INTERNATIONAL CIVIL AVIATION ORGANIZATION

AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG)

REPORT OF THE FOURTH MEETING OF THE AFI OPMET MANAGEMENT TASK FORCE (AFI MTF/4)

(Pretoria, South Africa, 10 - 11 September 2012)

Prepared by the Secretary of AFI MTF

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PART 1 - HISTORY OF THE MEETING

1.1 Date and Site of the Meeting

1.1.1 The fourth meeting of the AFI OPMET Management Task Force (MTF/4) was held in Pretoria, South Africa at the Jemea Manor Guest House through the courtesy of the South African Weather Service. The meeting was held from 10 to 11 September 2012.

1.2 Officers and Secretariat

1.2.1 Ms. G.E. Khambule, Senior Manager, Aviation Weather Centre, South African Weather Service opened the meeting on behalf of the CEO of the South African Weather Service, Dr. Linda Makuleni who was not able to attend the opening ceremony due to prior commitments of equal importance.

1.2.2 In her opening remarks, Ms. Khambule expressed appreciation to the participants for attending the meeting and to their respective administrations for availing resources that enabled them to attend. She recalled that this was the second time the Task Force was meeting in South Africa in the last three years and noted that it reflected the confidence and honour the Task Force and ICAO in general bestowed upon South Africa.

1.2.3 Ms. Khambule reminded the meeting that the main objective of the OPMET Management Task Force (OPMET MTF) was to enhance operational meteorological (OPMET) information exchange in the AFI Region and adjacent regions by regularly reviewing the OPMET exchange scheme and developing proposals for their optimization. She underscored the importance of commitment of the Force to the exercise for realization of concrete results.

1.2.4 Mr. Vitalis Ahago, Regional Officer, Aeronautical Meteorology, ICAO Eastern and Southern African Office, Nairobi, Kenya, served as the Secretary assisted by Mr. Benoit Okossi, Regional Officer, Aeronautical Meteorology, ICAO Western and Central African Office, Dakar, Senegal.

1.3 Attendance

1.3.1 The meeting was attended by fourteen (12) participants from four (4) Member States.

1.3.2 The list of participants is at **Appendix A.**

1.4 Working Languages

1.4.1 The discussions were conducted in the English language only as per APIRG procedures concerning Task Force.

1.5 Agenda

1.5.1 The following Agenda was adopted:

Agenda Item 1: Election of Chairperson and vice Chairperson of the Task Force and adoption of the Agenda.

Agenda Item 2: Review of MTF/3 recommendations, MET/SG/10 and APIRG/18 Conclusions and Decisions.

Agenda Item 3: Provision of tropical cyclone and volcanic ash advisories for the AFI Region and of the corresponding SIGME by MWOs and Review of report on SIGMET Tests Conducted in November 2011.

Agenda Item 4: Review of regional guidance material on OPMET exchange.

Agenda Item 5: Future developments with regard to OPMET information.

Agenda Item 6: Terms of reference, work programme and composition of the AFI OPMET MTF.

Agenda Item 7: Any other business.

1.6 Documentation and working Language

1.6.1 The working language of the meeting as well as the documentation was in English as per APIRG procedures concerning task forces.

1.6.2 Nineteen (19) Working Papers and six (6) Information Papers were presented at the meeting. The list of the papers is included at **Appendix B** to this report.

1.7 Recommendations

1.7.1 The OPMET MTF recorded its actions in the form of recommendations and decisions, with the following significance:

- Decisions deal with matters of concern only to the OPMET MTF;
- Recommendations, when reviewed by the MET/SG, become Draft Conclusions for matters which in accordance with the APIRG Terms of Reference, merit the attention of States or on which further action will be initiated by ICAO in accordance with established procedures, or Draft Decisions, when approved by MET/SG, deal with matters of concern only to MET/SG.

PART II- REPORT ON THE AGENDA

Agenda Item 1: Election of Chairman and Vice-Chairman of the Subgroup

1.1 In accordance with the relevant provisions contained in the APIRG Procedural Handbook, the Sub-group elected its Chairperson and Vice-Chairperson. Mr. Gicheru Winstone Njuguna, Kenya, and Mrs. Mary Iso, Nigeria, were elected chairperson and Vice-Chairperson respectively.

Agenda Item 2: Review of the AFI OPMET MTF/3 Report

2.1 The rapporteur of the Task Force presented to the meeting a summary of the MTF/3 meeting report. In reviewing the list of Decisions and Recommendations contained in the report, the Task Force noted that Decision 3/10, on invitation of AFI RODBs to monitor SIGMET during the regular EUR SIGMET Tests, had not been implemented. It was further noted that failure to implement was due to the fact that the two RODBs had not been provided with information regarding the dates of the EUR SIGMET monitoring exercise. To ensure participation of the AFI RODBs in future monitoring exercises, the Task Force formulated the following Decision.

Decision 4/01 Participation of AFI RODBs to Regular EUR SIGMET Tests

That, ROC Toulouse notifies AFI RODBs on time for their participation to the Regular EUR SIGMET Tests

2.2 The meeting recalled Decision 18/01 of the APIRG/18 meeting, calling for a review and update of APIRG Conclusions and Decisions by APIRG Sub-Groups including the MET/SG. The meeting then reviewed the OPMET related Conclusions and Decisions of APIRG/13 to APIRG/17 as shown in **Appendix C** to this report.

2.3 The meeting also reviewed the OPMET related Decisions and Conclusions from MET/SG/10 and APIRG/18 as shown in the **Appendix D** to this report for the progress so far made on their implementation.

2.4 The Task Force was informed that in the APIRG/18 meeting, concern was expressed that the number of Conclusions and Decisions had become cumbersome to manage effectively. It was therefore necessary that a strategy be developed for their streamlining. In this regard, the Meeting agreed that the Sub-Groups should review all APIRG Conclusions and Decisions since APIRG/13 meeting, with the objective of identifying those with the following characteristics:

a) Those which have been implemented or become obsolete due to developments;
b) Those which have matured to be included in the work programme of APIRG and its subsidiary bodies as well as the Terms of Reference or Handbook of the Group;
c) Those which are adequately covered by other specific provisions of ICAO including SARPs, Assembly Resolutions and Regional requirements, to be deleted or re-formulated to complement such other ICAO provisions; and
d) Those which have since become redundant.

2.5 In relation to this, the Task Force formulated the following Decision:

Decision 4/02: Review of Previous OPMET Related APIRG Conclusions and Decisions

That, the reviewed list of OPMET related APIRG Decisions and Conclusions in Appendix C to this report, be submitted to the MET/SG/11 Meeting for further review.

Agenda Item 3: Provision of tropical cyclone and volcanic ash for the AFI Region and of the corresponding SIGMET by MWOs and Review of report on SIGMET Tests conducted in November 2011

3.1 The meeting recalled that ICAO Annex 3 provides that SIGMET information shall be issued by a meteorological watch office (MWO) and shall give a concise description in abbreviated plain language concerning and /or expected occurrence of specified en-route weather phenomena, which may affect the safety of aircraft operations, and of the development of those phenomena in time and space. It also provides the required technical specifications relating to the preparation and issuance of SIGMETs.

3.2 Annex3 further recommends that SIGMET messages concerning volcanic ash cloud and tropical cyclones should be based on advisory information provided by VAACs and TCACs, respectively designated by regional air navigation agreement.

3.3 The meeting also recalled that, following concerns by users, the MET Divisional Meeting (2002) formulated recommendation 1/12 b), urging for periodic tests of SIGMET messages to be conducted.

3.4 The meeting noted that SIGMET Tests have been conducted on annual basis in the AFI Region since 2008. The report of the tests conducted in November 2011 is attached at **Appendix E** to this report. Analysis of the past SIGMET tests showed that 22 MWOs (61%) are still not issuing SIGMETs at the time of the test. In this regard the meeting reviewed the Recommendations proposed by the report and formulated the following recommendation:

Recommendation 4/03 Arrangements between Adjacent MWOs for the Provision of SIGMET information

That MWO Providers States that have never issued SIGMETs during SIGMET Tests be assisted by Dakar and Nairobi ICAO regional Offices to establish bilateral arrangements with adjacent operational MWOs as per AFI BASIC ANP, Part VI, paragraph 9, for the provision of SIGMET information awaiting operational implementation of their MWOs.

3.5. The meeting was pleased to learn that since December 2011 the Tropical Cyclone Advisory Centre (TCAC) La Reunion has been disseminating Tropical Cyclone Advisories in graphical format.

Agenda Item 4: Review of regional guidance material on OPMET exchange

4.1 Review of AFI SIGMET GUIDE

4.1.1 The meeting recalled that one of the terms of reference for the Task Force is to regularly update regional guidance material related to OPMET exchange. The meeting further recalled that Decision 16/54 called for the timely review of the regional guidance material on the OPMET to ensure

that guidance material covers procedures for the exchange of all required OPMET data types.

4.1.2 In respect of the above, the Task Force reviewed the current version of the AFI SIGMET Guide i.e. ninth Edition, amendment 2-June 2011 given in **Appendix F** to this report. The version had been amended to reflect Decision 18/47 of the APIRG/18 meeting which required inclusion of explanations of Table MET 3A and Table MET 3B.

4.1.3 The Task Force noted that the list of Meteorological Watch Offices (MWOs) in the AFI Region is contained in Appendix A to the AFI Regional SIGMET Guide whereas the World Meteorological Organization (WMO) headings used by AFI MWOs are contained in Appendix H to the Guide. The meeting then reviewed the two documents to ensure that they are consistent particularly with regards to the names of MWOs and the corresponding Flight Information Regions served.

4.1.4 The Task Force noted that in the fourth meeting of the METWSG meeting held from 15 to 18 May 2012 in Montreal, Canada, it was noted that several inconsistencies existed between some ICAO Regional SIGMET guides. The METWSG meeting had agreed to form an *ad hoc* group with the objective to, among others, develop generic guidance on the issuance of SIGMET for each ICAO region to consider in their respective SIGMET guides to remove inconsistencies. In this regard the Task Force requested the Secretariat to amend the AFI SIGMET Guide based on the outcome of the said *ad hoc* working group which would become available following the METWSG/4 Meeting to be held in June 2013.

4.1.5 In reviewing the documents, the meeting noted that the word "Standard" is used as part of the heading of the Appendix and this could easily be confused with its use in Annex 3 where it implies a mandatory requirement. The meeting further noted that Table A6-1, of ICAO Annex 3, Meteorological Service for International Air Navigation, contains several provisions to be applied to describe area affected by hazardous weather which are not included in Appendix F of the latest AFI Regional SIGMET Guide.

4.1.6 In order to avoid the possible confusion, the meeting was of the view that the provisions in the guidance material should be re-worded to exclude reference to a "standard". The meeting therefore formulated the following Recommendation.

Recommendation 4/04: Updating of AFI Regional SIGMET Guide

That,

a) **the AFI Regional SIGMET Guide, Appendix A &H, be updated to reflect the correct MWO names and location indicators for South Africa as follows:**
   1) **the MWO name as Johannesburg (FAJS);**
   2) **FIRs names and location indicators served as Cape Town FIR (FACA), Johannesburg FIR (FAJA) and Johannesburg Oceanic FIR (FAJO);**

b) The Secretariat update the Regional SIGMET Guide to reflect the outcome of the global review being carried out by the METWSG;

c) **the heading in Appendix F to the AFI Regional SIGMET guide be revised with a view to replace the word "Standard" with the word "Procedures", and**

d) **the amended SIGMET Guide given in Appendix F to this report, be endorsed as the AFI Regional SIGMET Guide Ninth Edition, Amendment 3.**

4.2 RODBS implementation status report

4.2.1 The meeting noted that the reports presented by the two RODBs managers did not include implementation status as called for by the MTF decision 2/6. To ROBDs were then requested to be including implementation status in their reports. In this regard the Task Force formulated the

following Decision:

Decision 4/05: Improving the Annual RODBs Implementation Status Report

That, Dakar and Pretoria RODBs issue their respective annual implementation status reports based on the MTF, MET/SG and APIRG Decisions and Conclusions related to the AFI RODBs.

4.3 Review of the current edition of the AFI meteorological bulletin exchange (AMBEX) handbook

4.3.1 The Task Force reviewed the amended AMBEX Handbook given in **Appendix G** to this report and undertook some editorial corrections to improve it.

4.3.2 The Task Force noted that Appendix G to the AMBEX Handbook details the list and contacts of AMBEX Focal Points for the AFI Region. The meeting underscored the importance of the list as it is an additional effort to ensure compliance with the AMBEX Scheme and other OPMET exchange procedure requirements in the AFI Region. The list could also provide useful contacts for the two AFI Regional OPMET Data Banks (Dakar and Pretoria). In view of this, the meeting felt that there was need for the secretariat to invite States whose information about the AMBEX Focal points is not complete to provide the relevant details.

4.3.3 The Task Force was informed that the SADISOPSG/17 meeting held in Cairo, Egypt from 29 to 31 May 2012, of the eminent cessation (1July 2012) of the satellite segment of the Aeronautical Fixed System (AFS) of the International Satellite Communication System (ISCS 1 and ISCS 2). The meeting recalled that ISCS 1 and ISCS 2 were used for the retrieval of World Area Forecast System (WAFS) products. In light of this, the SADISOPSG/17 formulated Conclusion 17/30 calling for the review of all SADIS documentation and subsequent replacement of all reference to ISCS by WAFS Internet File Service (WIFS). The Task Force noted that reference to ISCS in the AMBEX Handbook and other documentation still existed. In light of these developments, the meeting agreed that there was a need to review the AMBEX Handbook and other guidance material.

4.3.4 The Task Force recalled that the AFI OPMET MTF/2 meeting was informed of the implementation of the internet based "request reply" service by the Pretoria RODB. The Task Force noted with appreciation that the Dakar RODB had similarly implemented the internet service for querying AFI Bulletins by users. However, the meeting further noted that the foregoing was not indicated in the latest version of the AFI AMBEX Handbook.

4.3.5 In reviewing chapter 8.3 of the AFI AMBEX Handbook, the Task Force agreed that it was necessary to remove the phrase 'as necessary' in paragraph 8.3.4 as this may imply that the BCCs or National OPMET Centers (NOCs) were not obliged to compile and exchange OPMET bulletins as per the AMBEX Scheme. In this regard, the following Decisions were formulated:

Decision 4/06: Updating of the list of AFI AMBEX Focal Points through invitation letter

That, the Secretariat be invited to urge States to ensure that the information regarding their AFI AMBEX focal point in Appendix G of the AFI AMBEX Handbook is kept up to date by responding to the invitation letter sent to them every year.

Decision 4/07 Updating of the AFI AMBEX Handbook

That:

a) **The Secretariat be invited to:**

1) review and replace all reference to the satellite segment of the AFS, International Satellite Communication System (ISCS/1 and ISCS/2) in the AFI AMBEX Handbook (HB) and other guidance material by "WIFS";

2) Update paragraph 2.5.2 of the AMBEX HB to reflect that both AFI RODB have implemented internet based facilities for retrieval of OPMET information, and include the URLs accordingly;

3) Remove the word "as necessary" in paragraph 8.3.4 of the AMBEX HB; and

4) Undertake the editorial corrections to the AMBEX handbook given in Appendix G to this report;

b) the Regional AMBEX Handbook be endorsed as the Seventh Edition, Amendment 2, Corrigendum 1.

4.3.6. Following a review by the Task Force of the AMBEX scheme against OPMET DATA required to be exchanged in the AFI and from AFI to EUR, it was noted that there was no clear distinction between data to be exchanged and data required. This was in considering that some data are exchanged according to the Scheme but not required while some are required but not exchanged.

4.3.7. The meeting noted that in order to fulfill the requirements on OPMET data exchange, the AMBEX scheme should clearly reflect the status according to data requirements. The meeting therefore considered it necessary that the AMBEX Scheme be reviewed with the objective of separating data required from those that are not required as per the FASID MET tables. Consequently, the meeting formulated the following Decision:

Decision 4/08: Establishment of a Core team to review the AMBEX Scheme

That a Core Team composed of the Secretariat, France, Nigeria, Senegal, South Africa and ASECNA be established to review the AMBEX Handbook by taking into consideration the requirements expressed in the AFI MET FASID Tables and improve the exchange scheme and report to the Task Force on time for the MTF/6 Meeting.

4.3.8. The meeting noted with appreciation that in recent times, the results of Global monitoring activity conducted by IROG Toulouse were being availed to the AFI Region on monthly bases. It was further noted that AFI Region stood to benefit from the exercises.

4.3.9. The Task Force was informed of a review of the bulletins being monitored at the SADIS gateway which are contained in Annex 2 of the SADIS User Guide. The meeting was further informed that the reviews indicated that bulletins for AFI Region were not only different from those in the AFI routine tables and also from those monitored by IROG Toulouse. In this regard the meeting was of the opinion that in order to improve the availability and exchange of OPMET data, monitoring should be done at different stages of the system to ensure that the bulletins are monitored at all stages. Consequently, the meeting formulated the following Recommendation:

Recommendation 4/09: Monitoring of OPMET bulletins in coordination with ROC Toulouse

That, the monitoring done by RODBs Pretoria and Dakar and ROC Toulouse be harmonized to ensure that the same bulletins headers, as described in the

AFI AMBEX HB, be monitored at all these facilities for comparison and continuous improvement.

4.3.10. Following an enquiry from ASIA/PAC Regional Office as to whether what was received on their side was what they should be receiving as per the AFI routine tables, the meeting was of the opinion that the status of OPMET exchange within AFI Region needed to be improved.

4.3.11. The Task Force recalled that the two AFI Regional OPMET Databanks had the responsibility of storing and disseminating bulletins originating from AFI AMBEX centers and other ICAO Regions and also of conducting routine monitoring as per previous AFI MTF conclusion and to report on the outcome of the monitoring to ICAO. The monitoring activities revealed that in the AFI Region, the BCCs are not compiling bulletins as per AMBEX Handbook. The meeting then agreed that this could contribute to the lack of AFI OPMET Bulletins in the region and other ICAO Regions.

4.3.12 In order to ensure the availability of AFI OPMET information to users in AFI and other ICAO Regions as well as IROGs, the meeting agreed that it was crucial that the different role players play their role as described in AMBEX Handbook. In this regard, the meeting formulated the following Recommendation.

Recommendation 4/10: Increasing the availability of OPMET information to users in AFI and ICAO regions

That, AFI Bulletin Compiling Centers (BCCs) and National OPMET Center (NOCs) Provider States:

a) **take note of their responsibilities regarding the compilation of AFI OPMET Bulletins and initiation of OPMET data respectively as described in the AFI AMBEX HB, and**

b) **be invited to implement the AMBEX scheme accordingly.**

4.3.13. The meeting noted that the exchange of special air reports remains a challenge despite the existence of related provisions in ICAO Annex 3, *Meteorological Service for International Air navigation*, and guidance material in *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services (Doc 9377)*, and procedures in AFI SIGMET guide.

4.3.14. The Task Force recalled that the requirements for relaying of Special Air Reports by Air Traffic Service (ATS) units are defined in ICAO Annex 3, paragraph 5.8 as well as Doc 9377, paragraph 4.2.12. Further, the AFI SIGMET Guide provides the procedures in this regard under paragraph 2.1.2.

