriately sited to give the best practicable indication of conditions along the runway/touchdown zone?				
20.	Do MET Watch Offices issue SIGMET messages, including those for volcanic ash and tropical				

QUESTION NUMBER	QUESTION	ANSWER			COMMENTS
		YES	NO	NOT APPLICABLE OR UNSURE	
	cyclones?				
21.	Does the State ensure that provisions related to special air-reports, including those for volcanic ash, are being adhered to concerning their relay to the relevant MET offices?				
22.	Does the State ensure that MET offices issue wind shear warnings for aerodromes where wind shear is considered as a safety factor?				
23.	Does the State ensure that the MET authority, in coordination with the ATS authority, has promulgated regulatory criteria for special observations?				
24.	Does the State ensure that the MET offices issue local routine and special reports?				
25.	Does the State ensure that the MET offices issue METAR, SPECI and TAF?				
26.	Are MET offices readily accessible to provide briefing, consultation and flight documentation to flight crew members and/or other flight operations personnel?				
27.	Does the State ensure that the following reports are issued in accordance with the format in Annex 3? 1. Local routine and local special reports 2. METAR and SPECI 3. TAF 4. SIGMET and AIRMET 5. Aerodrome warning and wind shear warning				

MET SG/2
Appendix 7B to the Report on Agenda Item 7

RECOMMENDATIONS FROM THE QMS FOR MET SEMINAR

In order to expedite the implementation of a Quality Management System for Meteorological Service to International Air Navigation, the seminar recommends that MID States that have not already done so should:

1. Engender a top level management commitment by:
    a. fostering a quality culture within the organization concerned;
    b. providing sufficient financial resources; and
    c. providing appropriate human resources.

2. Appoint a Quality Manager/Team.

3. Conduct a gap analysis and ensure that necessary technical documentation is available and maintained, and create initial QMS documentation using the examples provided.

4. Engage a consultant and ensure that adequate internal training and awareness is provided to all staff concerned.

5. Identify internal and external customers, and take necessary measures to determine, satisfy and continuously monitor their requirements.

6. Share experience and exchange information related to implementation of QMS for MET service.

REPORT ON AGENDA ITEM 8: FUTURE WORK PROGRAMME

Update to the Terms of Reference and the Work Programme

8.1 The meeting recalled that at its last meeting, it had formulated draft Decision 1/11 adopting revised Terms of Reference (ToR) and Work Programme of the MET Sub-Group; and that MIDANPIRG/11 had incorporated these changes into the Fourth Edition of the MIDANPIRG Procedural Handbook.

8.2 The meeting conducted a further review of the ToR and agreed that no further changes were necessary at this time.

8.3 With regards to the future work programme, the meeting determined updates thereto, and accordingly agreed to the following Draft Decision:

DRAFT DECISION 2/13 – UPDATE TO THE TERMS OF REFERENCE AND WORK PROGRAMME OF THE MET SUB-GROUP OF THE MIDANPIRG

*That, the updated Terms of Reference and Work Programme of the Meteorology Sub-Group (MET SG) of the MIDANPIRG, at **Appendix 8A** to the Report on Agenda Item 8, be adopted and forwarded to MIDANPIRG/12 for endorsement and inclusion in the MIDANPIRG Procedural Handbook.*

Date and place of MET SG/3 meeting

8.4 The meeting noted that its meetings were held approximately once every 18 months. Accordingly, the meeting agreed that its third meeting (MET SG/3) should be held at the MID Regional Office, Cairo, during the second quarter of 2011. The exact dates would be coordinated with the Chairman of the MET SG, as appropriate.

Follow-up action plan

8.5 In accordance with the ICAO Business Plan, and the requirements for performance monitoring, the meeting developed a follow-up action plan as presented at **Appendix 8B** to the Report on Agenda Item 8.

MET SG/2
Appendix 8A to the Report on Agenda Item 8

METEOROLOGY SUB-GROUP OF MIDANPIRG (MET SG)

...

2. Work Programme

...