4.3.15. The meeting was of the view that sufficient guidance material exists which would improve the availability of this data type at RODBs and to users if applied appropriately. The meeting regretted that despite that concern was raised by ICAO on the lack of compliance by States to the requirements for dissemination of Special Air Report not much improvement has been made.

4.3.16. The Task Force concurred that it was necessary to engage the AFI AMBEX Focal points with a view to taking steps in order to address the lack of this data type in the databanks and other platforms. In this regard therefore, the formulated the following recommendation:

Recommendation 4/11: Implementation of Special air reports

That States be reminded of :

a) their responsibilities regarding the dissemination of Special Air Reports and implementation of related existing mechanisms; and

b) ATS units of their responsibilities for obtaining dissemination of Special Air Reports to their associated MWOs.

4.3.17 The Task Force recalled that Conclusion 17/59 of APIRG/17 Meeting calls for the implementation of the interface control document (ICD) for AFI OPMET database access procedures. The AFI ICD has since been updated, published and placed on the ICAO website as per Decision 3/6 of the MTF/3 Meeting.

4.3.18. The Task Force reviewed the updated AFI data catalogue presented to the meeting and recalled that Decision 10/10 of the MET/SG/10 Meeting which called for the finalization of the AFI OPMET data catalogue by AFI RODB Managers. In this regard the meeting requested the RODB managers to finalize the catalogue by making reference to the SADIS User Guide and AFI FASID MET Table 1B. The following Decision was then formulated:

Decision 4/12: Finalizing AFI OPMET Data Catalogue

That, Dakar and Pretoria RODBs finalize the AFI OPMET Data Catalogue using Appendix 1 to the SADIS User Guide (METAR/SPECI, TAF) and AFI FASID MET Table 1B (SIGMET) on time for the MTF/5 meeting.

4.3.19. The meeting recalled that AFI OPMET MTF/2 recommended that a Core Team of experts be established to develop backup procedures for implemented by both Pretoria and Dakar RODBs, (recommendations 2/7 and 2/9 refers). The recommendations were subsequently endorsed by MET/SG/10 through formulation of Decision 10/6 and Conclusion 10/7, calling for the establishment of the Core Team and implementation of an AFTN circuit between Dakar and Pretoria to support the backup procedures.

4.3.20. The Task Force further recalled that during the AFI OPMET MTF/3 and METSG/10 meetings the Core Team of experts reported very little progress with regard to the development of the backup procedures. In this regard the meeting stressed the need for better coordination of the activities of the team to ensure that progress was made.

4.3.21. The meeting noted that following the METSG/10, the Core Team considered several options for backup of the two AFI RODBs (Dakar and Pretoria), focusing on procedures which would be both practical and cost effective. The meeting noted that the Core Team contacted IROG Toulouse through email on 21 May 2012 with a view to learn from procedures implemented in the EUR Region. It was established that the backup mechanism used in the EUR was still under development and could therefore not be much helpful to the AFI Region.

4.3.22. Given the above circumstances, the Core Team therefore did not have much choice but to develop backup procedures from scratch. In this regard the Task team considered the various options presented for their cost effectiveness and practicability and also taking into account the different challenges existing in the AFI Region with regard to OPMET data exchange. The options presented were as follows:

a) A dedicated line to be established linking the two RODBs. The line should have sufficient capacity to handle large volumes of data;

b) The two AFI RODBs to be backed up through Toulouse. This means that both RODBs would promulgate OPMET information to Toulouse and incase one fails, the information would still be retrievable from Toulouse;

c) The Global Telecommunication System (GTS) protocol to be investigated as a possible medium to be used for exchange of OPMET information between the two RODBs. This was considered an alternative to the AFTN line;

d) A routine procedure be established which would require the AFI AMBEX compiling centers (BCCs) to re-route OPMET bulletins directly to the other RODB in the event that one fails.

4.3.23. In considering the options, the meeting concurred with the Core Team of experts that the fourth option (iv) was the most appropriate. However, the meeting noted that there was need for further investigation and formulated the following Decision:

Decision 4/13: Developing of AFI RODBs Back Up Procedures

That, the Task Force:

a) Appreciates the work so far undertaken by the Core Team of Experts in developing the AFI RODBs Back Up Procedures; and

b) Encourage the Core Team to further investigate ways to improve the backup procedures so far developed using contributions from existing backup procedures especially from London and Washington WAFCs.

Agenda Item 5: Future developments

5.1 The meeting recalled that the Global Air Traffic Management (ATM) Operational Concept contained in ICAO Doc. 9854, describes the future ATM system outlining the scope of the concept, guiding principles, expected benefits, system performance, different expectations and coordination, the manner in which the ATM system will deliver services and the associated benefits to airspace users by 2025. The meeting was informed that the Aviation System Block Upgrades (ASBU), is a methodology to implement the future ATM system based on operational concepts extracted from NEXTGEN (USA), SESAR (Europe) and CARATS (Japan).

5.2 The meeting also noted that ASBU methodology would facilitate interoperability of different technologies, accommodating different procedures covering all elements of the ANS systems (ATM, CNS, AGA, AIM and MET). It would also provide harmonization thus leading to seamlessness across regions. This would be achieved through progressive, cost effective and cooperative implementation of air navigation systems worldwide. The meeting further noted that the Block upgrades will allow for a structured approach to meet the needs of individual aviation communities worldwide and that the use of meteorological (MET) information in a net-centric ATM environment and satisfying the foreseen performance requirements for MET will have an impact on the information that needs to be made available and exchanged between information providers and users.

5.3 A roadmap had been designed to enable the exchange of aeronautical meteorological information in a flexible, easy expandable, open and transparent manner. Nevertheless it remains clearly focused on the transition of currently defined user products as prescribed by Annex 3. The implementation roadmap or general guidance to support implementation could be considered by the ICAO Secretariat in conjunction with the publication of an amendment of Annex 3. Potential issues to consider in this context are:

- XML coding at source (e.g. weather observation system at an airport) versus
- ----- XML coding exclusively by collecting centres that will distribute information international;

- Transition of OPMET Databanks towards new formats including XML;

- Implication for information providers to fulfill metadata requirements.

5.4 A proposed logical structured flow of actions to be considered in the transition, thus roadmap, are the development of:

- XML/GML format for TAC OPMET;
- Metadata requirements;
- ICAO Weather Information Exchange Model (IWXXM);
- Information Management for ATM / SWIM

5.5 The meeting noted the improvement steps that needed to be incorporated in the transformation process and the road map to be followed.

5.6 The Task Force considered that it was important that the Secretariat make a follow-up of the regional implication of the roadmap on the transition towards Table-driven data representation for OPMET and report back after the publication of the 17th Edition of ICAO Annex 3. In this regard, the Task Force formulated the following decision:

Decision 4/14: Transition towards Table-Driven Data Representation for OPMET

That the Secretariat liaises with the concerned ICAO study groups to follow up the regional implication of the roadmap on the transition towards Table-driven data representation for OPMET, and report on time for the MTF/6 meeting.

5.7 Considering the important role the databank provider States will be playing with the introduction of meteorological information in digital format, the meeting encouraged AFI data bank provider States to start developing the necessary capability of handling OPMET bulletins in digital format as the exchange of the same on bilateral basis is expected after the applicability of Amendment 76 to Annex 3 in November 2013. The meeting noted with appreciation that necessary assistance and guidance would be provided to the provider States. In this regard the meeting formulated the following recommendation.

Recommendation 4/15: Development of Capabilities of Handling OPMET Information in Digital Format

That both Pretoria and Dakar RODBs be encouraged to:

a) **start developing capability of handling OPMET data in digital format as soon after November 2013 as possible;**

b) **test the codes based on the table-driven data representation (XML/GML) schema for METAR/SPECI, TAF and SIGMET with a view to fine tuning over the first year; and**

c) **take a leading role over the transition aspect of XML/GML and assist other AFI States in implementing table-driven data representation wherever possible.**

Agenda Item 6: Terms of reference, work programme and composition of the AFI OPMET MTF

6.1 The meeting recalled that the AFI OPMET MTF was established by Conclusion 16/54 of the APIRG/16 meeting with terms of reference and composition as given in the **Appendix H** to this report.

6.2 Under this agenda item, the Task Force reviewed its work programme given in **Appendix I** to this report.

6.3 The Task Force noted that the composition of the MTF and its Terms of Reference shown in Appendix I was as described by APIRG during the establishment of the AFI OPMET MTF. The Task Force further recalled that the Terms of Reference reflected the overall tasks of the MTF and need to be revised only when major changes are introduced to the MTF programme and that any change would have to be subject to a draft conclusion to be endorsed by APIRG. The meeting therefore agreed that there was no need to amend the terms of reference at the meeting.

6.4 The Task Force reviewed its work programme shown in **Appendix I**to this report and formulated the following Decision:

Decision 4/16 Future work programme of the MTF

That, the updated work programme of the AFI OPMET MTF as shown in Appendix I be endorsed.

Agenda Item 7: Any other business

7.1 The meeting recalled APIRG Conclusion 16/54 which established the OPMET Management Task Force and APIRG Decision 17/80 which set the frequency of and venues for the meetings. Having evaluated the activities of the two RODBs, the Task Force Considered that the RODBs were now well established and running as expected and therefore it was no longer necessary to visit the RODBs during every MTF meeting. In this regard, the meeting formulated the following Decision:

Decision 4/17: Venue of the AFI OPMET MTF Meetings

Due to the progress made by Dakar and Pretoria RODBs Provider States in implementing the RODBs, the Task Force will meet at ICAO ESAF and WACAF Regional Offices from its fifth meeting (MTF/5).

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INTERNATIONAL CIVIL AVIATION ORGANISATION

AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG)
AFI OPMET MANAGEMENT TASK FORCE FOURTH MEETING (AFI OPMET MTF/4)
(Pretoria, South Africa, 10 to 11 September 2012)

PROVISIONNAL LIST OF WORKING/INFORMATION PAPERS

WP No	Agenda Item.	Subject	Presented by
A. WORKING PAPERS			
WP/01	1	Provisional Agenda	Secretariat
WP/02	2	Review of MTF/3 Recommendations **REVIEW OF THE REPORT OF THE AFI OPMET MANAGEMENT TASK FORCE THIRD MEETING**	Rapporteur (Senegal)
WP/03	2	MET/SG/10 and APIRG/18 Conclusions and Decisions related to OPMET **IMPLEMENTATION OF MTF/4 RECOMMENDATIONS WITH REGARD TO MET/SG/10 AND APIRG/18 CONCLUSIONS AND DECISIONS RELATED TO OPMET**	Secretariat
WP/04	3	Provision of tropical cyclone and volcanic ash advisories for the AFI Region and of the corresponding SIGMET by MWOs and Review of report on SIGMET Tests Conducted in November 2011	Secretariat
WP/05	4	Review of regional guidance material on OPMET exchange a) Review of the AFI regional SIGMET Guide **REVIEW OF THE CURRENT EDITION OF AFI REGIONAL SIGMET GUIDE**	Secretariat
WP/06	4	Review of regional guidance material on OPMET exchange b) Review of the AFI Meteorological Bulletin Exchange (AMBEX) Handbook **REVIEW OF THE CURRENT EDITION OF THE AFI METEOROLOGICAL BULLETIN EXCHANGE (AMBEX) HANDBOOK**	Secretariat
WP/07	4	Review of regional guidance material on OPMET exchange c) AMBEX implementation status report by Dakar RODB (appropriate APIRG, MET/SG and MTF Conclusions, Decisions and Recommendations) **DAKAR RODB IMPLEMENTATION STATUS REPORT**	Dakar/RODB (**Senegal/ASECNA**)
WP/08	4	Review of regional guidance material on OPMET exchange d) AMBEX implementation status report by Pretoria RODB (appropriate APIRG, MET/SG and MTF Conclusions, Decisions and Recommendations) **PRETORIA RODB IMPLEMENTATION STATUS REPORT**	Pretoria/RODB (**South Africa**)

WP No	Agenda Item.	Subject	Presented by
A. WORKING PAPERS			
WP/09	4	Review of regional guidance material on OPMET exchange e) Review of the AFI ICD **DEVELOPMENT OF THE AFI OPMET DATABASE CATALOGUE**	Secretariat
WP/10	4	Review of regional guidance material on OPMET exchange f) Joined ICD implementation report (including the finalization of the AFI OPMET data catalog (Rec. 2/14); Time validation criteria for data reception (Dec. 2/4) and Monitoring Time Frames (Dec. 2/5), etc.. **FINALIZATION OF THE AFI OPMET DATA CATALOG**	Dakar and Pretoria RODBs (joined WP by **Senegal, South Africa and ASECNA**)
WP/11	4	Review of regional guidance material on OPMET exchange g) Review of OPMET related FASID Tables **REVIEW OF THE AFI FASID TABLE MET 2A STEMMING FROM THE RESULTS OF THE SADISOPSG/17 MEETING**	Secretariat
WP/12	4	Review of regional guidance material on OPMET exchange h) Report of the Core Team of Experts (**Kenya, Madagascar, Senegal and South Africa**) on the development of a backup procedure for the AFI RODBs (MTF/2 Rec. 2/9) **REPORT OF THE CORE TEAM OF EXPERTS AFI RODB BACKUP PROCEDURES**	Core Team (Joined report by **Kenya, Madagascar, Senegal and South Africa**)
WP/13	5	Future Developments with regards to OPMET information	Secretariat
WP/14	6	Terms of reference, work programme and composition of the AFI OPMET MTF	Secretariat
WP/15	4	Review of regional guidance material on OPMET exchange b) Review of the AFI Meteorological Bulletin Exchange (AMBEX) Handbook **IMPLEMENTATION OF SPECIAL AIR REPORTS**	South Africa
WP/16	4	Review of regional guidance material on OPMET exchange b) Review of the AFI Meteorological Bulletin Exchange (AMBEX) Handbook **MONITORING OF OPMET INFORMATION BY ICAO REGIONS**	South Africa

WP No	Agenda Item.	Subject	Presented by
A. WORKING PAPERS			
WP/17	4	Review of regional guidance material on OPMET exchange b) Review of the AFI Meteorological Bulletin Exchange (AMBEX) Handbook **COMPILING OF OPMET BULLETINS BY AFI AMBEX CENTERS (BCCS)**	South Africa
WP/18	4	Review of regional guidance material on OPMET exchange h) Report of the Core Team of Experts on the development of a backup procedure for the AFI RODBs **DEVELOPMENT OF A BACKUP PROCEDURE FOR THE AFI RODB**	France (ROC Toulouse)
WP/19	4	Review of regional guidance material on OPMET exchange b) Review of the AFI Meteorological Bulletin Exchange (AMBEX) Handbook **REVIEW OF THE AMBEX SCHEME**	France (ROC Toulouse)

IP No.	Agenda Item	Subject	Presented by
A. INFORMATION PAPERS			
IP/01		Information Bulletin	Secretariat
IP/02		AFI OPMET MTF Focal Points 2012	Secretariat
IP/03		List of Documents	Secretariat
IP/04		Working Arrangements	Secretariat
IP/05	4	Results of OPMET Data Management	Secretariat
IP/06	4	Monitoring of requests received from AFTN users	Secretariat

Appendix C

REVIEW STATUS OF IMPLEMENTATION OF OTHER OUTSTABDING
OPMET RELATED CONCLUSIONS & DECISIONS FROM OTHER APIRG PREVIOUS MEETINGS

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation and Similar subject with Previous Dec/Concl.
6) APIRG Con. 13/68	Better communications for volcano observatories	**That states concerned make efforts to establish reliable communications links between their volcano observatories and meteorological watch offices (MWOS) and area control centres (ACCS).**	• Improved communications links between volcano observatories and meteorological watch offices (MWOs) and area control centres	• Continuous: State letters forwarded to States with active volcanoes None
28) APIRG/17 Concl. 17/75	OPMET exchange requirements and inter- regional OPMET gateway (IROG) functions	**That:** **a) The OPMET data type, OPMET bulletins and types of OPMET exchange at Appendix 3.5C, be implemented by Dakar and Pretoria Regional OPMET data banks (RODBs), AMBEX bulletin compiling centres (BCCs) and National OPMET Centres (NOCs) as the OPMET requirements in the AFI Region; and** **b) The IROG functions and the requirements for the exchange of OPMET between the AFI Region and adjacent Regions in Appendices 3.5D and 3.5E to this. report be implemented by Dakar and Pretoria RODBs as the requirements for the interregional OPMET exchange in the AFI Region.**	• Related AMBEX procedures implemented; • Improved availability of OPMET at AFI aerodromes	• OPMET data type, OPMET bulletins and types of OPMET exchange implemented by Dakar and Pretoria RODBs, • The above requirements are being implemented by AFI BCCs and NOCs. None
29)	Revision of	**That, information related to the requirements of OPMET data from AOP Aerodromes as given in Appendix 3.5F to**	• Updated AFI FASID MET	Action completed

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation and Similar subject with Previous Dec/Concl.
APIRG/17 Concl. 17/76	OPMET data requirements	**this report be included in the AFI FASID MET Table 1A after the normal amendment of the FASID Table.**	Table 1A • New OPMET requirements included in AFI FASID	None
30) APIRG/17 Concl. 17/77	OPMET exchange monitoring and management procedures at BCCS and RODBs	**That, the OPMET management and monitoring procedures given in appendices 3.5I and 3.5J to this report be implemented by the RODBS and the BCCS as the requirements for OPMET exchange monitoring and management procedures in the AFI region.**	• Related AMBEX procedures implemented; • OPMET exchange monitoring and management procedures Implemented at BCCs and RODBs • Improved availability of OPMET at AFI aerodromes	• Implementation of required procedures on going • Assessment of the procedures implementation to be completed by the next MTF/4 meeting Concl. 17/75
31) APIRG/17 Concl. 17/78	Interface control document (ICD) for AFI OPMET database access procedures	**That:** **a) The procedures given in Appendix 3.5I to this report be implemented as the Regional Interface Control Document (ICD) access procedures for AFI OPMET database; and** **b) The ICD be published by the ICAO Regional Office(s).**	• The AFI Interface control document (ICD) for AFI OPMET database access procedures, implemented • Related AMBEX procedures implemented; • Improved availability of OPMET at AFI aerodromes	• Implementation of required procedures on going • Assessment of the procedures implementation to be completed by the next MTF/4 meeting None
32) APIRG/17 Dec. 17/79	Future work programme and composition of the task force	**That, the work programme and the composition of the AFI OPMET Management Task Force (MTF) be updated as shown in Appendix 3.5L to this report.**	the work programme and the composition of the AFI OPMET Management Task Force updated	Completed None
33) APIRG/17 Dec. 17/80	Frequency of meetings of the AFI OPMET MTF	**That, the Task Force meets once a year to plan and assess progress on its work programme. The yearly meetings will be held alternatively between RODBs Dakar and Pretoria.**	the frequency of meetings of the AFI OPMET MTF established	Completed None

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation and Similar subject with Previous Dec/Concl.
34) APIRG/17 Concl. 17/81	Improving the dissemination of SIGMET	**That:** **a) Dakar ROBD provider State and ASECNA take the required measures to file automatically the SIGMET test results using the appropriate procedures in the SIGMET guide; and** **b) Upon receipt of a VAA Message, the MWOs in the AFI Region act promptly to issue a corresponding SIGMET within ten (10) minutes.**	• Improved dissemination of SIGMETs • Improved availability of SIGMET at aerodromes and for en-route users	• Dakar RODB updated with regard to automatic filing • The yearly AFI SIGMET tests results indicates that most MWOs issue SIGMETs within ten (10) minutes None
35) APIRG/17 Concl. 17/82	Measures to improve the issuance and dissemination of SIGMET	**That:** **a) The ICAO Regional Offices of Dakar and Nairobi evaluate the provision of SIGMET information in all AFI MWOs through the RODB and State missions;** **b) ICAO Regional Offices encourage States to establish arrangements between adjacent MWOs for the provision of SIGMET information in MWOs where telecommunications or organizational issues are still inadequate;** **c) WMO in coordination with ICAO, be invited to provide additional training in the issuance of VA and TC SIGMETs to some MWOs not able to issue the required SIGMETs;** **d) The ICAO Regional Offices of Dakar and Nairobi update the AFI SIGMET guide for additional details of VA and TC test procedures; and** **e) The MWOs provider States endeavor to address the identified deficiencies in the issuance and dissemination of SIGMET.**	• Issuance and dissemination of SIGMET improved • Improved availability of SIGMET at aerodromes and for en-route users	a) Evaluation of SIGMET provision through AFI SIGMET Tests b) Two MWOs (Robertsfield and Kinshasa are yet to fully comply with the requirements of the SIGMET preparation and dissemination c) Additional SIGMET training scheduled for 2012 d) AFI SIGMET Guide updated and placed at AFI website e) State letter sent to concerned MWO Provider States to endeavor to address the identified deficiencies Concl. 17/81

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation and Similar subject with Previous Dec/Concl.
36) APIRG/17 Concl. 17/83	Improving availability of non-regular OPMET information	**That, AFI States be invited to organize coordination meetings between ATM, MET and Pilots on regular basis, to improve the availability of non-regular OPMET information in the AFI Region.**	• Improved availability of non-regular OPMET information • Improved coordination between ATM, MET and Pilots	States have been encouraged to organize such meetings as necessary None
Conclusion 18/41 C	Implementation of AMBEX Handbook Procedures	**That, Dakar and Pretoria RODB Provider States:** **a) implement an automatic OPMET data monitoring scheme using procedures in Chapter 12 and Appendix F of the AMBEX Handbook on quarterly basis (March 31, June 30, August, 31 and December 31 of each year);** **b) perform regular 24 hour simultaneous monitoring starting at 0000 UTC on the first Wednesday of every month; and** **c) c) distribute the monitoring statistics to the Chairman of the OPMET Management and the Secretariat with effect from July 2012.**	• Related AMBEX procedures implemented; • Improved OPMET monitoring • Improved availability of OPMET at AFI aerodromes	State letter forwarded to concerned Sates Concl. 17/75
Decision 18/42 C	Development of Back Up Procedures for The AFI RODBs	**That, a Core Team of experts consisting of Members from Kenya, Madagascar, Senegal, South Africa and ASECNA be established to develop back up procedures for the AFI RODBs.**	• Related AMBEX procedures implemented; • Improved availability of OPMET at AFI aerodromes	State letter forwarded to concerned Sates Concl. 17/75, 18/41
Conclusion 18/43 C	Implementation of an AFTN Circuit between Dakar and Pretoria RODBs to Support Back-Up Contingency Capabilities	**That Dakar and Pretoria RODBs Provider States,** **a) investigate the best possible way to implement a backup circuit between the two RODBs for the implementation of the backup procedures between the RODBs, in time for the MTF/4 meeting September 2012 and** **b) implement reliable telecommunications facilities to support back-up procedures for the AFI RODBs.**	• Improved OPMET monitoring • Improved availability of OPMET at AFI aerodromes	State letter forwarded to concerned Sates Concl. 17/75, 18/41, 18/42

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation and Similar subject with Previous Dec/Concl.
Decision 18/44 C	Amendment to the AMBEX Handbook	**That,** **a) <u>Appendices A and B</u> to the AMBEX Handbook be updated by the MET/SG Secretariat to reflect AFTN addresses for the IROGs Bangkok, Jeddah and Rio de Janeiro; and** **b) the amended AMBEX Handbook given in <u>Appendix 3.6A</u> to this report, be:** ***endorsed as the AMBEX Handbook Seventh Edition, Amendment 2; and published by the MET/SG Secretariat by July 2012.***	• Improved OPMET monitoring • Improved availability of OPMET at AFI aerodromes	State letter forwarded to concerned Sates Concl. 17/75, 18/41, 18/42, 18/43
Conclusion 18/45 C	SIGMET Monitoring and OPMETOPMET Routing Tables	**That,** **a) the two AFI RODB Provider States be invited to monitor the reception of SIGMET information during the regular (twice yearly) EUR Region SIGMET tests and report;** **b) the two AFI IROGs and ROC Toulouse exchange their routing tables and verify the coherency of these tables; and** **c) the AFI IROGs be invited to review their current routing tables, the status of OPMET reception, and update the routing tables as necessary.**	• Improved OPMET monitoring • Improved availability of OPMET at AFI aerodromes	State letter forwarded to concerned Sates Concl. 17/75, 18/41, 18/42, 18/43, 44,
Conclusion 18/46 C	Implementation of AFI OPMET data catalogue	**That, the OPMET data catalogue given in <u>Appendix 3.6B</u> to this report, be expeditiously finalized and implemented by States in the AFI Region.**	• Improved OPMET monitoring • Improved availability of OPMET at AFI aerodromes	State letter forwarded to concerned Sates Concl. 17/75, 18/41, 18/42, 18/43, 44, 45
Decision 18/47 C	Amendment to the AFI Regional SIGMET Guide	**That, the amendment to the SIGMET Guide given in <u>Appendix 3.6C</u> to this report, is approved as the AFI Regional SIGMET Guide Ninth Edition, Amendment 2.**	• SIGMET Guide amended to include appropriates changes	• Implemented • None
Conclusion 18/48 C	Measures To Improve The Issuance of SIGMET in the AFI Region	**That, the ICAO Dakar and Nairobi Regional offices sensitize meteorological authorities in the AFI Region on the importance of continuous monitoring, by meteorological watch offices (MWOs), of hazardous meteorological conditions that would warrant the issuance of SIGMET information in their respective areas of responsibility.**	• Meteorological authorities aware of continuous monitoring of hazardous meteorological conditions for aviation	State letter forwarded to concerned Sates • Dec. 18/47

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation and Similar subject with Previous Dec/Concl.
Conclusion 18/49 C	Revision of OPMETOPMET Data Requirements	**That:** **a) information related to the requirements of OPMET data from non-AOP aerodromes as given at Appendix 3.6D to this report, be submitted by ICAO Dakar and Nairobi Regional offices to the concerned States for approval, before amending the AFI FASID MET Table 2A and Annex 1 to the SADIS User Guide (SUG); and** **b) the non-AOP aerodromes as listed in Appendix 3.6E to this report, be deleted from AFI FASID MET Table 2A.**	• Updated AFI FASID MET Table 1A • New OPMET requirements included in AFI FASID	Action completed Conl 17/76
Conclusion 18/50 C	Improvement of OPMET Availability from AFI States Aerodromes	**That, efforts be made by the concerned States to improve the availability at Dakar RODB, of the required OPMET information from Accra, Conakry, Freetown, Kano, Kinshasa, Lagos and Luanda.**	• Improved availability of OPMET from the concerned aerodromes •	• State Letter forwarded to concerned States None
Decision 18/51 C	Preparation of AFI XML Transition Plan	**That, the preparation of the AFI XML Transition Plan be deferred until the adoption of Amendment 76 to Annex 3 (July 2013) at the earliest.**	postponed	• postponed
Conclusion 18/52 C	Issuance and Dissemination of SIGMET	**That:** **a) ICAO Regional offices should make concerted efforts to assist States address shortcomings and difficulties identified;** **b) the MWO Provider States listed in Appendix 3.6F take the required measures to remove operational shortcomings in SIGMET provision; and** **c) Roberts field and Kinshasa FIRs MWOs consider bilateral arrangements with adjacent MWOs (i.e. Dakar and Brazzaville MWOs respectively) for the provision of SIGMET information on behalf of the States concerned.**	• Issuance and dissemination of SIGMET improved • Improved availability of SIGMET at aerodromes and for en-route users	• State Letter forwarded to concerned States Concl. 17/81, 17/82

SPECIAL AFI REGION AIR NAVIGATION MEETING IN 2008 (SP AFI RAN/08)				
22) SP RAN(2008) Rec. 6/15	**Foster the implementation of SIGMET and QMS in the AFI region**	that APIRG adopt the met performance objective: foster the implementation of SIGMET and quality management system(QMS) in the AFI region as contained in the performance framework form at appendix f to the report on agenda item 6	• Provision of enhanced safety related MET information to International Civil Aviation	On going: 2 SIGMET and 2 QMS workshops in 2010. Further actions by APIRG/17 Concl. 17/81 and 17/82 None
24) SP RAN(2008) Rec. 6/17	**Implementation of terminal area warnings and forecasts, provision of WAFS forecasts and optimization of OPMET data exchanges and training for aeronautical meteorological staff**	That APIRG adopt the Performance Objective: Foster the implementation of terminal area warnings and forecasts, provision of world area forecast system (WAFS) forecasts and optimization of OPMET data exchanges as contained in Appendix G to the report on Agenda Item 6.	• Terminal area warnings and forecasts, provision of WAFS forecasts implemented • Optimization of OPMET data exchanges • Aeronautical meteorological staff trained	• Implementation of Terminal area warnings and forecasts encouraged during State mission • Provision of WAFS forecasts implemented through SADIS • Difficulties in training MET staff for lack of resources None

Appendix D

STATUS OF IMPLEMENTATION OF MTF RECOMMENDATIONS WITH REGARD TO OPMET RELATED CONCLUSIONS AND DECISIONS FROM MET/SG/10 AND APIRG/18

MTF Rec. No.	Title and Text of Rec. submitted to MET/SG/10	N° and Title of corresponding MET/SG Dec./ Concl. Submitted to APIRG/18	N°, Title and Text of corresponding Dec/Conl. Adopted by APIRG/18	Status/Action Taken
2/1:	**Composition of the AFI OPMET MTF** **That,** a) a Member of the Task Force who is unable to attend the MTF's meeting should notify the Chairman and the Secretary accordingly; b) two successive absences without a written apology to the Chairman by a member will automatically cause them to cease to be member.	**Decision 10/25 —** **Composition of the MET/SG**	No action by APIRG	
2/3	**Schedule of the AFI OPMET Monitoring** That, Dakar and Pretoria RODBs: a) implement an automatic OPMET data monitoring scheme using procedures in Chapter 12 and Appendix F of the AMBEX Handbook on quarterly basis (March 31, June 30, August, 31 and December 31 of each year) b) distribute the monitoring statistics to the Chairman of the Task Force and the Secretariat;	**Draft Conclusion 10/4:** **Schedule of the AFI OPMET Monitoring**	**Conclusion 18/41: Implementation of AMBEX Handbook Procedures** That Dakar and Pretoria RODB Provider States: a) implement an automatic OPMET data monitoring scheme using procedures in Chapter 12 and Appendix F of the AMBEX Handbook on quarterly basis (March 31, June 30, August, 31 and December 31 of each year); b) perform regular 24 hour simultaneous monitoring	State Letter forwarded to Dakar and Pretoria RODB Provider States for implementation

MTF Rec. No.	Title and Text of Rec. submitted to MET/SG/10	N° and Title of corresponding MET/SG Dec./ Concl. Submitted to APIRG/18	N°, Title and Text of corresponding Dec/Conl. Adopted by APIRG/18	Status/Action Taken
	c) perform regular 24 hour simultaneous monitoring starting at 00:00:00 UTC on the first Wednesday of every month, **d)** Implement the above tasks from 01 January 2012**.**		starting at 0000 UTC on the first Wednesday of every month; and c) distribute the monitoring statistics to the Chairman of the OPMET Management and the Secretariat with effect from July 2012.	
2/7	**Direct AFTN Link between AFI RODBs** That, a) Dakar and Pretoria RODBs Provider States take the required measures to provide direct AFTN connexion between both RODBs to facilitate the implementation of back up procedures between them. b) back-up procedures for the two RODBS be developed for use and supported by reliable telecommunications facilities.	**Draft Conclusion 10/7:** **Implementation of an AFTN circuit between Dakar and Pretoria RODBs to support back-up contingency capabilities**	**Conclusion 18/43: Implementation of an AFTN Circuit Between Dakar and Pretoria RODBS to Support Back-Up Contingency Capabilities** That Dakar and Pretoria RODBs Provider States, a) investigate the best possible way to implement a backup circuit between the two RODBs for the implementation of the backup procedures between the RODBs, in time for the MTF/4 meeting September 2012 and b) implement reliable telecommunications facilities to support back-up procedures for the AFI RODBs.	State Letter forwarded to Dakar and Pretoria RODB Provider States for implementation
2/8	**Improvement of availability of OPMET from a number of AFI States** That, efforts be made by the concerned States to improve the availability at Dakar RODB, of required OPMET from Accra, Conakry, Freetown, Kano, Kinshasa, Lagos, Luanda	**Draft Conclusion 10/16:** **Improvement of OPMET availability from AFI States Aerodromes**	**Conclusion 18/50: Improvement of OPMET Availability from AFI States Aerodromes** That efforts be made by the concerned States to improve the availability at Dakar RODB, of the required OPMET information from Accra, Conakry,	State Letter forwarded to then concerned AFI States for implementation

MTF Rec. No.	Title and Text of Rec. submitted to MET/SG/10	N° and Title of corresponding MET/SG Dec./ Concl. Submitted to APIRG/18	N°, Title and Text of corresponding Dec/Conl. Adopted by APIRG/18	Status/Action Taken
			Freetown, Kano, Kinshasa, Lagos and Luanda.	
2/9:	**Development of a backup procedures for the AFI RODBs** That, a Core Team of experts consisting of Members from Kenya, Madagascar, Senegal and South Africa be established to develop a back up procedures for the AFI RODBs. *Note: The team is expected to provide the results of their efforts to the Chairperson before 30 June 2011.*	**Draft Decision 10/6:** **Development of back up procedures for the AFI RODBs**	**Decision 18/42: Development of Backup Procedures For The AFI RODBs** That a Core Team of experts consisting of Members from Kenya, Madagascar, Senegal, South Africa and ASECNA be established to develop back up procedures for the AFI RODBs.	State Letter forwarded to the Core team Experts for implementation
2/11	**Amendment Proposals to the AMBEX HANDBOOK** That, the amendments to the AMBEX Handbook given on Appendix C to this report be submitted to the MET/SG Meeting for further review. *Note: Appendix C is to be finalized after the meeting*	**Draft Decision 10/8:** **Amendment to the AMBEX Handbook**	**Decision 18/44: Amendment to the AMBEX Handbook** That: a) Appendices A and B to the AMBEX Handbook be updated by the MET/SG Secretariat to reflect AFTN addresses for the IROGs Bangkok, Jeddah and Rio de Janeiro; and b) the amended AMBEX Handbook given in Appendix 3.6A to this report, be i) endorsed as the AMBEX Handbook Seventh Edition, Amendment 2; and ii) published by the MET/SG Secretariat by July 2012.	Implemented: The AMBEX Handbook is updated and published on ICAO website

MTF Rec. No.	Title and Text of Rec. submitted to MET/SG/10	N° and Title of corresponding MET/SG Dec./ Concl. Submitted to APIRG/18	N°, Title and Text of corresponding Dec/Conl. Adopted by APIRG/18	Status/Action Taken
2/12	**Updating paragraph 6.2.10 of the AMBEX HANDBOOK** That, paragraph 6.2.10 c) of the AMBEX Handbook be corrected according to the AFI ICD.	Combined with the Draft Decision 10/8	Decision 18/44	Implemented: The AMBEX Handbook is updated and published on ICAO website
2/13	**Updating AFTN Addresses of some Aerodromes in South Africa** That, the ICAO Regional Office in Nairobi updates Appendixes A and B of the AMBEX Handbook as follows: • AFTN address for Pretoria (FAPRYMYX) to be changed to Johannesburg (FAJSYMYX) • Durban (FADN) to be changed to King Shaka (FALE) • Lilongwe's ICAO location indicator (FWLI) to be changed to FWKI • FAPR to be changed to FAJS in the bulletins. • Spelling for Cape Town to be corrected.	Combined with the Draft Decision 10/8	Decision 18/44	Implemented: The AMBEX Handbook is updated and published on ICAO website
2/14	**AFI OPMET data catalogue** That, the draft OPMET data catalogue given in the Appendix D to this report be finalized by the RODB Managers for use by the two OPMET data banks.	**Decision 10/10:** **Finalization of AFI OPMET data catalogue** *(by the*	**Conclusion 18/46: Implementation of AFI OPMET Data Catalogue** That the OPMET data catalogue given in Appendix	To be expeditiously finalized by

MTF Rec. No.	Title and Text of Rec. submitted to MET/SG/10	N° and Title of corresponding MET/SG Dec./ Concl. Submitted to APIRG/18	N°, Title and Text of corresponding Dec/Conl. Adopted by APIRG/18	Status/Action Taken
	The updating of the catalogues be a joint responsibility of the two data banks'.	*RODBs)* and **Draft Conclusion 10/11** **Implementation of AFI OPMET data catalogue**	3.6B to this report, be expeditiously finalized and implemented by States in the AFI Region.	Dakar and Pretoria RODBs Provider States And Implemented by States
2/15	**Implementation of Special AIREP by Dakar RODB** That, Dakar RODB implements all types of OPMET data described in the AMBEX Handbook including special AIREP (UA).	Combined with 10/8	Decision 18/44	Implemented: The AMBEX Handbook is updated and published on ICAO website
2/17	**Sensitizing Authorities at High Level AFI Region Meetings on Safety and Security Issues** That, ICAO Regional Offices sensitize Authorities at the highest political level on the importance of continually monitoring hazardous weather conditions in their respective air spaces (Flight Information Regions (FIRs)) for air safety especially the issuance of SIGMETs by the MWOs**.**	**Draft Conclusion 10/14** **Measures to improve the issuance of SIGMET in the AFI region**	**Conclusion 18/48: Measures to Improve the Issuance of SIGMET in the AFI Region** That the ICAO Dakar and Nairobi Regional Offices sensitize meteorological authorities in the AFI Region on the importance of continuous monitoring, by meteorological watch offices (MWOs), of hazardous meteorological conditions that would warrant the issuance of SIGMET information in their respective areas of responsibility.	Meteorological Authorities in the AFI region will be sensitized during ICAO State Missions