2.2 **Tasks**

Ref	Tasks	Priority	Target Completion Date
1	Monitor implementation of WAFS and SADIS by the MID States and provide guidance for timely implementation of changes to the systems that affect end users	A	(1)
2	Foster implementation of IAVW: • Liaise with VAAC Toulouse • Organise VA SIGMET tests • Work towards enhancing the awarenes of all IAVW stakeholders	A	(1)
3	Foster implementation of TC advisories and warnings • Liaise with TCAC New Delhi • Organize TC SIGMET Tests	A	(1)
4	Enhance the availability and quality of SIGMET • Organize WS SIGMET Tests	A	(1)
5	Monitor the OPMET exchange and improve the availability and reliability of OPMET information from the MID Region • Ensure establishment of proper Regional OPMET Data Bank • Conduct regular monitoring of OPMET data • Provide feed-back to States on observed deficiencies	A	~~2010~~(1)
6	Maintain the MET part of the MID ANP • Ensure that FASID Tables are up-to-date	A	~~2009~~(1)
7	Review the need to ~~D~~develop regional guidance on the provision of SIGWX forecasts for Low-level flights	A	~~2010~~2011
~~8~~	Facilitate the implemenation of QMS for MET in the MID States • ~~Organize a QMS Seminar/workshop~~	~~A~~	~~2011~~2012 ~~2009/2010~~

(1) Continuous task

MET SG/2
Appendix 8B to the Report on Agenda Item 8

MET SUB-GROUP
DRAFT FOLLOW-UP ACTION PLAN

DRAFT CONC/DEC NO. --- (STRATEGIC OBJECTIVE)	TITLE OF CONCLUSION/ DECISION	TEXT OF CONCLUSION/DECISION	FOLLOW-UP ACTION	TO BE INITIATED BY	DELIVERABLE	TARGET DATE
Draft Conc. 2/1 (D)	TRAINING FOR THE NEW WAFS FORECASTS	That, in order to facilitate the implementation of the new WAFS forecasts by the WAFS users in the MID States, WAFC Provider States be invited to organize in 2011 or 2012 a training seminar for the MID Region on the use of the new gridded WAFS forecasts for convective clouds, icing and turbulence.	Follow up with Secretary of the WAFSOPSG	WAFC Provider States	Training seminar	2011 or 2012
Draft Conc. 2/2 (D)	SADIS STRATEGIC ASSESSMENT TABLES	That, the MID SADIS Strategic Assessment Tables, at **Appendix 4.1B** to the Report on Agenda Item 4, be adopted and forwarded to the SADISOPSG for planning the future SADIS bandwidth requirements by 31 March 2010.	Forward the MID SADIS Strategic Assessment Tables to the Secretary of SADIOSPSG	SADISOPSG	MID SADIS Strategic Assessment Tables	Mar. 2010
Draft Conc. 2/3 (A/D)	FINALIZED SIGMET TEST PROCEDURES AND CONDUCTING OF REGULAR SIGMET TESTS IN THE MID REGION	That, a) the MID SIGMET Test Procedures, at **Appendix 4.2A** to the Report on Agenda Item 4, be adopted and forwarded to States for implementation; b) MID States be urged to participate in the conducting of regular WS- and WV-SIGMET tests in 2010 onwards and nominate SIGMET Focal Points if they have not already done so; and c) the results of the SIGMET tests be reported to each MET Sub-Group meeting, with feedback provided on any identified deficiencies provided to States	Distribute procedures to States States to implement and nominate focal points Organize WS- and WV-SIGMET tests Report results to MET SG	ICAO States MID OPMET BMG MET Sub-Group	Implementation of MID SIGMET Test Procedures State letter Nomination of focal points WS- and WV-SIGMET tests Working paper analysis of results	Jan. 2010 Feb. 2010 Apr. 2010 Sept. 2010 Feb. 2011