MTF Rec. No.	Title and Text of Rec. submitted to MET/SG/10	N° and Title of corresponding MET/SG Dec./ Concl. Submitted to APIRG/18	N°, Title and Text of corresponding Dec/Conl. Adopted by APIRG/18	Status/Action Taken
3/2	**Provision of WS SIGMET advisory information by Pretoria RODB during AFI SIGMET tests** That, the facilities made available by Pretoria RODB Provider State for the on-going SIGMET advisory trials, could be utilized during AFI SIGMET tests to assist the AFI region with the provision of SIGMET advisory information for any other weather phenomenon other than tropical cyclone and volcanic ash. ***Note**: France who also provided such facility during SIGMET advisory trial may also propose such assistance for test purposes.*	**Draft Conclusion 10/12- Provision of SIGMET advisory information by Pretoria RODB during AFI SIGMET tests**	No Decision or Conclusion formulated by APIRG/18 but para. 3.6.22 indicated that "...the Geocentric Information Briefing (GIB) will be made available by Pretoria RODB Provider State during the SIGMET advisory trial and it will be used to assist ICAO WACAF and ESAF Regional Offices during WS SIGMET tests for the AFI region. The Group was informed that France having also provided such facility during the SIGMET advisory trials may propose such assistance for test purposes."	Implemented: the GIB was already provided by Pretoria RODB Provider State during 2011 SIGMET Tests.
3/3:	**Amendment to the AFI Regional SIGMET Guide** That, the amendment to the SIGMET Guide given in Appendix D to this report, be endorsed as the AFI Regional SIGMET Guide Ninth Edition, Amendment 2.	**Draft Decision 10/13: Amendment to the AFI Regional SIGMET Guide**	**Decision 18/47: Amendment To The AFI Regional SIGMET Guide** That the amendment to the SIGMET Guide given in Appendix 3.6C to this report, is approved as the AFI Regional SIGMET Guide Ninth Edition, Amendment 2.	Implemented: The AFI Regional SIGMET Guide is updated and published on ICAO website
3/4:	**Implementation of a AFTN Circuit between Dakar and Pretoria RODB** That, Dakar and Pretoria RODBs investigate the best possible way to implement a backup circuit between the two RODBs for the implementation of the	**Draft Conclusion 10/7: Implementation of an AFTN circuit between Dakar and**	**Conclusion 18/43: Implementation of an AFTN Circuit between Dakar and Pretoria RODBs to Support Back-Up Contingency Capabilities** That Dakar and Pretoria RODBs Provider States, a) investigate the best possible way to implement a backup	A State Letter forwarded to Dakar and Pretoria RODBs Provider States

MTF Rec. No.	Title and Text of Rec. submitted to MET/SG/10	N° and Title of corresponding MET/SG Dec./ Concl. Submitted to APIRG/18	N°, Title and Text of corresponding Dec/Conl. Adopted by APIRG/18	Status/Action Taken
	backup procedures between the RODBs, on time for the MTF/4 meeting.	**Pretoria RODBs to support back-up contingency capabilities**	circuit between the two RODBs for the implementation of the backup procedures between the RODBs, in time for the MTF/4 meeting September 2012 and b) implement reliable telecommunications facilities to support back-up procedures for the AFI RODBs.	for implementation
3/7	**Amendment Proposals to the AMBEX HANDBOOK** That, the amendment to the AMBEX Handbook given in Appendix F to this report, be endorsed as the AMBEX Handbook Seven Edition, Amendment 2.	**Draft Decision 10/8:** **Amendment to the AMBEX Handbook**	**See Decision 18/44 above**	Implemented: The AMBEX Handbook is updated and published on ICAO website
3/10:	**EUR SIGMET monitoring** That, the two AFI RODBs be invited to monitor the reception of SIGMET during the regular EUR SIGMET test and report.	**Draft Conclusion 10/9:** **SIGMET monitoring and OPMET routing**	**Conclusion 18/45: SIGMET Monitoring and OPMET Routing Tables** That: a) the two AFI RODB Provider States be invited to monitor the reception of SIGMET information during the regular (twice yearly) EUR Region SIGMET tests and report; b) the two AFI IROGs and ROC Toulouse exchange their routing tables and verify the coherency of these tables; and c) the AFI IROGs be invited to review their current routing tables, the status of OPMET reception, and update the routing tables as necessary.	A State Letter forwarded to Dakar and Pretoria RODBs Provider States for implementation

MTF Rec. No.	Title and Text of Rec. submitted to MET/SG/10	N° and Title of corresponding MET/SG Dec./ Concl. Submitted to APIRG/18	N°, Title and Text of corresponding Dec/Conl. Adopted by APIRG/18	Status/Action Taken
3/11:	**Exchanging Routing Tables between AFI IROG and ROC Toulouse** That, the two AFI IROGs and ROC Toulouse exchange their routing tables and verify their coherency.	Combined with the Draft Conclusion 10/9 above	Combined with the Draft Conclusion 18/45 above	A State Letter forwarded to Dakar and Pretoria RODBs Provider States for implementation
3/12	**Review of the OPMET routing by the AFI IROGs** That, a) the AFI IROGs be invited to review their current routing tables, the OPMET status of reception, and if necessary, update the routing tables; and b) ICAO invites AFI States to solve OPMET production and routing issues.	Combined with the Draft Conclusion 10/9 above	Combined with the Draft Conclusion 18/45 above	A State Letter forwarded to Dakar and Pretoria RODBs Provider States for implementation
3/13	**AFI OPMET data catalogue** That, the proposed data catalogue given in the Appendix G to this report be finalized by the RODB Managers and implemented by the RODB Provider States as the requirements for the AFI OPMET data catalogue.	**Decision 10/10:** **Finalization of AFI OPMET data catalogue** *(by the RODBs)* and **Draft Conclusion 10/11**	**Conclusion 18/46: Implementation of AFI OPMET Data Catalogue** That the OPMET data catalogue given in Appendix 3.6B to this report, be expeditiously finalized and implemented by States in the AFI Region.	To be expeditiously finalized by Dakar and Pretoria RODBs Provider States And Implemented by States

MTF Rec. No.	Title and Text of Rec. submitted to MET/SG/10	N° and Title of corresponding MET/SG Dec./ Concl. Submitted to APIRG/18	N°, Title and Text of corresponding Dec/Conl. Adopted by APIRG/18	Status/Action Taken
		Implementation of AFI OPMET data catalogue		
3/14	**Adaptation of the DMG Time Validation Criteria** That the time validation criteria developed by the DMG for the EUR be adapted to align it with the Air Navigation Plan (ANP) for the AFI Region and included in the AFI AMBEX Handbook for implemented by both Dakar and Pretoria.	**Decision 10/5: Adaptation of the EUR OPMET DMG Time Validation Criteria for application in the AFI Region**	No action by APIRG	
3/15	**Revision of OPMET Data Requirements** **That:** a) information related to the requirements of OPMET data from non-AOP aerodromes as given in Appendix H, be submitted by ICAO Regional Offices to the concerned States for approval, before amending the AFI FASID MET Table 2A and Annex 1 to the SADIS User Guide (SUG); b) the aerodromes as listed in Appendix I to this report, be deleted from AFI FASID MET Table 2A.	**Draft Conclusion 10/15:** **Revision of OPMET Data Requirements**	Conclusion 18/49: Revision of OPMET Data Requirements That: a) information related to the requirements of OPMET data from non-AOP aerodromes as given at Appendix 3.6D to this report, be submitted by ICAO Dakar and Nairobi Regional Offices to the concerned States for approval, before amending the AFI FASID MET Table 2A and Annex 1 to the SADIS User Guide (SUG); and b) the non-AOP aerodromes as listed in Appendix 3.6E to this report, be deleted from AFI FASID MET Table 2A.	FASID Table MET 2A process on going

MTF Rec. No.	Title and Text of Rec. submitted to MET/SG/10	N° and Title of corresponding MET/SG Dec./ Concl. Submitted to APIRG/18	N°, Title and Text of corresponding Dec/Conl. Adopted by APIRG/18	Status/Action Taken
3/16:	**Preparation of AFI XML Transition Plan** That, the preparation of the AFI XML Transition Plan be postponed until the decision on the implementation of the use of XML for OPMET and the necessary XML code tables has been completed by the MET/AIM Divisional Meeting planned for 2014.	**Decision 10/17:** **Preparation of AFI XML Transition Plan**	No action by APIRG	

INTERNATIONAL CIVIL AVIATION ORGANIZATION

AFI OPMET MANAGEMENT TASK FORCE

AFI REGIONAL SIGMET TESTS REPORT

November 2011

REPORT ON AFI SIGMET TESTS

November 2011

A - DATA EXCHANGE ANALYSIS

La reunion TCAC: TC advisory disseminated on 2 November 2011 at 11:27:00 UTC Instead of 0900 UTC. Two hours 27 minutes late.

Toulouse VAAC: VA advisory disseminated on 23 November 2011 at 09:56:00 UTC, 56 Minutes after the scheduled time for dissemination.

Dakar RODB:

- ✓ TC advisory received on 2 November 2011 at 11:59: UTC.
- ✓ VA advisory received on 23 November 2011 at 09:56:12 UTC
- ✓ No time frame estimated for WS advisory.
- ✓ WS SIGMET Tests issued by MWOs on their areas of responsibility

Pretoria RODB:

- ✓ TC advisory received on 02 November 2010 at 11:28:2024 UTC, 0minutes and 24 seconds after the dissemination time
- ✓ VA advisory received on 23 November 2011 at 09:56:17 UTC, 1 minutes and 30 seconds after the dissemination time
- ✓ WS advisory placed on the GIB website by Pretoria RODB on 30 November 2010
- ✓ No time frame estimated for WS advisory.
- ✓ WS SIGMET Tests issued by MWOs on their areas of responsibility.

1°) Issuance and Dissemination of WC SIGMET

- Only Three (3) out of expected Ten (10) MWOs (HHAS, FIMP and FAJS) issued WC SIGMET during the Test period.

2°) Issuance and Dissemination of WV SIGMET

- 24 MWOs out of 35 in the AFI region (68.5%) did not issue any WV SIGMET during the Test period
- Only two WV SIGMET from GMMC and DRRN were received on time
- 9 WV SIGMET Test were received late at the RODBs, more than 10 minutes after the advisory was issued by LFPW
- Two (2) SIGMET from GOOY and four (4) from DRRN were received at Dakar RODB at different times.
- SIGMETs from DNKN were received only at Dakar RODB and SIGMET from HUEN was received only at PRETORIA RODB

3°) Issuance and Dissemination of WS SIGMET

- 22 MWOs out of 35 in the AFI region (61%) did not issue any WS SIGMET during the Test period
- Thirteen (13) SIGMETs from FAJS, two (2) HHAA and three (3) SIGMET from DRRN were received at Pretoria RODB at different times.

B - SIGMET FORMAT ANALYSIS

1°) TC SIGMET

Asmara/ Eritrea:

a) Meteorological part not based on the advisory
b) The word "TEST" should be repeated 12 times" at the end of the SIGMET Test

Johannesburg/South Africa:

a) Meteorological part not based on the advisory
b) The word "TEST" should be repeated 12 times" at the end of the SIGMET Test

Antananarivo/Madagascar:

a) Meteorological part not based on the advisory
b) The word "TEST" should be repeated 12 times" at the end of the SIGMET Test

2°) VA SIGMET

Asmara/Eritrea (HHAS):

c) Meteorological part not based on the advisory
d) The word "TEST" should be repeated 12 times at the end of the SIGMET Test message

Kano/Nigeria (DNKN):

a) Meteorological part not based on the advisory

Niamey/Niger (DRRN):

a) Meteorological part not based on the advisory
b) The word "TEST should be repeated 12 times at the end of the Test Message

Casablanca/Morocco (GMMC):

a) Meteorological part not based on the advisory
b) The word "TEST" should be repeated 12 times at the end of the SIGMET Test message

Dakar/Senegal (GOOY):

a) Meteorological part not based on the advisory

Johannesburg/South Africa (FAJS):

No error

N'Djamena/Chad (FTTJ):

a) The word "TEST" indicated immediately after the name of the FIR. VA then information on the volcano should have followed.

Sal/Cape Verde (GVAC) :

a) The ICAO location indicator "GVAC" followed by an hyphen should be indicated immediately after the validity group in the first line of the SIGMET.

.

Brazzaville/Congo (FCBB):

a) Priority "GG" used instead of "FF"

3°) WS SIGMET *(following the weather phenomenon provided on the GIB website)*

Antananarivo/Madagascar:

a) No error

Asmara/Eritrea:

a) "EMBD TS" reported instead of "HVY SS"
b) The word "TEST" in bracket immediately after the weather phenomenon group should be excluded
c) The word "TEST" should be repeated 12 times at the end of the SIGMET Test message.

Entebbe/Uganda:

a) Validity should have been 300900/301200 and not 3009/301800
b) The MWO group i.e HUEN should be indicated immediately after the validity group followed by hyphen
c) Wrong Location, Level and Movement reported

Brazzaville/Congo:

a) Priority indicator "GG" was used instead of "FF".
b) Weather phenomenon "EMBD TS" was reported instead of "FRQ TS".
c) Wrong Location, level and movement reported

Johannesburg/South Africa:

a) No Error.

Kano/Nigeria:

a) The weather phenomena "SEV ICE" was reported instead of' "FRQ T".
b) Wrong Location, Level and movement reported.

Niamey/Niger:

a) No weather phenomenon, location, level and movement reported
b) The word "TEST" should be repeated 12 times at the end of the SIGMET test message

Maputo/Mozambique:

a) Validity period given as 300900/231500 instead of 300900/301200
b) The originating MWO i.e. FQMA followed by hyphen not indicated after validity group
c) Weather phenomenon indicted as "EMBED TS" instead of " SEV MTW"

Mauritius/Mauritius:

a) No weather phenomenon reported.

N'Djamena/Chad:

a) No weather phenomenon reported. "HVY DS" should have been reported.
b) Location, Level and Movement not reported

Dakar/Senegal:

a) No weather phenomenon reported. "SQL TS" should be reported.
b) Location, Level and Movement not reported

Sal/Cape Verde

The ICAO MWO location indicator should come immediately after the validity group

Morocco:

a) No weather phenomenon indicated reported**.** "SEV TURB" should have been reported

Sal/Cape Verde:

a) No Error

C – SUMMARY OF OPERATIONAL SHORTCOMINGS AND DEFICIENCIES IDENTIFIED

	Operational Shortcomings and Deficiencies	VAAC, TCAC, RODBs or MWOs
1	**2**	**3**
1	24 MWOs out of 35 in the AFI region (68,5%) did not issue any WV SIGMET TEST during the Test period	**ESAF (18):**Luanda, Bujumbura, Gaborone, Addis Ababa, Nairobi, Lilongwe, Maputo, Windhoek, Kigali, Mahe, Mogadishu, Dar –Es-Salaam, Entebbe, Lusaka, Harare, Cairo,*Tripoli*,Khartoum, **WACAF (6):** Accra, Algeria,*,Gran Canarias*, Monrovia, Tunis*,Kinshasa,
2	22 MWOs out of 35 in the AFI region (61%) did not issue any WS SIGMET TEST during the Test period	**ESAF (16):FNLU,** Gaborone, Bujumbura, Cairo*, Addis Ababa, Nairobi Tripoli*,Lilongwe, Windhoek, Kigali, Mahe*, Mogadishu, Khartoum*, Dar –Es-Salaam, Lusaka, Harare,, Luanda, **WACAF (6):** Algiers*, Gran Canarias *,Kinshasa , Accra, Monrovia, Tunis*
3	9 MWOs out of 11 in the AFI region (82 %) did not issue any WC SIGMET TEST during the Test .	Antananarivo , Dar –Es-Salaam ,Gaborone, Harare , Lilongwe, Mahe , Maputo , Mauritius, Nairobi
4	The listed 18 MWOs (51%) have never issued any SIGMET TEST during AFI SIGMET Tests	**ESAF (14):** Luanda, Bujumbura, Cairo*, Addis Ababa, Nairobi, Tripoli*, Lilongwe, Windhoek, Kigali, Mahe*, Khartoum*, Dar –Es-Salaam, Lusaka, Harare **WACAF (4):**Algiers *, Gran Canarias*, Kinshasa, Monrovia,
5	2 MWOs did not use FF priority indicator to disseminate WS SIGMET.	Brazzaville, Mauritius
6	1 MWO did not use FF priority to disseminate WV SIGMET	Brazzaville
7	1 MWOs issued a WC SIGMET while it was not required	Asmara
8	1 TCAC issued advisory late, more than two hours after scheduled time	Re union
9	WC SIGMETs from 2 MWOs were received late at the RODBs, more than 10 mn after the advisory was issued by FMEE.	Johannesburg, Mauritius
10	WV SIGMETs from 9 MWOs were received late at the RODBs, more than 10 mn after the advisory was issued by LFPW	Kano, Niamey , Dakar , N'djamena, Sal, Brazzaville , Johannesburg ,Antananarivo , Mauritius
11	1 MWO issued WV SIGMET before advisory	Asmara
12	2 MWO issued WS SIGMETs with incorrect weather phenomena description or no weather phenomenon when there should have been	Asmara, Kano
	5 MWO issued WS SIGMETs without weather phenomena	Casablanca, Dakar, N'djamena , Mauritius , Niamey
9	9 MWOs issued SIGMET test messages without including a line of 12 "TEST" at the end of the SIGMET message	Asmara Johannesburg Niamey Casablanca Sal Entebbe , Dakar, Mauritius Maputo
10	2 MWOs issued SIGMETs without including hyphen at the end of the line containing the validity period	Entebbe, Bamako
11	3 MWOs issued SIGMETs without including the MWO ICAO indicator just after the validity period	Maputo, Entebbe, Sal

HECA*: MWOs in the AFI region but not accredited to ESAF and WACAF

D – RECOMMENDATIONS

Recommendation 1: SIGMET Issuance and Dissemination

It is recommended that the Meteorological Watch Office (MWO) Provider States listed in column 3 and line 4 of the above Table of summary of operational shortcomings and deficiencies identified, that have never issued any SIGMET during AFI SIGMET Tests:

a) take urgent step to establish arrangements between adjacent MWOs for the provision of SIGMET information as per paragraph 9 Part VI of AFI BASIC ANP (Doc 7474) under the assistance of ICAO Regional Office concerned; and

b) endeavor to address the identified deficiencies in the issuance and dissemination of SIGMET (APIRG/18, Conclusion 18/52); before removing the telecommunication/organizational deficiencies

c)

Recommendation 2: Removing Operational Shortcomings

It is recommended that:

a) Brazzaville and Mauritius use the priority indicator FF to disseminate SIGMETs;

b) Kano , Niamey , , Dakar, N'djamena , Sal, , Brazzaville , Johannesburg , Antananarivo, Mauritius MWOs issue SIGMETs on the required time period, no more than 10 mn after the issuance of the advisories*;*

c) Re union should issue advisory at the correct time.

d) Asmara , Mauritius , Niamey , Maputo , Casablanca, Entebbe , Johannesburg MWO'S should include a line of 12 "TEST" at the end of the SIGMET test message

e) All MWOs use the correct SIGMET format when preparing the SIGMET message by including:
   1. a correct weather phenomena description
   2. the ICAO indicator of the corresponding FIR at the beginning of the main text of the SIGMET
   3. a hyphen at the end of the line containing the validity period
   4. the MWO ICAO indicator just after the validity period

INTERNATIONAL CIVIL AVIATION ORGANIZATION

AFRICA AND INDIAN OCEAN (AFI) REGIONAL SIGMET GUIDE

NINTHEDITION – SEPTEMBER 2007

Amendment 3~~2~~- July ~~June~~
201~~2~~1

Prepared by the ICAO ESAF &WACAF Offices
And published under the authority of the Secretary General

The designations employed and the presentation of the 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 or of its authorities, or concerning the delimitation of its frontiers or boundaries.

RECORD OF AMENDMENTS AND CORRIGENDA

Amendments			
No.	Date of issue	Date entered	Entered by
1	31/05/2010	07/06/2010	RO/MET
2	2/06/2011	30/06/2011	MET/SG/ Secretariat
3	30/07/2011	31/07/2012	RO/MET

Corrigenda			
No.	Date of issue	Date entered	Entered by
1	28/10/2008	27/10/2008	RO/MET

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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 aeronautical meteorological warnings for hazardous en-route meteorological phenomena, known as SIGMET information. The guidance is complementary to the Annex 3 standards and recommended practices regarding SIGMET and to the SIGMET related provisions of the AFI Basic ANP and FASID, ICAO Doc 7474.

1.2 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, 3.4 – 3.7, Chapter 7, 7.1, and Part II, Appendix 6;
- AFI Basic ANP, Part I and VI, and AFIFASID Table MET 1B, MET 3A and MET 3B;
- Annex 11 - Air Traffic Services, Chapter 4, 4.2.1 and Chapter 7, 7.1;
- PANS – Air Traffic Management, Doc 4444, Chapter 9, 9.1.3.2;
- Regional Supplementary Procedures, Doc 7030, Part 1, 8.2.

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

1.3 The SIGMET Guide is intended mainly to assist the MWOs in the ICAO African and Indian Ocean (AFIAFI) 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 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.

1.4 This document was prepared by the ICAO AFI and ESAF Regional Offices. It is reviewed and updated regularly in order to be kept in line with the relevant ICAO SARPs and regional procedures. This current version incorporates the changes to SIGMET-related provisions included in Amendment 74 to Annex 3 which was approved by ICAO Council on 21 February 2007.

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2. RESPONSIBILITIES AND COORDINATION

2.1 General

2.1.1 SIGMET is warning information, hence it is of highest priority among other types of meteorological information provided to the 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. They contribute to the effectiveness of the SIGMET service through issuance of special air-reports reported by pilots 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 In view of the foregoing, it should be well understood that the effectiveness of the SIGMET service depends strongly on the level of collaboration between the MWOs, ATS units and pilots. That is why, close coordination between these parties, as well as mutual understanding of their needs and responsibilities, are essential for the successful implementation of the SIGMET service.

2.1.4 For the special cases of SIGMET for volcanic ash and tropical cyclones, the MWOs are provided with advisories from the volcanic ash advisory centres (VAAC), and tropical cyclone advisory centres (TCAC) designated in the Regional ANP.

2.1.5 Another use of SIGMET is 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,related to the provision of SIGMET information, are described.

2.2 Meteorological Watch Office - responsibilities and procedures related to SIGMET

2.2.1 SIGMET information should be issued by the meteorological watch offices (MWO) in order to provide timely warning for 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 AFI Region are listed in Appendix A to this Guide extracted from the FASID AFI Table MET 1B. The MWOs situated outside of the AFI Region are in italic.

2.2.4 If, for some reason, a State is not able to meet its obligations for establishing MWO(s) and for provision of SIGMET for the FIR(s) or control area(s) the State is providing air traffic services, arrangements should be made between the meteorological authorities of the States concerned, that another

MWOtakes over these responsibilities for certain period of time. Such delegation of responsibilities should 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 other 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. Corresponding operational procedures should be established and the meteorological staff should be trained accordingly.

2.2.6 In preparing SIGMET information MWOs should follow strictly 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 their intensity and spatial extent are met.

Note: MWOs should not issue SIGMET for weather phenomena of lower intensity or such of transient nature or smaller scale, which do not affect significantly the flight safety and their transmission to users may lead to unnecessary precautionary measures.

2.2.7 The MWOs should be adequately equipped in order to be able to identify, analyze 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.

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

a) issue SIGMET information based on the special-air report; 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 concerned is of transient nature).

2.2.9 Appropriate telecommunication means should be available at the MWO in order to ensure timely dissemination of SIGMET according to a dissemination scheme, which should include transmission to:

- Local ATS users;
- Aeronautical MET offices within its AOR, where SIGMET is required for briefing and/or flight documentation;
- Other MWOs concerned (it should be ensured that SIGMET is sent to all MWOs whose AORs are, at least partly, within the 1800 km (1000 NM) range from the observed phenomenon);
- Centres designated for transmission of VOLMET or D-VOLMET where SIGMET is required for those transmissions;
- Responsible AMBEX centre and Regional OPMET Data Bank (it should be arranged that through the AMBEX scheme SIGMETs are sent to the designated OPMET data banks in the other ICAO regions, to the WAFCs and to the SADIS and ISCS providers);

- Responsible TCAC or VAAC according to FASID Tables MET 3A and MET 3B.

2.2.10 In issuing SIGMET for tropical cyclones or volcanic ash, the MWOs should include as appropriate the advisory information received from the responsible TCAC or VAAC. In addition to the information received from the TCAC and VAAC the MWOs may use the 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) and arrangements should be in place to ensure:

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

- receipt and display at the ATS unit of SIGMETs issued by MWOs responsible for the adjacent FIRs/ACCs if these SIGMETs are required according to para2.3.4 below, (within 1800 km (1000 NM) range from the observed phenomenon); and

- transmission without delay by the ATS unit 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 transmitted to aircraft-in-flight should cover a portion of the route up to two hours flying time ahead of the aircraft. SIGMET should be transmitted only during the time corresponding to their period of validity (p. 3.4.2.3 refers).

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 the FIR/CTA boundary, up to a distance of 1000 NM (1800 KM), which corresponds to two hours flying time ahead of the current position of the aircraft. If this is the case, the controllers should at their own initiative transmit the SIGMET promptly to the aircraft-in-flight likely to be affected. If necessary, the controller should pass to the aircraft available SIGMETs issued for the adjacent FIR/CTA, which the aircraft will be entering, if relevant to the expected flight route.

2.3.5 The ATS units concerned should also transmit to 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 dependant 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 TCACs and VAACs

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 AFIRegionwith their corresponding areas of responsibility and lists of MWOs and ACCs to which advisories are to be sent is provided in FASID Tables MET 3A and MET 3B of the AFIFASID. These tables are reproduced in Appendix B and Appendix C to this Guide.

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 preflight 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.

3. PROCEDURES 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 D.

3.1.2 The increasing use of automated systems for handling the MET information by 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, which provides detailed information regarding the content and order of elements in the SIGMET message, should be followed strictly by the MWOs.

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 conciseand clear without additional descriptive text other than the prescribed in Annex 3.

3.1.4 After the issuance of a SIGMET the MWO should maintain watch over the evolution of the phenomenon for which the SIGMET has been issued and issue updated SIGMET when necessary. The TC and VA SIGMET should be updated at least every 6 hours.

3.1.5 SIGMET 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 should 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 VA and TC (this includes: TS, CB, TURB, ICE, MTW, DS and SS); this SIGMET will be referred as WS SIGMET;
- SIGMET for volcanic ash, which will hereafter be denoted as VA SIGMET or WV SIGMET; and
- SIGMET for tropical cyclones, which will hereafter be denoted as TC SIGMET or WC SIGMET.

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

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 respective ATS unit and MWO, sequential number and period of validity;
- SIGMET main body, containing information concerning the observed or forecast weather phenomenon for which the SIGMET is issued together with its expected evolution within the period of validity;

3.3.2 The first two parts of the SIGMET message are common for all types of SIGMET. The format and content of the third part is different; that is why, in the following paragraphs the meteorological part of the SIGMET message is described separately for the three types of SIGMET.

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 a real SIGMET accepts concrete numerical value.

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 for meteorological phenomena other than volcanic ash cloud or tropical cyclone WC – for SIGMET for tropical cyclone WV – for SIGMET for volcanic ash
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 p 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 location indicator).

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

3.4.1.4 The group CCx should be used only when issuing a correction to a SIGMET which had already been transmitted.The third letter "x" takes the value A for the first correction, B for the second correction, etc.

Examples:

WSSG31 GOOY121200
WVCV31 GVAC 010230
WCGG31FCBB 100600 CCA

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 p.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 p.3.4.2.3)
CCCC	ICAO location indicator of the issuing MWO
-	hyphen to separate the preamble from the text

3.4.2.2 The numbering of SIGMETs starts 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:

GOOO SIGMET 2 VALID 121100/121700 GOOY-
DGACSIGMET A04 VALID 202230/210430 DGAA-

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 communication between ATC and pilots and in VOLMET and D-VOLMET.

3.4.2.3 The following considerations should be taken into account when determining the validity period:

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

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

Examples:

1. SIGMET for an observed phenomenon:

WSNI31 DNKN241120
DNKKSIGMET 3 VALID 241120/241500 DNKN-

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

WSCG31 FCBB 311130
FCBBSIGMET 1 VALID 1530/1930 FCCC-

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

3.4.3.1 The meteorological part of a SIGMET for weather phenomena consists of seven elements as shown in the table below.

Start of the second line of the message

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

6	7
Movement or expected movement	Changes in intensity
MOV <direction, speed>KMH[KT] or STNR	INTSF or WKN or NC

3.4.3.1.1 Name of the FIR/UIR or CTA(Column 1)

CCCC <name> FIR[/UIR]
or
CCCC <name> CTA

The ICAO location indicator and the name of the FIR/CTA is given followed by the appropriate abbreviation: FIR, FIR/UIR or CTA.

Examples:

DRRRNIAMEYFIR

3.4.3.1.2 Phenomenon(Column 2)

The phenomenon description consists of a qualifier and a phenomenon abbreviation. SIGMET should be issued only for the following phenomena:

at cruising levels (irrespective of altitude):

thunderstorms (TS) – if they are OBSC, EMBD, FRQ or SQL with or without hail;
turbulence (TURB) – only SEV
icing (ICE) – only SEV with or without FZRA
mountain waves (MTW) – only SEV
dust storm (DS) – only HVY
sand storm (SS) – only HVY
radioactive cloud – RDOACT CLD

The appropriate abbreviations and combinations, and their meaning are given in Appendix E.

3.4.3.1.3 Indication whether the phenomenon is observed or forecast(Column 3)

OBS [AT <GGgg>Z]
or FCST

The indication whether the phenomenon is observed or forecast is given by using the abbreviations OBS or FCST. OBS is followed by anoptionaltime 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(Column 4)

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 longitude:

E OF or W OF <Ennn[nn]> or <Wnnn[nn]>

- Indication of a part of the FIR with reference to latitude and longitude: any combination of the above two cases;
- with reference to a location with ICAO location abbreviation CCCC (normally, this should be the case of SIGMET based on special air-report in which the reported phenomenon is given with reference to an airport or another object with ICAO location indicator CCCC);
- with reference to geographical features well known internationally.

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

3.4.3.1.5 Flight level and extent(Column 5)

FL<nnn>
or FL<nnn/nnn>
or TOP FL<nnn>
or [TOP] ABVFL<nnn>
or [TOP] BLWFL<nnn>

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

- reporting 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(Column 6)

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(Column 7)

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
FIR/UIR or CTA	Phenomenon	Volcano		Volcanic ash cloud observed or forecast
		Name	Location	
<CCCC><name> FIR [/UIR][CTA]	VA	[ERUPTION] [MT <name>]	[LOC <lat,lon>]	VA CLD OBS AT <GGgg>Z VA CLD FCST

4			5
Extent of the cloud			Expected movement
Vertical	Horizontal	Position	
FL <nnn/nnn>	[APRX <nnn> KM[NM] BY <nnn> KM[NM]]	[<lat,lon> - <lat,lon> - …]	MOV <direction><speed>

6	
Volcanic ash cloud forecast at the end of the period of validity	
FCST time	Position
FCST <GGgg>Z	VA CLD APRX <lat,lon> - <lat,lon> - …

3.4.4.2 Name and location of the volcano and/or indicator for VA cloud(Column 2)

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 should be included in the SIGMET.

3.4.4.3 Time of observation or indication of forecast(Column 3)

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 going to affect the FIR within the next 12 hrs, SIGMET should be issued, according to paragraph 2.4 above, and the abbreviation VA CLD FCST should be used.

Examples:

VA CLD OBS AT 0100Z
VA CLD FCST

3.4.4.4 Level and extent of the volcanic ash cloud(Column 4)

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 should be separated by hyphen

If the VA cloud spreads over more than one FIR, separate SIGMETs should 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 and keep the description of the volcanic ash clouds consistent by checking the SIGMET messages received from the neighbouring MWOs.

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

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(Column 5)

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

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

Examples:

MOV E 35KMH
MOV SW 20KT
STNR

3.4.4.6 Forecast position of the VA cloud at the end of the validity period of the SIGMET message(Column 6)

FCST <GGgg>Z VA CLD APRX <P1(lat,lon) - P2(lat,lon) - … >

3.4.4.6.1 The GGggZ group should indicate the end of 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 distribution with height determines that the cloud is spread horizontally into different directions at different height layers.

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
		Observed or forecast		
FIR/UIR or CTA	TC name	Time	Locationof TC centre	Extent
<CCCC><name> 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

5	6	7
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(Column 2)

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(Column 3.1)

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(Column 3.2)

<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 (Column 4)

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(Column 5)

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(Column 6)

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(Column 7)

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 F 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, the SIGMET should be cancelled by the issuing MWO. The cancellation is done by issuing same type of SIGMET with the following structure:

- WMO heading with the same data type designator;
- First line that contains as period of validity the remaining time of the original period of validity;
- Second line, which contains the 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. WS SIGMET:

WSZR31 FZAA 101200
FZAA SIGMET 5 VALID 101200/101600 FZAA-
FZAA FIR KINSHASA…

Cancellation of WS SIGMET:

WSZR31 FZAA 101430
FZAA SIGMET 6 VALID 101430/101600 FZAA-
FZAA FIR KINSHASACNL SIGMET 5 101200/101600=

2. VA SIGMET

WVCG31 FCBB 131518
FCCC SIGMET 03 VALID 131515/132115 FCBB-
FCCC FIR BRAZZAVILLE…

Cancellation of a VASIGMET:

WVCG31 FCBB 132000
FCCC SIGMET 04 VALID 132000/132115 FCBB-
FCCCFIR BRAZZAVILLE CNL SIGMET 03 13151500/132115=

or, in case that the volcanic ash cloud moves to an adjacent FIR:

WSZR31 FZAA 132000
FZAA SIGMET 04 VALID 132000/132115 FZAA -

FZAA FIR KINSHASACNL SIGMET 03 13151500/132115 VA MOV TO YUDO FIR=

3.5 Dissemination

3.5.1 SIGMET information is part of the operational meteorological (OPMET) information. According to Annex 3 the telecommunication facilities used for the exchange of the operational meteorological information should be the aeronautical fixed service (AFS).

3.5.2 The AFS consists of a terrestrial segment, AFTN or ATN (AMHS), and a satellite segment which comprises the SADIS and ISCS satellite broadcasts provided by the UK and the USA respectively.

3.5.3 Currently, AFTN links should be used by the MWOs to send the SIGMET, as follows:

- to the adjacent MWOs and ACCs* using direct AFTN addressing;
- When required for VOLMET or D-VOLMET, SIGMET should be sent to the relevant centre providing the VOLMET service;
- SIGMET should be sent to all regional OPMET Data Banks (RODB);
- It should be arranged that SIGMET is relayed to the SADIS and ISCS providers for satellite dissemination, as well as to the WAFCs London and Washington, either through the AMBEX scheme, or directly by the issuing MWO;
- SIGMET for volcanic ash should be disseminated to the responsible VAAC.

3.5.4 Through SADIS and ISCS, SIGMET is disseminated to all authorised users . In this way, SIGMET is available on a global basis, meeting the aeronautical requirements.

* Note: For this dissemination it is required that SIGMET is available at the ACCs for transmission to aircraft in flight for the route ahead up to a distance corresponding to two hours flying time.

APPENDIX A: Meteorological Watch Offices

EXPLANATION OF THE TABLE

Column

1. Location of the meteorological watch office (MWO)
2. ICAO location indicator, assigned to the MWO
3 Name of the FIR, UIR and/or search and rescue region (SRR) served by the MWO
4 ICAO location indicator assigned to the ATS unit serving the FIR, UIR and/or SRR
5 X if the MWO in column 2 issues VA SIGMET
6 X if the MWO in column 2 issues TC SIGMET
7 Remarks

Note: MWOs in italics are situated outside the AFI Region.

MWO Location	ICAO loc. ind.	Area served		SIGMET		Remarks
		Name	ICAO loc. ind.	VA	TC	
1	2	3	4	5	6	7
ALGERIA						
ALGER/Baraki1	DAAL	Alger FIR/SRR	DAAA	X		
ANGOLA						
LUANDA/4 de Fevereiro	FNLU	Luanda FIR/SRR	FNAN	X		
BOTSWANA						
GABORONE/Sir SeretseKhamaIntl	FBSK	Gaborone FIR/SRR	FBGR	X	X	
BURUNDI						
BUJUMBURA/Bujumbura	HBBA	Bujumbura FIR	HBBA	X		
CANARYISLANDS (Spain)						
GRAN CANARIA/Gran Canary, Canary I.	GCLP	Canarias FIR and Grando RSS	GCCC	X		
CAPE VERDE						
SAL I./AMILCAR CABRAL	GVAC	Sal Oceanic FIR/SRR	GVSC	X		
CHAD						
N'DJAMENA/N'Djamena	FTTJ	N'Djamena FIR/SRR	FTTT	X		
CONGO						
BRAZZAVILLE/Maya-Maya	FCBB	Brazzaville FIR/SRR	FCCC	X		
DEMOCRATIC REP. OF THE CONGO						
KINSHASA/N'Djili	FZAA	Zaire FIR, Kinshasa SRR	FZAA	X		
EGYPT						
CAIRO/Cairo Intl	HECA	Cairo FIR/SRR	HECC	X		
ETHIOPIA						
ADDIS ABABA/Bole Intl	HAAB	Addis Ababa FIR/SRR	HAAA	X		
ERITREA						
ASMARA	HHAS	Asmara FIR	HHAA	X		
GHANA						
ACCRA/Kotoka Intl	DGAA	Accra FIR/SRR	DGAC	X		

MWO Location	ICAO loc. ind.	Area served		SIGMET		Remarks
		Name	ICAO loc. ind.	VA	TC	
1	2	3	4	5	6	7
KENYA						
NAIROBI/Jomo Kenyatta Intl	HKJK	Nairobi FIR/SRR	HKNA	X	X	
LIBERIA2						/
MONROVIA/Roberts Intl	GLRB	Roberts FIR/SRR	GLRB	X		
LIBYAN ARAB JAMAHIRIYA						
TRIPOLI/Tripoli Intl	HLLT	Tripoli FIR/SRR	HLLL	X		
MADAGASCAR						
ANTANANARIVO/Ivato	FMMI	Antananarivo FIR/SRR	FMMM	X	X	
MALAWI						
LILONGWE/Lilongwe Intl	FWLI	Lilongwe FIR/SRR	FWLL	X	X	
MAURITIUS						
MAURITIUS/Sir SeewoosagurRamgoolam Intl	FIMP	Mauritius FIR/SRR	FIMM	X	X	
MOROCCO						
CASABLANCA/Anfa	GMMC	Casablanca FIR/SRR	GMMM	X		
MOZAMBIQUE						
MAPUTO/Maputo Intl	FQMA	Beira FIR/SRR	FQBE	X	X	
NAMIBIA						
WINDHOEK/Hosea Kutako	FYWH	Windhoek FIR/SRR	FYWH	X		
NIGER						
NIAMEY/DioriHamani Intl	DRRN	Niamey FIR/SRR	DRRR	X		
NIGERIA						
KANO/MallamAminu Kano Intl	DNKN	Kano FIR/SRR	DNKK	X		
RWANDA						
KIGALI/GregoireKayibanda	HRYR	Kigali FIR/SRR	HRYR	X		
SENEGAL						
DAKAR/Leopold Sedar Senghor	GOOY	Dakar FIR/SRR Dakar oceanic FIR	GOOO	X		

MWO Location	ICAO loc. ind.	Area served		SIGMET		Remarks
		Name	ICAO loc. ind.	VA	TC	
1	2	3	4	5	6	7
SEYCHELLES						
MAHE/Seychelles Intl	FSIA	Seychelles FIR/SRR	FSSS	X	X	
SOMALIA						
MOGADISHU/Mogadishu	HCMM	Mogadishu FIR/SRR	HCSM	X		
SOUTH AFRICA						
CAPE TOWN/Cape Town	FACT	Cape town FIR	FACT	X		
JOHANNESBURG/Johannesburg	FAJS	Johannesburg FIR/ARCC	FAJS	X	X	
JOHANNESBURG/Johannesburg	FAJO	Johannesburg Oceanic	FAJO	X	X	
SUDAN						
KHARTOUM/Khartoum	HSSS	Khartoum FIR/SRR	HSSS	X		
TUNISIA						
Institut National de la Météorologie	DTTA	Tunis FIR/UIR	DTTC	X		
UGANDA						
ENTEBBE/Entebbe Intl.	HUEN	Entebbe FIR	HUEC	X		
UNITED REPUBLIC OF TANZANIA						
DAR-ES-SALAAM/Dar-es-Salaam	HTDA	Dar-es-Salaam FIR	HTDC	X	X	
ZAMBIA						
LUSAKA/Lusaka Intl	FLLS	Lusaka FIR/SRR	FLFI	X		
ZIMBABWE						
HARARE/Harare	FVHA	Harare FIR/SRR	FVHA	X	X	

APPENDIX B: Tropical Cyclone Advisory Centres

FASID AFI TABLE MET 3A

EXPLANATION OF THE TABLE

Column

1. Location of the tropical cyclone advisory centre (TCAC).
2. ICAO location indicator of TCAC (for use in the WMO heading of advisory bulletin).
3. Area of responsibility for the preparation of advisory information on tropical cyclones by the TCAC in Column 1.
4. Period of operation of the TCAC.
5. MWOs to which the advisory information on tropical cyclones should be sent.
6. ICAO location indicator of the MWOs in Column ~~4~~ 6.