DRAFT CONC/DEC NO. --- (STRATEGIC OBJECTIVE)	TITLE OF CONCLUSION/ DECISION	TEXT OF CONCLUSION/DECISION	FOLLOW-UP ACTION	TO BE INITIATED BY	DELIVERABLE	TARGET DATE
		concerned with proposed corrective actions.			and feedback	
Draft Conc. 2/4 (A/D)	INITIATING TROPICAL CYCLONE SIGMET TESTS IN THE MID REGION	That, with a view to initiating tropical cyclone SIGMET tests in the MID Region, the ICAO MID Regional Office carry out the necessary coordination with Tropical Cyclone Advisory Centre New Delhi, India, to secure their cooperation in the regular MID SIGMET tests (expected from September 2010 onwards).	Follow up with TCAC New Delhi	ICAO	State Letter Initiate WC-SIGMET tests	Apr. 2010 Late-2010 or 2011
Draft Conc. 2/5 (A/D)	IMPROVING THE TROPICAL CYCLONE ADVISORIES AND WARNINGS FOR AVIATION	That, in order to improve the quality and timeliness of the Tropical Cyclone Advisories and SIGMETs, MID States having the capability to forecast tropical cyclones tracks in the Arabian Sea and related hazardous aviation weather, be encouraged to establish close collaboration with the Tropical Cyclone Advisory Centre (TCAC) New Delhi, India, and provide feedback to the TCAC in case of identified forecast errors or other operational problems.	Follow-up with States concerned	ICAO States concerned	State letter	Feb. 2010
Draft Conc. 2/6 (A/D)	SIGMET GUIDE FOR THE MID REGION	That, the ICAO MID Regional Office, circulate the working draft of the MID SIGMET Guide, as presented at **Appendix 4.2C** to the Report on Agenda Item 4, to MID States in order to: a) obtain the necessary WS-, WV- and WC-SIGMET headers for Appendix B of the document; and b) finalize the document in time for the MET	Follow-up with the States Finalize MID SIGMET Guide	ICAO States MET SG	State Letter Finalized MID SIGMET Guide	Apr. 2010 2011

DRAFT CONC/DEC NO. --- (STRATEGIC OBJECTIVE)	TITLE OF CONCLUSION/ DECISION	TEXT OF CONCLUSION/DECISION	FOLLOW-UP ACTION	TO BE INITIATED BY	DELIVERABLE	TARGET DATE
		SG/3 meeting.				
Draft Conc. 2/7 (A/D)	IMPROVING OPMET DATA IN THE MID REGION	That, in order to improve the quality and availability of OPMET data in the MID Region, MID States be urged, if they have not already done so, to: a) fully implement ICAO Annex 3 provisions relating to OPMET data, including TAF; b) investigate the reasons for the absence of SIGMET messages and reconsider their procedures for SIGMET generation and transmission; c) consider the need for establishing local quality control and format verification procedures for OPMET data; and d) undertake all efforts to reduce the errors in OPMET data significantly, the aim of which should be that less than 5% of all issued OPMET data being incorrect.	Follow-up with the States concerned Fully implement Annex 3 provisions Identify reasons for absence of SIGMET Establish quality control measures	ICAO States	State Letter Improved quality and availability of OPMET data	Feb. 2010 Oct. 2010
Draft Conc. 2/8 (D)	HARMONIZATION OF PROCEDURES FOR OPMET DATA ISSUANCE	That, in order to improve the timeliness and regularity of OPMET data (METAR and TAF) for AOP aerodromes in the MID Region: a) the ICAO MID Regional Office develop guidance material related to the issuance of OPMET data; and b) MID States be urged to implement common procedures in accordance with this guidance.	Develop regional guidance Urge States to implement common procedures	ICAO States	Guidance material State Letter Improved timeliness and regularity of OPMET	Feb. 2010 Apr. 2010 Sept. 2010
Draft Conc. 2/9	PROPOSAL FOR AMENDMENT TO	That, the ICAO MID Regional Office, undertake the necessary action to:	Process proposal for amendment	ICAO	State Letter proposal for	Jan. 2010