Note: MWOs in italics are situated outside the AFI Region.

TABLE MET 3A

TROPICAL CYCLONE ADVISORY CENTRES

TROPICAL CYCLONE ADVISORY CENTRE	ICAO LOC. INDICATOR	AREA OF RESPONSIBILITY	PERIOD OF OPERATION	MWOs TO WHICH ADVISORY INFORMATION IS TO BE SENT	
				Name	ICAO LOC. INDICATOR
1	2	3	4	5	6
RÉUNION (France)	FMEE	SouthwestIndianOcean Sud-ouest de l'océan Indien Sudoeste del océano Índico N: 0° S S: 30°S W: 30°E E: 90°E	1 November–30 April 1er novembre–30 avril 1 de noviembre–30 de abril	Antananarivo ~~Bloemfontein~~ Bombay/Mumbay Dar-es-Salaam ~~Durban~~ Gaborone Harare Johannesburg Johannesburg Oceanic Cape town Lilongwe Mahé/Seychelles Male Maputo Mauritius Nairobi	FMMA ~~FABL~~ VABB HTDC ~~FADN~~ FBSK FVHA FAJS FWKI FSIA FSIA FSIA VRMM FQMA FIMM HKJK

APPENDIX C: Volcanic Ash Advisory Centres

FASID AFI TABLE MET 3B

EXPLANATION OF THE TABLE

Colum~~n~~
n

~~3~~1. Name ~~Location~~ of the volcanic ash advisory centre (VAAC).

2~~4~~. ICAO location indicator of VAAC (for use in the WMO header~~ing~~ of advisory bulletin).

3.~~5~~. Area of responsibility for the preparation of advisory information on volcanic ash by the VAAC in Column 1.

4.~~6~~. MWOs to which the advisory information on volcanic ash should be sent.

5.~~7~~. ICAO location indicator of the MWOs in Column 4.

6~~8~~. Name of the ACCs to which the advisory information on volcanic ash should be sent.

7~~9~~. ICAO location indicator of the ACCs in Column 6

Note: MWOs and ACCs in italics are situated outside the AFI Region

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FASID TABLE MET 3B — VOLCANIC ASH ADVISORY CENTRES

VOLCANIC ASH ADVISORY CENTRE	ICAO LOCATION INDICATOR	AREA OF RESPONSIBILITY	MWOs TO WHICH ADVISORY INFORMATION IS TO BE SENT		ACC TO WHICH ADVISORY INFORMATION IS TO BE SENT	
			Name	ICAO LOCATION INDICATOR	Name	ICAO LOCATION INDICATOR
1	2	3	4	5	6	7
Toulouse (France)	LFPW	AFI Region Santa Maria Oceanic*, EUR* (except for London, Scottish and Shannon FIRs) and MID* Regions: south of 71°N, west of 60°E FIR Santa Maria Oceanic*, régions EUR* (sauf les FIR London, Scottish et Shannon) et MID*: au sud de 71°N, ouest de 60°E Santa MariaOceanic*, EUR* (excepto las FIR London, Scottish y Shannon) y Regiones MID: sur del paralelo 71°N oestedelparalelo 60°E	Accra Addis Ababa Amilcar Cabral Antananarivo Brazzaville Bujumbura Dakar Gran Canaria Kano Kigali Kinshasa Nairobi Niamey N'Djamena Sal I.	DGAA HAAB GVAC FMMI FCBB HBBA GOOY GCLP DNKN HRYR FZAA HKNA DRRN FTTJ GVAC	Accra Addis Ababa Antananarivo Brazzaville Bujumbura Dakar Gran Canaria Kano Kigali Kinshasa Nairobi Niamey N'Djamena Robertsfield (Conakry) Sal I.	DGAA HAAB FMMI FCBB HBBA GOOY GCLP DNKN HRYR FZAA HKNA DRRN FTTJ GUCY GVAC

APPENDIX D: List of the Abbreviations and Code Words Used in SIGMET

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	Dust storm
E	East or eastern longitude
ERUPTION*	Eruption (used to indicate volcanic eruption)
EMBD	Embedded in layer (to indicate CB embedded in layer 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	Kilometers
KMH	Kilometers per hour
KT	Knots
LINE*	Line
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	Observed
OBSC	Obscured
OCNL	Occasional
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	SIGMET (used to indicate SIGMET information)
SQL	Squall line
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

APPENDIX E: Meteorological Phenomena to be Reported by SIGMET

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

Notes:

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

2. Obscured (OBSC) indicates that the thunderstorm (including, if necessary, CB-cloud which is not accompanied by a thunderstorm) is obscured by haze or smoke or cannot be readily seen due to darkness

3. Embedded (EMBD) – indicates that the thunderstorm (including, if necessary, CB-cloud which is not accompanied by a 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 consideredsevere whenever the peak value of the cube root of 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 forecast.

APPENDIX F: Standard for Reporting Geographical Coordinates in SIGMET

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

1. Each point is represented by a 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:	N0518 W00401	Abidjan
	S0419 E01519	Kinshasa
	N1443 W01728	Dakar

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

N1334 W00739 – N1327 W01635 – N0932 W1340– N0518 W00401 (Bamako, Banjul, Conakry, Abidjan)

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.

4. Reporting a phenomenon occupying two different geographical areas within the FIR. This is frequently the case with two (or more) separate TS formations occurring in different parts of the FIR at the same time. The question is whether a separate SIGMET should be issued for each formation, or, one SIGMET could include location description for two (or more) geographical areas. The current SIGMET format does not allow for reporting of more than one phenomenon or two different TS areas. Therefore, in cases like this, two separate SIGMETs should be issued. The main concern with issuing separate SIGMETs is that, in general, a new SIGMET for the same FIR would replace the previous one; this may lead to rejecting valid information in case as described above. It should be noted in this regard, that the current SIGMET format allows for using different sequence numbers and thus, for keeping more than one SIGMET at a time valid for the FIR concerned; for instance, a series A1, A2,… could be used for "phenomenon A" and B1, B2, … , for "phenomenon B".

APPENDIX G: Examples

Note: Most examples are based on real SIGMETs. The real SIGMETs have been corrected in order to make them compliant with the Annex 3 format.

1. WS SIGMET

SIGMET for thunderstorms

WSCG31 FCBB 122305
FCCC SIGMET 9 VALID 122330/130230 FCBB-
FCCCBRAZZAVILLE FIR EMBD TS OBS N0241 E01250 – N0443 E01552 – N0200 E01630 – N0300 E01500 TOP FL400 STNR NC=

WSNT03 KKCI 032340
KZNY SIGMET C17 VALID 032345/040345 KKCI-
KZNY NEW YORK OCEANIC FIR FRQ TS OBS WI AREA N2400 W05500 - N2300 W04930 - N1845 W05645 - N2100 W05800 - N2400 W05500 TOP FL450 MOV E 15KT INTSF=

WSSG31 GOOY 091131
GOOO SIGMET 3 VALID 091140/091540 GOOY-
GOOODAKAR FIR SQL OBS 1130Z LINEN17W10 –N13 W07 – N07 W05MOV W 10KMH WKN=

WSUK31 EGGY 121120
EGTT SIGMET 01 VALID 121125/121525 EGRR-
EGTT LONDON FIR EMBD TSGR OBS AT 1115Z SE OF LINE N5130 E00200 - N5000 W00400 TOPS FL220 MOV NE 30KT NC=

1.2 SIGMET for severe turbulence

WSAU21 AMMC 280546
YBBB SIGMET BS02 VALID 280600/281200 YMMC-
YBBB BRISBANE FIR SEV TURB FCST WI S3900 E15100 - S4300 E15100 - S4300 E16000 - S4100 E16300 - S3700 E16300 - S3900 E16000 FL260/370 MOV E 20 KT NC=

WSZR31FZAA 280003
FZAA SIGMET 01 VALID 280002/280402 FZAA-
FZAA KINSHASA FIR SEV TURB OBS W OF MT KILIMANJARO BLW FL100 STNR NC=

1.3 SIGMET for severe icing

WSFR31 LFPW 280400
LFMM SIGMET 2 VALID 280500/280900 LFMM-
LFMM FIR MARSEILLE SEV ICE OBS AT 0400Z LIONGULF FL040/100 STNR NC=

WSIY31 LIIB 032152
LIMM SIGMET 07 VALID 032200/040200 LIMM-
LIMM MILANO FIR SEV ICE FCST OVER ALPS AND N PART APPENNINIAN AREA FL030/120 MOV E NC=

1.4 SIGMET for heavy duststorm

WSNR31 DRRN 160530
DRRR SIGMET 4 VALID 160600/161000 DRRN-
DRRR NIAMEY FIR HVY DS OBS N OF N1800 S OF N2300 W OF E01500 E OF E00600 MOV W 10KMH NC=

1.5 SIGMET for severe mountain wave

WSUK31 EGGY 150550
EGTT SIGMET 03 VALID 150600/151000 EGRR-
EGTT LONDON FIR SEV MTW FCST N OF N5100 FL090/140 STNR WKN=

2. VA SIGMET

2.1 VA SIGMET - full

WVPH01 RPLL 211110
RPHI SIGMET 2 VALID 211100/211700 RPLL-
RPHI MANILA FIR VA ERUPTION MT PINATUBO LOC S1500 E07348
VA CLD OBS AT 1100Z FL310/450 APRX 220KM BY 35KM S1500 E07348 – S1530 E07642 MOV SE 65KMH FCST 1700Z VA CLD APRX S1506 E07500 – S1518 E08112 – S1712 E08330 – S1824 E07836=

Note:The coordinates used in describing the VA cloud are fictitious.

2.2 "Short" first SIGMET (no FCST)

YUDD SIGMET 2 VALID 211100/211700 YUSO-
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL LOC S1500 E07348
VA CLD OBS AT 1100Z FL310/450 APRX 220KM BY 35KM S1500 E07348 – S1530 E07642 MOV SE 65KMH FCST 1700Z VA CLD APRX S1506 E07500 – S1518 E08112 – S1712 E08330 – S1824 E07836=

or

YUDD SIGMET 2 VALID 211100/211700 YUSO-
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL LOC S1500 E07348
VA CLD OBS AT 1100Z FL100/180 APRX 220KM BY 35KM S1500 E07348 – S1530 E07642=

WVFJ01 NFFN 090900
NFFF SIGMET 03 VALID 090915/091515 NFFN-
NFFF NADI FIR VA ERUPTION MT LOPEVI LOC S1630 E16820 VA CLD OBS AT 0330Z FL090 APRX 10NM BY 10NM MOV SE 25KT FCST 1515Z VA CLD APPRX S1630 E16820 - S1900 E17600 - S1930 E17030=

2.3 SIGMET for VA CLD in the FIR but the volcano information is unknown

YUDD SIGMET 2 VALID 211100/211700 YUSO-
YUDD SHANLON FIR/UIR VA CLD OBS AT 1100Z FL310/450 APRX 220KM BY 35KM S1500 E07348 – S1530 E07642 MOV SE 65KMH FCST 1700Z VA CLD APRX S1506 E07500 – S1518 E08112 – S1712 E08330 – S1824 E07836=

2.4 SIGMET for VA CLD forecast to affect the FIR

We assume that the responsible VAAC has issued an advisory at 0200Z with forecast positions of the VA CLD for 0800Z, 1400Z and 2000Z. From this forecast it is seen that the VA CLD will enter the YUDD FIR around 0800Z. The responsible MWO, YUSO receiving this advisory prepares a SIGMET for the expected penetration of the VA cloud in its FIR and this SIGMET is send at 0230Z.

WVXY01 YUSO 210230
YUDD SIGMET 2 VALID 210800/211400 YUSO-
YUDD SHANLON FIR/UIR VA CLD FCST FL310/450 APRX 220KM BY 35KM S1500 E07348 – S1530 E07642 MOV SE 65KMH FCST 1400Z VA CLD APRX S1506 E07500 – S1518 E08112 – S1712 E08330 – S1824 E07836=

Notes: 1. The forecast positions at 0800Z and 1400Z are taken from the VA advisory.

3. TC SIGMET

3.1. TC Graham – SIGMET issued by MWO Perth - Australia

WCOC31 APRF 280453
YBBB SIGMET PH01 VALID 280500/281100 YPRF-
YBBB BRISBANE FIR TC GRAHAM OBS AT 0400Z S1806 E12145 CB TOP FL450 WI 120NM OF CENTRE MOV SE 7KT INTSF FCST 1100Z TC CENTRE S1808 E12150=

3.2. SIGMET messages issued in July 2003 during the passage of TC Koni

WCSS20 VHHH 200240
VHHK SIGMET 2 VALID 200900/201500 VHHH-
VHHK HONG KONG CTA TC KONI OBS AT 0000Z N1618 E11506CB TOP FL500 WI 90NM OF CENTRE MOV NW 8KT NCFCST 1500Z TC CENTRE N1749 E11347=

Note: This SIGMET is issued before the TC Koni started affecting the Hong Kong CTA, as seen from the issuing time and the start of validity time

WCSS20 VHHH 201150
VHHK SIGMET 7 VALID 201200/201800 VHHH-
VHHK HONG KONG CTA TC KONI OBS AT 0900Z N1712 E11400 CB TOP FL500 WI 90NM OF CENTRE MOV NW 10KT NCFCST 1800Z TC CENTRE N1810 E11300=

WCSS20 VHHH 201450
VHHK SIGMET 10 VALID 201800/210000 VHHH-
VHHK HONG KONG CTA TC KONI OBS AT 1500Z N1730 E11330CB TOP FL500 WI 60NM OF CENTRE MOV NW 10KT NCFCST 2100Z TC CENTRE N1818 E11240=

APPENDIX H: WMO Headings for SIGMET Bulletins Used by AFIMeteorological Watch Offices (MWO)

EXPLANATION OF THE TABLE

Col 1: State and name of the MWO

Col 2: ICAO location indicator of the MWO

Col 3: $T_1T_2A_1A_2$ii group of the WMO heading for the WS SIGMET bulletin

Col 4: $T_1T_2A_1A_2$ii group of the WMO heading for the WC SIGMET bulletin (tropical cyclone)

Col 5: $T_1T_2A_1A_2$ii group of the WMO heading for the WV SIGMET bulletin (volcanic ash)

Col 6: ICAO location indicator of the FIR/CTA served by the MWO

Col 7: Remarks

WMO HEADINGS FOR SIGMET BULLETINS
USED BY AFI METEOROLOGICAL WATCH OFFICES

MWO Location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
ALGERIA ALGER/Baraki	DAAL	WSAL31		WVAL31	DAAA	
ANGOLA LUANDA/4 de Fevereiro	FNLU	WSAN31		WVAN31	FNAN	
BOTSWANA GABORONE/Sir SeretseKhama	FBSK	WSBC31	WCBC31	WVBC31	FBGR	
BURUNDI BUJUMBURA/Bujumbura	HBBA	WSBI31		WVB131	HBBA	
CANARYISLANDS (Spain) GRAN CANARIA/Gran Canary, Canary I	GCLP	WSCR31		WVCR31	GCCC	
CAPEVERDE SAL I/Amilcar Cabral	GVAC	WSCV31		WVCV31	GVSC	
CHAD N'DJAMENA/N'djamena	FTTJ	WSCD31		WVCD31	FTTT	
CONGO BRAZZAVILLE/Maya-Maya	FCBB	WSCG31		WVCG31	FCCC	
D.R.CONGO KINSHASA/N'Djili	FZAA	WSZR31	WCZR31	WVZR31	FZAA	
EGYPT CAIRO/Cairo International	HECA	WSEG31	WCEG31	WVEG31	HECC	
ETHIOPIA ADDIS ABABA/Bole Intl	HAAB	WSET31		WVET20	HAAA	
ERITREA ASMARA	HHAS	WSEI31		WVEI31	HHAA	
GHANA ACCRA/Kotoka Int'l	DGAA	WSGH31		WVGH31	DGAC	
KENYA KENYA/Jomo Kenyatta Int'l	HKJK	WSKN31	WCKN31	WVKN31	HKNA	
LIBERIA MONROVIA/Roberts Int'l	GLRB	WSLI31		WVSL31	GLRB	
LIBYAN ARAB JAMAHIRIYA TRIPOLI/Tripoli Int'l	HLLT	WSLY31		WVLY31	HLLL	
MADAGASCAR ANTANANARIVO/Ivato	FMMI	WSMG31	WCMG20	WVMG20	FMMM	
MALAWI LILONGWE/Lilongwe Int'l	FWLI	WSMW31	WCMG31	WVLI31	FWLL	

MWO Location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
MAURITIUS MAURITIUS/Sir SeewoosagurRamgoolam Int'l	FIMP	WSMA31	WCMG20	WVMA31	FIMM	
MOROCCO CASABLANCA/Anfa	GMMC	WSMC31		WVMC31	GMMM	
MOZAMBIQUE MAPUTO/Maputo Int'l	FQMA	WSMZ31	WCMZ20	WVMZ31	FQBE	
NAMIBIA WINDHOEK/Hosea Kutako	FYWH	WSNM31		WVNM31	FYWH	
NIGER NIAMEY/DioriHmaniInt'l	DRRN	WSNR31		WVNR31	DRRR	
NIGERIA KANO/MallamAminuKanoInt'l	DNKN	WSNI31		WVNI31	DNKK	
RWANDA KIGALI/GregoireKayibanda	HRYR	WSRW31		WVRW31	HRYR	
SENEGAL Leopold Sedar Senghor	GOOY	WSSG31		WVSG31	GOOO	
SEYCHELLES MAYE/Seychelles Int'l	FSIA	WSSC31	WCSC20	WVSC31	FSSS	
SOMALIA MOGADISHU/Mogadishu	HCMM	WSSI31		WVSI31	HCSM	
SOUTH AFRICA JOHANNESBURG/Johannesburg	FAJS	WSZA31	WCZA31	WVZA31	FACA FAJA FAJO	
SUDAN KHARTOUM/Khartoum	HSSS	WSSU31		WVSU31	HSSS	
TUNISIA TUNIS/Carthage	DTTA	WSTS31		WVTS31	DTTC	
UGANDA ENTEBBE/Entebbe Int'l	HUEN	WSUG31		WVUG31	HUEC	
UNITED REPUBLIC OF TANZANIA DAR-ES-SALAAM/Dar-es-Salaam	HTDA	WSTN31	WCTN31	WVTN31	HTDC	
ZAMBIA LUSAKA/Lusaka Int'l	FLLS	WSZB31		WVZB31	FLFI	
ZIMBABWE HARARE/Harare	FVHA	WSZW31	WCZW31	WVZW31	FVHA	

APPENDIX H1: OPERATIONAL UNITS

OPERATIONAL UNITS/UNITES OPERATIONNELLES

MWO, RODB, VAAC, TCAC AND ACC/FIC AFTN ADDRESSES OF THE AFI REGION
ADRESSES RSFTA DES CVM, BRDO, VAAC, TCAC ET CCR/CIV DE LA REGION AFI

MWO, RODB, VAAC, TCAC AND ACC/FIC Location	ICAO location indicator	AFTN Address/Adresse RSFTA			FIR/ACC served	Confirmation Date/ Date de confirmation
		MWO/CVM	ACC/CCR	FIC/CIV	ICAO location indicator	
1	2	3	4	5	6	7
ALGERIA ALGER/Houari Boumedienne	DAAG	DAAGYMYX	DAAAZQZX	DAAAZQZX	DAAA	
ANGOLA 4 de Fevereiro	FNLU	FNLUYMYX	FNANZAZX	FNANZQZX	FNAN	02/05/2008
BOTSWANA Gaborone/Sir Seretse Khama Int.	FBSK	FBSKYMYX	FBGRZRZX	FBGRZRZX	FBGR	18/03/2008
BURUNDI BUJUMBURA	HBBA	HBBAYMYX	HBBAZQZX	HBBAZQZX	HBBA	
CANARY ISLANDS GRAN CANARIA	GCLP	GCLPYMYX	GCLPZQZX	GCLPZQZX	GCCC	
CAPE VERDE SAL I/Amilcar Cabral	GVAC	GVACYMYX	GVSCZQZX	GVSCZQZX	GVSC	11/01/2008. Fax N°T/10-1009
CHAD N'Djamena/Hassan Djamous International	FTTJ	FTTJYMYX	FTTTZQZX FTTTZRZX FTTTZUZX FTTTZFZX	FTTTZIZX FTTTZFZX FTTTZQZX	FTTT	15/04/2009. Fax N° 2009/000119/ ASECNA/DEED/DEETT
CONGO BRAZZAVILLE/Maya-Maya	FCBB	FCBBYMYX	FCCCZQZX FCCCZRZX FCCCZUZX FCCCZFZX	FCCCZQZX FCCCZFZX FCCCZIZX	FCCC	15/04/2009. Fax N° 2009/000119/ ASECNA/DEED/DEETT
D.R. CONGO KINSHASA/N'Djili	FZAA	FZAAYMYX	FZAAZQZX	FZAAZQZX	FZAA	18/01/2008. E-mail from ASECNA HQ (Sougué)
EGYPT CAIRO	HECA	HECAYMYX	HECAZQZX	HECAZQZX	HECC	
ERITREA ASMARA	HHAS	HHASYMYX	HHASZQZX	HHASZQZX	HHAA	
ETHIOPIA ADDIS ABABA/Bole Int.	HAAB	HAABYMYX	HAAAZQZX	HAAZQZX	HAAA	07/03/2008
GHANA ACCRA/Kotoka International Airport	DGAA	DGAAYMYX	DGACZQZX	DGACZQZX	DGAC	24/12/2007. E-mail at 09:12 from Juati Ayilari-Naa
KENYA NAIROBI/Jomo Kenyatta	HKJK	HKJKYMYX	HKNAZQZX	HKNAZQZX	HKNA	10/03/2008

LIBERIA MONROVIA/Roberts International Airport	GLRB	GLRBYMYX	GLRBZQZX	GLRBZQZX	GLRB	
LIBYA TRIPOLI	HLLT	HLLTYMYX	HLLTZQZX	HLLTZQZX		
MADAGASCAR ANTANANARIVO/Ivato	FMMI	FMMIYMYX	FMMIZTZX	FMMIZQZX	FMMM	14/03/2008
MALAWI LILONGWE/Kamuzu Int.	FWKI	FWKIYMYX	FWLLZQZX	FWLLZQZX	FWLL	
MOROCCO CASABLANCA/Anfa	GMMC	GMMCYMYX	GMMMZQZX	GMMMZQZX	GMMM	E-mail du 30/03/2009
MAURITIUS MARITIUS/Sir Seewoosagur Ramgoolam Int.	FIMP	FIMPYMYX	FIMMZQZX	FIMMZQZX	FIMM	17/03/2008
MOZAMBIQUE MAPUTO/Maputo Intl	FQMA	FQMAYMYX	FQBEZQZX	FQBEZIZX	FQBE	07/03/2008
NAMIBIA WINDHOEK/Hosea Kutako	FYWH	FYWHYMYX	FYNMZQZX	FYNMZQZX	FYNM	06/03/2008
NIGER NIAMEY/Diori Hmani International Airport	DRRN	DRRNYMYX	DRRRZQZX DRRRZRZX DRRRZUZX DRRRZFZX	DRRRZIZX DRRRZQZX DRRRZFZX	DRRR	15/04/2009. Fax N° 2009/000119/ ASECNA/DEED/DEETT
NIGERIA KANO/Mallam Aminu Kano International Airport	DNKN	DNKNYMYX	DNKNZQZX	DNKNZQZX	DNKK	07/01/2008. E-mail at 14:08 from Rahim Adewara
RWANDA KIGALI/Gregoire Kayibanda	HRYR	HRYRYMYX	HRYRZQZX	HRYRZQZX	HRYR	
SENEGAL DAKAR/Leopold Sedar Senghor	GOOY	GOOYYMYX	GOOOZQZX GOOOZRZX GOOOZUZX GOOOZFZX	GOOOZIZX GOOOZFZX GOOOZQZX GOOOZOZX	GOOO	15/04/2009. Fax N° 2009/000119/ ASECNA/DEED/DEETT
SEYCHELLES MAHE/Seychelles Intl	FSIA	FSIAYMYX	FSSSZQZX	FSSSZQZX	FSSS	06/03/2008

SOMALIA MOGADISHU/Mogadishu	HCMM	HCMMYMYX	HCSMZQZX	HCSMZQZX	HCSM	
SOUTH AFRICA JOHANNESBURG/O.R.Tambo Int	FAJS	FAJSYMYX	FACAZQZX	FACAZQZX	FACA	06/03/2008
JOHANNESBURG/O.R.Tambo Int	FAJS	FAJSYMYX	FAJAZQZX	FAJAZQZX	FAJA	
JOHANNESBURG/O.R.Tambo Int	FAJS	FAJSYMYX	FAJOZQZX	FAJOZQZX	FAJO	
SUDAN KHARTOUM	HSSS	HSSSYMYX	HSSSZQZX	HSSSZQZX	HSSS	
TUNISIA TUNIS/Carthage	DTTA	DTTAYMYX	DTTCZQZX DTTCZRZX	DTTCQZX DTTCZRZX	DTTC	24/04/2009. Fax N° 01391 du 27 avril 2009
UGANDA ENTEBBE/Entebbe Int.	HUEN	HUENYMYX	HUECZQZX	HUECZQZX	HUEC	
UNITED REPUBLIC OF TANZANIA DAR-ES-SALAAM/Dar-es-Salaam	HTDA	HTDAYMYX	HTDCZQZX	HTDCZQZX	HTDC	
ZAMBIA LUSAKA/Lusaka Int.	FLLS	FLLSYMYX	FLFIZQZX	FLFIZQZX	FLFI	25/03/2008
ZIMBABWE HARARE/Harare	FVHA	FVHAYMYX	FVHAZQZX	FVHAZQZX	FVHA	
RODB/BRDO Dakar DAKAR/Leopold Sedar Senghor		GOOYYZYZ	GOOYYZYZ	GOOYYZYZ		15/04/2009. Fax N° 2009/000119/ ASECNA/DEED/DEETT
RODB/BRDO Pretoria Pretoria		FAPRYMYX	FAPRYMYX	FAPRYMYX		
VAAC Toulouse, France		LFPWYMYX				
TCAC La Réunion, France		FMEEYMYX	FMEEYAYX	FMEEYAYX	FMEE	

APPENDIX I: WMO Headings for Tropical Cyclone and Volcanic Ash Advisory Bulletins (FK And FV)Used by AFITCAC And VAAC

Explanation of Table

Col. 1: Name of the TCAC or VAAC

Col 2: ICAO location indicator used by the TCAC or VAAC

Col 3: WMO heading (TTAAii CCCC) of the FK or FV bulletin

Col 4: Remarks (e.g., Area of coverage of the advisory, or any other bulletin-specific information)

TCAC/VAAC (State)	ICAO location indicator	WMO Heading TTAAii CCCC	Remarks
1	2	3	4
TC Advisories (FK)			
Réunion (France)	FMEE	FKIO20 FMEE	
VA Advisories (FV)			
Toulouse (France)	LFPW	FVXX01LFPW 1st volcano in activity FVXX02LFPW 2ndvolcano in activity, FVXX03LFPW 3rdvolcano in activity FVXX04LFPW 4thvolcano in activity FVXX05LFPW usedfor VAAC TOULOUSE back up byLONDON	

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APPENDIX J - AFI SIGMET Test Procedures

(Amendment 1 – May 2010)

1. Introduction

1.1 The MET Divisional Meeting (2002) formulated recommendation 1/12 b), Implementation of SIGMET requirements, which call, inter alia, for the relevant planning and implementation regional groups (PIRGs) to conduct periodic tests of the issuance and reception of SIGMET messages, especially those for volcanic ash.

1.2 Concerns by the users for the timely reception of SIGMET information has prompted the need to improve awareness on the critical and important nature of SIGMETs. In order to maintain the International Airways Volcano Watch (IAVW) and TC watch systems ready-for-action, regular exercises involving the advisory centres and the MWOs under their areas of responsibility should be performed.

1.3 The requirements for dissemination of SIGMET are specified in Annex 3, Appendix 6, 1.2. Regional guidance on the preparation and dissemination of SIGMET is provided in this Regional SIGMET Guide.

2. Purpose and Scope of SIGMET tests

2.1 The purpose of the tests is to check the awareness of the participating MWOs of the ICAO requirements for the issuance of SIGMET, and the adequacy of the existing telecommunication procedures for dissemination of the advisories and SIGMETs. Based on the results of the tests, the States will be provided with advice aimed at improving their practices and procedures.

2.2 In the case of SIGMET for tropical cyclones and volcanic ash clouds (referred hereafter as WC SIGMET and WV SIGMET respectively) the scope of the tests will involve issuance of test advisories by the VAACs and TCACs in the region, which will be disseminated to the corresponding MWOs and the Regional OPMET Data Banks (RODBs). The MWOs will have to issue a test SIGMET on receipt of a test advisory from the responsible VAAC or TCAC, and disseminate it according to the distribution list used for normal (non-test) SIGMETs.

2.3 The RODBs will record the reception of the test SIGMETs and the corresponding time and will provide a summary table to the VAAC or TCAC with a copy to the Regional Office.

2.4 A consolidated summary report will be prepared by the ICAO Secretariat and reported to the MET/SG and APIRG. The report will include recommendations for improvement of the SIGMET exchange and availability.

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3. SIGMET test procedures

3.1 Procedures for WC and WV SIGMET TEST :

3.1.1 Operational Units:

3.1.1.1 Tropical Cyclone Advisory Centre (TCAC: La Réunion

3.1.1.2 Volcanic Ash Advisory Centre (VAAC): Toulouse

3.1.1.3 Regional OPMET Data Bank (RODB): Dakar, Pretoria

3.1.1.4 Meteorological Watch Office (MWO)

3.1.1.4.1 All MWOs listed in AFI FASID Table MET 3A and MET 3B, under the responsibility of Toulouse, VAAC and La Réunion, TCAC.

Note: The participation of MWOs of States, which do not belong to AFI region, should be coordinated through the relevant ICAO Regional Office.

3.1.2 Test date and time

3.1.2.1 ICAO Regional Office will set a date and time after consultation with the VAAC, TCAC and RODB. The information about the agreed date and time will be sent to all States concernedand copied to the States SIGMET Tests Focal Points.

3.1.3 Test messages

3.1.3.1 Each VAAC or TCAC prepares a simple TEST message in the form of VA or TC advisory. The formats of the said TESTsare given in Attachment 1 to this Appendix.

3.1.3.2 The MWOs, upon receipt of the TEST VA/TC advisory, should prepare a TEST SIGMET for volcanic ash or tropical cyclone, respectively, and send it to the RODBs. The WMO heading and the first line of the SIGMET should be valid ones, while the body of the message should contain an explanatory text on the tests as show in Attachment 1 to this Appendix.

3.1.3.3 The MWOs should issue a WV or WC TEST SIGMET within the 10-minute period following the issuance of VA or TC test message by the corresponding VAAC or TCAC.

3.2 Procedures for WS SIGMET Tests

3.2.1 WS SIGMET advisory Test should be initiated by Pretoria RODB in coordination with ICAO Regional Offices in Dakar and Nairobi. The information about the date and time will be sent to all States concerned and copied to the State's SIGMET Tests Focal Points.

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3.2.2 Operational Units:

- AFI Regional OPMET data Banks: Dakar and Pretoria;
- Meteorological Watch Offices (MWO): All MWOs listed in FASID Table MET 3A and MET 3B of the AFI FASID;
- Toulouse VAAC;
- La Réunion TCAC.

3.3 Common Procedures Applicable to All Types of SIGMET

3.3.1 The AFTN addresses of the RODBs to which the test SIGMETs should be sent are as follows:

Dakar	:	GOOYYZYZ
Pretoria	:	FAPRYMYX

3.3.2 To avoid over-writing of a valid SIGMET, the test SIGMET may not be sent if there is a valid SIGMET for responsible area of the MWO. Such MWOs are strongly encouraged to notify the Regional Office via e-mail of their non-participation in the test due to the said reasons.

3.3.3 Test for different types of SIGMET should preferably be conducted on separate dates.

3.3.4 At least two SIGMET tests per year should be conducted.

3.4 Special procedure to avoid overwriting of a valid SIGMET

3.4.1 It is vital to ensure that TEST SIGMET is not confused with operational SIGMET and avoid overwriting a valid operational SIGMET in an automated system. In order to prevent this it is suggested that:

a) If at the time of the SIGMET test NO SIGMET is current for the FIR, the number of the Test SIGMET should follow the normal numbering sequence; e.g. if the last "normal" SIGMET before the test was number "03",

b) the TEST SIGMET should be number "04", and the first "normal" SIGMET after the test should be number "05".If a SIGMET is VALID at the time of the test then the TEST SIGMET should be issued and the valid SIGMET should be repeated immediately after the TEST SIGMET. E.g., if the following SIGMET is issued at 0100 on the date of the test:

WSCG31 FCBB 250100
FCCC SIGMET 1 VALID 250100/250500 FCBB-
FCCC BRAZZAVILLE FIR SEV TURB FCST WI ….=

A SIGMET test is scheduled for 0200 UTC on the 25th. The TEST SIGMET is issued with the next consecutive sequence number as follows:

WSCG31 FCBB 250200
FCCC SIGMET 2 VALID 250200/250210 FCBB-
FCCC THIS IS A TEST SIGMET PLEASE DISREGARD=

The original SIGMET is then retransmitted immediately after this with the next consecutive sequence number and the validity period is amended accordingly:

WSCG31 FCBB 250200
FCCC SIGMET 3 VALID 250200/250500 FCBB-
FCCC BRAZZAVILLE FIR SEV TURB FCST WI … =

4. Dissemination of test SIGMETs and Advisories

4.1 All TEST SIGMETs and TC/VA advisories should be sent to the two AFI RODBs. The AFTN addresses to be used by the MWOs, TCACs and VAACs are as follows:

Dakar – GOOYYZ YZ
Pretoria – FAPRYMYX

4.2 SIGMET tests should be terminated within 2 hours of the test start time.

4.3 Coordination with the ATS units

4.3.1 MWOs should inform the associated ATS units of the forthcoming SIGMET tests by a suitable advanced notice.

4.4 Processing of the test messages and results

4.4.1 The RODBs will be requested to file all incoming TEST advisories and SIGMETs and perform an analysis of the availability, timeliness of arrival and the correctness of the headers and meteorological content of all test SIGMETs. A SIGMET TEST Summary Table as shown in Attachment 4 to this Appendix should be prepared by each RODB and sent to the Rapporteur of the AFI OPMET Management Task Force (AFI OPMET MTF), and the contact given below with a copy to the ICAO Dakar and Nairobi Regional Office.

4.4.2 The Rapporteur and SIGMET test contact should prepare the final report of the test and present it to the AFI Regional Offices. A summary report should be submitted to the next AFI OPMET MTF meeting.

4.4.3 The current contact information for sending summary tables is as follows :

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WS SIGMET summary table sent to :

Mr DiemeSaidou
Service Exploitation Météorologique ASECNA – Sénégal
Tél 221 33 869 22 03
Fax 221 33 820 06 00
E-mail : saidoudieme@yahoo.fr

WV/WC SIGMET summary table sent to :

Mrs G.E Khambule
South African Weather Service
Tel 27113909326
Fax 27113209332
Email : gaborekwe.khambule@weathersa.co.za

All Summary Tables and any enquires about SIGMET tests sent to :

ICAO Regional Office, Dakar
E-mail : icaoAFI@dakar.icao.int
Cc : aokossi@dakar.icao.int

And

ICAO Regional Office, Nairobi
Email : icao@icao.union.org
Cc: vitalis.ahago@icao.unon.org

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Attachment 1 to Appendix J

AFI SIGMET TEST PROCEDURES

Format of VA Test advisories and SIGMETs

1. The format of VA and TC advisories are as in ICAO Annex 3:
   - Table A2-1. Template for advisory message for volcanic ash
   - Table A2-2. Template for advisory message for tropical cyclones.