DRAFT CONC/DEC NO. --- (STRATEGIC OBJECTIVE)	TITLE OF CONCLUSION/ DECISION	TEXT OF CONCLUSION/DECISION	FOLLOW-UP ACTION	TO BE INITIATED BY	DELIVERABLE	TARGET DATE
(A/D)	PART VI (MET) OF THE MID AIR NAVIGATION PLAN VOLUME I AND VOLUME II	a) Amend Part VI (MET) of the MID ANP Volume I (Basic ANP) and Volume II (FASID) as given in **Appendix 5A** and **Appendix 5B** to the Report on Agenda Item 5 respectively, to align regional procedures for the International Airways Volcano Watch (IAVW) and World Area Forecast System (WAFS) with global provisions; and b) Amend Table MET 1A of Part VI (MET) of the MID ANP Volume II (FASID) as given in **Appendix 5C** to the Report on Agenda Item 5 to reflect regional requirements for 24- or 30-hour Aerodrome Forecasts (TAF) for aerodromes within the MID Region.			amendment	
Draft Dec. 2/10 (A/D)	REVIEW OF PART VI (MET) OF THE MID AIR NAVIGATION PLAN VOLUME II (FASID)	That, in time for MET SG/3, the ICAO Regional Office review and propose amendments, as necessary, to: a) FASID Tables MET 1B, 2B, 3A, 3B, 5, 6 and 7; and b) FASID Tables MET 2A, 2C, 4A and 4B related to OPMET exchange in coordination with the MID OPMET Bulletin Management Group.	Review FASID MET Tables	ICAO OPMET BMG MET SG	Proposal(s) for amendment	2011
Draft Conc.2/11 (D)	REGIONAL SURVEY ON THE IMPLEMENTATION OF MET SERVICES AND FACILITIES	That, the ICAO MID Regional Office utilise the questionnaire presented at **Appendix 7A** to the Report on Agenda Item 7 as the basis of a regional survey on the implementation of MET services and facilities in the MID Region in 2010, and at least every 18 months thereafter.	Follow up with States concerned	ICAO	Regional survey	Jan. 2010

DRAFT CONC/DEC NO. --- (STRATEGIC OBJECTIVE)	TITLE OF CONCLUSION/ DECISION	TEXT OF CONCLUSION/DECISION	FOLLOW-UP ACTION	TO BE INITIATED BY	DELIVERABLE	TARGET DATE
Draft Conc.2/12 (A/D)	FACILITATING THE IMPLEMENTATION OF QMS FOR MET IN THE MID REGION	That, MID States that have not yet implemented a Quality Management System (QMS) for meteorological service to international air navigation, be invited to take necessary action to expedite the implementation of QMS in accordance with Annex 3 provisions, taking into consideration the key recommendations at **Appendix 7B** to the Report on Agenda Item 7.	Follow up with States concerned	ICAO States	State Letter Implementation of QMS for MET	Jan. 2010 Nov. 2012
Draft Dec. 2/13 (D)	UPDATE TO THE TERMS OF REFERENCE AND WORK PROGRAMME OF THE MET SUB-GROUP OF THE MIDANPIRG	That, the updated Terms of Reference and Work Programme of the Meteorology Sub-Group (MET SG) of the MIDANPIRG, at **Appendix 8A** to the Report on Agenda Item 8, be adopted and forwarded to MIDANPIRG/12 for endorsement and inclusion in the MIDANPIRG Procedural Handbook.	Approve revised work programme	MIDANPIRG	Approved work programme	Oct. 2010
Draft Conc.2/14 (D)	ACTIVATION AND PROPOSED MEETING OF THE MID OPMET BULLETIN MANAGEMENT GROUP	That, a) the MID OPMET Bulletin Management Group (BMG) be activated with the Terms of Reference at **Appendix 9A** to the Report on Agenda Item 9; b) the MID States participating in the OPMET BMG are urged to nominate appropriate experts on the group and inform the ICAO MID Regional Office accordingly; and c) the Rapporteur of the OPMET BMG, in coordination with the ICAO MID Regional Office, organize a meeting of the group immediately prior to, or concurrent with, MIDANPIRG/12.	Activate OPMET BMG Nomination of experts Organize meeting of the BMG	ICAO OPMET BMG Rapporteur	State Letter List of BMG experts Inaugural meeting	Jan. 2010 Apr. 2010 Oct. 2010

KEY TO ICAO STRATEGIC OBJECTIVES: A = SAFETY, D = EFFICIENCY

REPORT ON AGENDA ITEM 9: ANY OTHER BUSINESS

Impacts of aviation on the environment

9.1 Bahrain apprised the meeting of the impacts that aviation can have on the environment, and concluded that ICAO was the most appropriate body to propose and coordinate a global solution.

9.2 The meeting acknowledged that it was not in the purview of the MET SG nor the MIDANPIRG to address environmental matters directly, since these would take place at a global level; however, within the air traffic management arena of the MIDANPIRG, optimization of air traffic routes were aimed at reducing carbon emissions, and thus reducing the impacts of aviation on the environment.

9.3 In addition, the meeting acknowledged that global ICAO activities in the environmental field (such as aircraft noise and the impact of aircraft engine emissions) were being addressed through the Committee on Aviation Environmental Protection (CAEP) of the ICAO Council, which consists of Members and Observers from States, intergovernmental and non-governmental organisations representing aviation industry and environmental interests. The meeting was encouraged to visit the Environmental Unit[1] website of ICAO, where considerable information and literature on ICAO's efforts to minimise the impact of aviation on the environment was available.

9.4 The meeting was informed that ICAO has produced a video for the United Climate Change Conference 2009 – COP 15 (Copenhagen 7-18 December 2009) which is available online at: http://www.icao.int/newcentre and accessible also through the ICAO MID Regional Office website: www.icao.int/mid under Links.

Activation and proposed meeting of the MID OPMET BMG

9.5 The meeting noted that the necessary follow-up action related to MIDANPIRG Decision 11/82 (*Activation of the MID OPMET Bulletin Management Group*) had not been undertaken prior to MET SG/2, and agreed that this should be completed as a matter of priority.

9.6 In addition, the meeting considered it sensible that the OPMET BMG convene an inaugural meeting to discuss and progress the activities of the group as reflected in the Terms of Reference of the OPMET BMG[2]. Accordingly, the meeting agreed that the OPMET BMG should be invited to organize a one-day meeting immediately prior to, or concurrent with, MIDANPIRG/12, in coordination with the Regional Office. The meeting recommended that the OPMET BMG utilise the MID Forum[3] to progress their discussions in the meantime.

9.7 In view of the foregoing, the meeting agreed to the following Draft Conclusion to replace and supersede MIDANPIRG Decision 11/82:

[1] http://www.icao.int/env
[2] Appendix 5.6C to the Report of MIDANPIRG/11, reproduced at **Appendix 9A** to this Report.
[3] http://212.71.33.150/

DRAFT CONCLUSION 2/14 – ACTIVATION AND PROPOSED MEETING OF THE MID OPMET BULLETIN MANAGEMENT GROUP

That,

*a) the MID OPMET Bulletin Management Group (BMG) be activated with the Terms of Reference at **Appendix 9A** to the Report on Agenda Item 9;*

b) the MID States participating in the OPMET BMG are urged to nominate appropriate experts on the group and inform the ICAO MID Regional Office accordingly; and

c) the Rapporteur of the OPMET BMG, in coordination with the ICAO MID Regional Office, organize a meeting of the group immediately prior to, or concurrent with, MIDANPIRG/12.

Outstanding SADIS invoices

9.8 The Secretariat outlined that the tenth meeting of the SADIS Cost Recovery Administrative Group[4] (SCRAG/10), held 6 November 2009, had formulated Conclusion 10/2 inviting the ICAO Regional Offices to remind specific States with outstanding amounts in respect to the services received under the SADIS Agreement[5], that they should pay these amounts in order avoid having their SADIS service withdrawn.

9.9 Four SADIS receiving States in the MID Region were identified as not having settled their outstanding SADIS invoices for 2009, and in some cases years prior to 2009. Article XIII of the SADIS Agreement clearly states that *failure by a Party receiving the SADIS service to pay its share of the costs of providing the service (other than a Party exempted in accordance with Article IV) shall lead to the service to that Party being withdrawn at the end of the calendar year in which payment was due. The service shall not be re-instated until the Party concerned has fully settled its debt.*

9.10 Accordingly, State Letter reference AN10/2.2-09/393 was issued by the MID Regional Office on 09 December 2009 reminding the States concerned (Bahrain, Libyan Arab Jamahiriya, Kuwait and Jordan) of their obligations to the Articles of the SADIS Agreement (notably Articles XII and XIII), and urging them to settle outstanding debts in full in order to avoid having their SADIS service suspended early in 2010.

Update on GRIB2 dissemination trials on SADIS 2G

9.11 The SADIS Provider State updated the meeting on earlier discussions under Agenda Item 4.1 related to GRIB2 WAFS data dissemination trials on SADIS 2G. Recent testing on SADIS 2G had proved that a compressed GRIB2 data set of approximately 22MB in size (including wind, temperature and humidity data, and icing, turbulence and CB cloud trial forecasts) had taken in the region of 45 minutes to transmit in full across SADIS 2G. These tests had demonstrated that the SADIS Provider State (viz. WAFC London Provider State) was progressing in line with expectations and that further testing would be conducted in order to report formal findings to the SADISOPSG/15 (May 2010) and WAFSOPSG/6 (February 2011) meetings accordingly.

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[4] http://www.icao.int/icao/en/atb/jf/scrag/reports.htm
[5] http://www.icao.int/icao/en/atb/jf/scrag/agreement.pdf

MET SG/2
Appendix 9A to the Report on Agenda Item 9

TERMS OF REFERENCE OF THE MID OPMET BULLETIN MANAGEMENT GROUP (OPMET BMG)[1]

1. Terms of Reference

a) Review the OPMET exchange schemes in the MID Region and develop proposals for their optimization taking into account the current trends in the global OPMET exchange;

b) Develop monitoring and management procedures related to the ROBEX exchange and other exchanges of OPMET information;

c) Keep up-to-date the regional guidance material related to OPMET exchange;

d) Liaise with similar groups in the adjacent ICAO Regions in order to ensure harmonized and seamless OPMET exchange; and

e) The group will report to the MET Sub-Group of MIDANPIRG.

2. Work Programme

The work to be addressed by the MID OPMET BMG includes:

a) examine the existing requirements and any new requirements for the OPMET exchange in MID region and to assess the feasibility of satisfying these requirements, taking into account the availability of the data;

b) review the ROBEX scheme and other OPMET exchange schemes and prepare proposal for updating and optimizing of the schemes;

c) review and update the procedures for interregional exchange and for transmission of the regional OPMET data to SADIS;

d) review and amend the regional guidance materials on the OPMET exchange and include procedures for the exchange of all required OPMET message types: SA, SP, FC, FT, WS, WC, WV, FK, FV, UA;

e) develop procedures for monitoring and management of the OPMET information, based on similar procedures used in the EUR and APAC Regions; and

f) provide regular progress reports to MET SG meetings.

[1] Reproduced from Appendix 5.6C to the Report of MIDANPIRG/11

3. Composition

a) The OPMET/BMG is composed by experts from Egypt, Kuwait and Oman (Rapporteur). Bahrain, Saudi Arabia and UAE are also expected to participate in the activity of the Group; and

b) Experts from the EUR BMG, the VAAC Toulouse, APAC OPMET/M Task force and IATA are invited to participate in the work of the MID OPMET BMG.

4. Working arrangements

It is expected that most of the work of the group will be conducted via correspondence by fax, e-mail or telephone. The group should establish a network of OPMET focal points at all MID COM/MET centres dealing with OPMET data. When necessary, the Rapporteur, in coordination with the Regional Office, Cairo, will call teleconferences or meetings to discuss important issues.

MET SG/2
Attachment A to the Report

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