Example of TEST Volcanic Ash Advisory

VA ADVISORY
DTG : YYYYMMDD/hhmm
VAAC: (name of VAAC
VOLCANO : TEST
PSN : UNKNOWN
AREA : (name of VAAC) VAAC AREA
SUMMIT ELEV : UNKNOWN
ADVISORY NR : YYYY/nn (actual number)
INFO SOURCE : NIL
AVIATION COLOUR CODE : NIL
ERUPTION DETAILS : NIL
OBS VA DTG : DD/0150Z
OBS VA DTG : ASH NOT IDENTIFIABLE FROM SATELLITE DATA
FCST VA CLD + 6HR : 01/ 0800 Z SFC/FL600 NO ASH EXP
FCST VA CLD + 12 HR : 01/1400 Z SFC/FL600 NO ASH EXP
FCST VA CLD + 18 HR : 01/2000 Z SFC/FL600 NO ASH EXP
RMK: THIS IS A TEST VA ADVISORY. MWO SHOULD NOW ISSUE A TEST SIGMET FOR VA, UNLESS THERE IS A VALID SIGMET FOR VA.
PLEASE REFER TO THE LETTER FROM ICAO AFI OFFICE DATED xxxxxx.
NXT ADVISORY : NO FURTHER ADVISORIES =

2. Example of Format of TEST Tropical Cyclone ADVISORY

TC ADVISORY

DTG : YYYYMMDD/hhmm
TCAC : (name of TCAC)
TC : TEST
NR : nn (actual number)
PSN : NIL
MOV : NIL
C: NIL
MAX WIND : NIL
FCST PSN + 06HR : NIL
FCST MAX WIND + 6HR : NIL

FCST PSN +12 HR : NIL
FCST MAX WIND +12HR : NIL
FCST PSN +18HR : NIL
FCST MAX WIND +18HR : NIL
FCST PSN + 24 HR : NIL
FCST MAX WIND +24HR : NIL

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RMK : THIS IS A TEST TC ADVISORY. MWO SHOULD NOW ISSUE A TEST SIGMET FOR TC, UNLESS THERE IS VALID SIGMET FOR TC
PLEASE REFER TO THE LETTER FROM ICAO AFI OFFICE DATED XXXXXX
NXT MSG : NIL

3. Example of TEST SIGMET for Volcanic Ash

WVXXii CCCC YYGGgg
CCCC SIGMET n (nn) VALID YYGGgg/ YYGGggCCCC-
THIS IS A TEST SIGMET , PLEASE DISREGARD. TEST VA ADVISORY NUMBER xx

RECEIVED AT YY GGggz =

Example:

WVHK31 VHHH 180205
VHHK SIGMET 01 VALID 180205/180215 VHH-
THIS IS A TEST SIGMET, PLEASE DISREGARD. TEST VA DVISORY NUMBER 01
RECEIVED AT 180200Z =

4. Format of TEST SIGMET for Tropical Cyclone

WCXXii CCCC YYGGgg
CCCC SIGMET n (nn) VALID YYGGgg/YYGGgg CCCC-
THIS IS A TEST SIGMET, PLEASE DISREGARD. TEST VA DVISORY NUMBER xx
RECEIVED AT YYGGggZ=

Example :

WCHK31 VHHH 180205
VHHK SIGMET 01 VALID 180205/180215 VHHH-
THIS IS A TEST SIGMET, PLEASE DISREGARD. TEST TC ADVISORY NUMBER 01
RECEIVED AT 180200Z=

5. Format of TEST SIGMET for other weather phenomena

WSXXii CCCC YYGGgg
CCCC SIGMET n (nn) VALID YYGGgg/YYGGgg CCCC
THIS IS A TEST SIGMET, PLEASE DISREGARD =

Example :
WSHK31 VHH H180200

VHHK SIGMET 04 VALID 180200/ 180210 VHHH-
THIS IS A TEST SIGMET, PLEASE DISREGARD =

Note : 1) " x x " in the WMO heading to be used replaced by the respective WMO geographical designator
2) Actual number to be used in all TEST SIGMETS

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6. AFI Volcanic ash test procedure

Format of the test VAA

a) The format for the TEST VAA that will be provided by the Toulouse VAAC can be seen below. DD is the day of the month, HH the hour of issuance.

FVAF01 LFPW DDHH00
VOLCANIC ASH ADVISORY
ISSUED: 200506DD/HH00Z
VAAC: TOULOUSE
VOLCANO: FICTITIOUS
LOCATION: NIL

AREA : NIL
SUMMIT ELEVATION : NIL
ADVISORY NUMBER : 2005/01
INFORMATION SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS : NIL
OBS ASH DATE/TIME : NIL
OBS ASH CL: NIL FCST
ASH CL+6H:NIL FCST
ASH CL+12H:NIL FCST
ASH CL+18H:NIL
NEXT ADVISORY: NO FURTHER ADVISORIES

REMARKS:

THIS IS A VAA TEST MESSAGE APPLICABLE TO THE WHOLE OF ICAO AFI REGION. EACH METEOROLOGICAL WATCH OFFICE, AREA CONTROL CENTRE AND FLIGHT INFORMATION CENTRE SERVING FLIGHT INFORMATION REGIONS WITHIN THE AFI REGION RECEIVING THIS MESSAGE SHOULD ISSUE AN ADMINISTATIVE MESSAGE USING THE WMO HEADER NOAF33 LFPW AND SEND IT TO THE AFTN ADDRESS LFZZMAFI TO ACKNOWLEDGE THE RECEPTION OF THIS VAA MESSAGE.

b) Template of the SIGMET (without meteorological content = acknowledgement of receipt) to be sent by the MWO/ACC/FIC to both RODBs:

TO: VAAC TOULOUSE, RODB DAKAR, RODB PRETORIA
WVFR31LFPW080200

LFFF SIGMET 1 VALID 080400/081000 LFPW-
LFFF PARIS FIR/UIR TEST TESTTESTTEST
ACK RECEP TEST VAA FROM VAAC TOULOUSE
VOLCANO UNKNOWN AREA ICAO AFI REGION

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INFO SOURCE TEST VOLCAFI
DTG 20071127/0615Z RECEIVED AT 27/0621Z
TEST VA SIGMET PLEASE DISREGARD
TEST TESTTESTTESTTESTTESTTESTTESTTESTTESTTEST TEST=

Note : Parts of the SIGMET message (acknowledgement of receipt) highlighted, must be replaced with information about the Recipients, date, your MWO/ACC/FIC and corresponding FIR.

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Attachment 2 to Appendix J

EXEMPLE OF TCA TEST MESSAGE FORMAT FROM LA REUNION TCAC

KIO20 FMEE 100900
TC ADVISORY
DTG: 20090610/0900Z
TCAC: REUNION
TC: TEST
NR: 01
PSN: NIL
MOV: NIL
C: NIL
MAX WIND: NIL
FCST PSN +06HR: NIL
FCST MAX WIND +06HR: NIL
FCST PSN +12HR: NIL
FCST MAX WIND +12HR: NIL
FCST PSN +18HR: NIL
FCST MAX WIND +18HR: NIL
FCST PSN +24HR: NIL
FCST MAX WIND +24HR: NIL
RMK: THIS IS A TEST TC ADVISORY. MWO SHOULD NOW ISSUE A TEST SIGMET FOR TC, UNLESS THERE IS A VALID SIGMET FOR TC.
NXT MSG: NIL

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Attachment 3 to Appendix J

SIGMET TEST PROCEDURES
- Examples of TEST advisories and SIGMETs -

1. Format of TEST SIGMET for Volcanic Ash

WVXXiiCCCCYYGGgg
CCCC SIGMET n(nn) VALID YYGGgg/YYGGgg CCCC−
THIS IS A TEST SIGMET PLEASE DISREGARD. TEST VA ADVISORY NUMBER XX RECEIVED AT YYGGggZ=

Example:

WVSG31 GOOY 180205
GOOO SIGMET 01 VALID 180205/180215 GOOY-
THIS IS A TEST SIGMET, PLEASE DISREGARD. TEST VA ADVISORY NUMBER 01 RECEIVED AT 180200Z=

2. Exemple of TEST SIGMET for Tropical Cyclone

WCXXiiCCCCYYGGgg
CCCC SIGMET n(nn) VALID YYGGgg/YYGGggCCCC−
THIS IS A TEST SIGMET PLEASE DISREGARD. TEST TC ADVISORY NUMBER XX RECEIVED AT YYGGggZ=

Example:

WCHK31 VHHH 180205
VHHK SIGMET 01 VALID 180205/180215 VHHH-
THIS IS A TEST SIGMET PLEASE DISREGARD. TEST TC ADVISORY NUMBER 01 RECEIVED AT 180200Z=

3. Exemple of TEST SIGMET for other weather phenomena

WSXXiiCCCCYYGGgg
CCCC SIGMET n(nn) VALID YYGGgg/YYGGggCCCC−
THIS IS A TEST SIGMET PLEASE DISREGARD=

Example:

WSCG31 FCBB 180200
FCCC SIGMET 04 VALID 180200/180210 FCBB-
THIS IS A TEST SIGMET PLEASE DISREGARD=

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Attachment 4 to Appendix J

SAMPLE TABLE TO BE USED BY RODBS

AFI SIGMET TEST Summary (Reception time at RODBs)

Name of RODB : Dakar or Pretoria
Date of test : YYYY/MM/DD
Target : VA (Volcanic Ash)

VAA	Header		Received time (UTC)
TTAAii	CCCC	YYGGgg	
FVXX01	LFPW	180200	18:00:27

SIGMET	Header				Received time (UTC)
TTAAii	CCCC	YYGGgg	MWO	FIR/UIR	
WVSG31	GOOY	180235	GOOY	GOOO	18:06:02
WVCD31	FTTJ	180311	FTTJ	FTTT	18:07:58
WVNI31	DNKN	180255	DNKN	DNKK	18:17:55

Name of RODB : Dakar or Pretoria
Date of test : YYYY/MM/DD
Target : TC (Tropical Cyclone)

TCA	Header		Received time (UTC)
TTAAii	CCCC	YYGGgg	
FKIO01	FMEE	180200	18:08:27

SIGMET	Header				Received time (UTC)
TTAAii	CCCC	YYGGgg	MWO	FIR/UIR	
WCMG20	FMMI	180250	FMMI	FMMM	18:02:55
WCTN31	HTDA	180402	HTDA	HTDC	18:03:58
WCZA31	FAJS	180356	FAJS	FAJA	18:03:44
WCBC31	FBSK	180322	FBSK	FBGR	18:03:15

INTERNATIONAL CIVIL AVIATION ORGANIZATION

AFI MET BULLETINS EXCHANGE (AMBEX) HANDBOOK

Seventh Edition – Amendment 2

July – 2011

Corrigenda 1: September 2012

Prepared by the ICAO ESAF & WACAF Offices
And published under the authority of the Secretary General

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~~RECORD OF AMENDMENTS AND CORRIGENDA~~

~~Amendments~~			
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AMBEX HANDBOOK - 7TH EDITION -

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ABBREVIATIONS AND ACCRONYMES

ADMIN	Administrative
AFI	Africa and Indian Ocean region of ICAO
AFMAG	AFI MET Advisory Group
AFS	~~Aerodrome flight information service~~ Aeronautical fixed service
AFTN	Aeronautical fixed telecommunication network
AIREP	Air-report
AMBEX	AFI MET Bulletins Exchange (System)
AMD	Amend/Amended
ANP	Air Navigation Plan
APIRG	AFI Planning and Implementation regional Group
ASIA/PAC	Asia and Pacific Region of ICAO
BCC	Bulletin Compilation Centre
~~BRDO~~	~~Banque Régionale des Données OPMET~~
COM	Communications
ESAF	East and South African (Office)
EUR	Europe region of ICAO
FASID	Facilities and Services Implementation Document
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
IROG	Inter-regional OPMET gateway
ISCS	International Satellite Communication System
MET	Meteorology
MET/SG	MET Sub-group
METAR	Aerodrome routine meteorological report
MID	Middle East region of ICAO
NAM	North American region of ICAO
NOC	National OPMET Centre
ODREP	OPMET Data Regional Exchange Points
OMM	Organisation Météorologique Mondiale
OPMET	Operational meteorological *(information)*
RODB	Regional OPMET Data Bank
SADIS	Satellite Distribution of Aeronautical Information
SAM	South African (Office)
SARP	Standards and Recommended Practices [ICAO]
SIGMET	Information concerning en-route weather phenomena which may affect the safety of aircraft operation
SPECI	Aerodrome special meteorological report *(in meteorological code)*
TAF	Aerodrome forecast
TCA	Tropical Cyuclone Advisory
TCAC	TCA Centre
VAA	Volcanic Ash Advisory
VAAC	VAA Centre
WACAF	Western and Central African (Office) of ICAO
WMO	World Meteorological organization

1. INTRODUCTION

1.1 The Africa- Indian (AFI) Meteorological Bulletin Exchange (AMBEX) scheme was established by the **AF**I Planning and Implementation Regional Group (APIRG) in 1986. The scheme became operational in 1986 and has since then been successfully serving the ICAO AFI Region in the exchange of the required OPMET information.

Note: AFI Meteorological Advisory Group (AFMAG) was created by the LIM AFI (COM/MET/RAC) RAN Meeting in Lome April 1988 and established by APIRG/6 Meeting in November 1989.AFMAG was replaced by AFI Meteorology Sub Group (MET/SG) at APIRG/11 Nairobi 1998. AMBEX was implemented starting on 29 August 1986.

1.2 AMBEX scheme was intended initially only for TAF exchanges. AIREPs and METAR were added to the scheme ~~at a later stage~~ and later, SIGMET, Volcanic Ash Advisory (VAA) and tropical Cyclone (TCA) were also added.~~has been added in this edition~~. The operation of the AMBEX scheme included exchange of OPMET bulletins between the originating tributary offices and the bulletin compiling centres, which, according to their functions and responsibilities, were classified as METAR Collection Centres, TAF Collection Centres and AIREP Collection Centre. The operational exchange has been carried out according to agreed transmission schedules; the bulletin contents were specified in the AMBEX Handbook.

1.3 The procedures described hereunder are based to a significant degree on corresponding procedures in use in the Regional OPMET Bulletin Exchange (AMBEX) Scheme (AFI). Although uniformity is desired, the AMBEX Scheme is not intended as a rigid scheme for the AFI Region where variations or adaptation of the basic principles appear more efficient. AMBEX centre authorities are strongly requested to suggest to the Secretary of the MET/SG any local changes that are considered desirable for the enhancement of the efficiency of the scheme.

1.4 Based on communications (COM) facilities of very limited capacity in the early seventies, the AMBEX scheme was strictly planned to accommodate only those OPMET exchanges considered vital for the flight operations. Over the years, the COM facilities have been improving considerably and the AMBEX scheme has been developed accordingly.

1.5 Recently, it has been identified that significant changes in the scheme were needed in order to make it compatible with the existing COM environment and satisfy the evolving user requirements. In view of this, APIRG adopted conclusions that called for further development of the AMBEX scheme according to the new operational requirements.

1.6 The AMBEX Handbook is the main guidance material providing detail on the procedures for OPMET exchange under the AMBEX scheme. The Handbook defines the responsibilities of the AMBEX centres and the procedures to be followed. It defines also the content and format of the AMBEX bulletins.

1.7 The AMBEX Handbook is published and kept up-to-date by the ICAO ESAF and WACAF Offices.

2. AMBEX SCHEME - GENERAL

2.1 Objective

2.1.1 The main purpose of the AFI Meteorological Bulletins Exchange (AMBEX) Scheme is to:

- ensure the most efficient and economical exchange of operational meteorological (OPMET) information within the AFI Region as well as with the other ICAO regions to meet the requirements of users of OPMET information, and
- ensure the implementation of the OPMET-related SARPs in Annex 3 and Annex 10, and the relevant provisions of the ICAO Air Navigation Plan (ANP) for the AFI Region in a highly efficient and standardized way.

2.2 Structure

2.2.1 The above objective is achieved by implementing a number of AMBEX collecting and disseminating centres (AMBEX centres), Regional OPMET data banks (RODBs)*, and inter-regional OPMET gateways (IROGs). All these operational units form the **AMBEX scheme.** In order to ensure seamless global exchange of the required OPMET information, the AMBEX Scheme should be developed in compliance with similar structures in the other ICAO regions, as well as with the aeronautical fixed service ~~system~~ (AFS) satellite distribution systems used to disseminate OPMET data.

** Note: The AFI OPMET Regional Data BANKS are currently located in Dakar, Senegal and Pretoria, South Africa.*

2.3 Products

2.3.1 The AMBEX scheme prepares and delivers to the aviation users the required OPMET information in the form of **bulletins.** The scheme should handle all types of OPMET information in alphanumeric bulletin form and should provide facilities and services for scheduled and non-scheduled delivery of OPMET information to users.

2.4 Communications -General

2.4.1 Use of AFS Components

According to Annex 3, 11.2,[2?] telecommunications facilities used for the exchange of operational meteorological information should be the aeronautical fixed service". The use the AFS for the OPMET exchange encompass two components:

- Use of terrestrial AFTN circuits; and
- Use of satellite distribution systems-SADIS .

2.4.2 Use of the AFTN

2.4.2.1 In the AMBEX scheme AFTN circuits are used for collection of the OPMET messages by the AMBEX centres and for regional and inter-regional exchanges of OPMET bulletins. The access to the regional OPMET data banks (request-reply service provided by the RODBs) is also provided through the AFTN.

2.4.2.2 OPMET bulletins transmitted via the AFTN shall be in encapsulated in the text part of the AFTN message format (Annex 3, Appendix 10, 2.1.4).

2.4.2.3 Transit times of the AFTN messages and bulletins containing OPMET information are specified in Annex 3, Appendix 10, 1.1

2.4.2.4 OPMET bulletins via AFTN should use the following **priority indicators:**

- **FF: SIGMET, SPECIAL AIR-REPORTS ~~AIREP SPECIAL,~~ VAA,TCA and TAF amend (** cf. Annex 10 Vol II, 4.4.1.1.3)
- **GG: TAF, METAR and SPECI (cf. Annex 10 VolI, 4.4.1.1.4)**

2.4.2.5 **Filing times** of the bulletins should be according to Annex 3, Appendix 10, 2.1.2

2.4.3 Use of the Satellite Distribution System for aeronautical information (SADIS-operated by the UK)

2.4.3.1 SADIS satellite broadcast is used by the authorized users in the States for receiving global OPMET DATA.

2.4.3.2 FASID Table MET 7 of the AFI regional plans contains a list of authorized users for the SADIS broadcast.

2.5 Use of the Internet

2.5.1 Internet may be used to the dedicated internationally agreed circuits for exchange of meteorological data. An internet based FTP service to SADIS has been operational since 2002.

2.5.2 In future, it is intended that RODBs should also provide internet based facilities for retrieval of OPMET information. RODB Dakar is already using the Internet to provide METARs and TAFs.

2.6 Management

2.6.1 Monitoring of the OPMET exchange under the AMBEX Scheme, planning for improvements and preparation of proposals for any changes that may be necessary, are carried by the APIRG. In order to achieve these tasks, the AMBEX implementation status and planning is part of the agenda of the AFI MET Sub-group (MET/SG).

Note: When necessary, contributory bodies may be established by APIRG or the MET Sub-group to deal with OPMET specific issues. The AFI OPMET Management Task Force, established by APIRG/16 is currently tasked to deal with all OPMET related issues in the AFI Region

2.6.2 Any proposals for amendments to the AMBEX Scheme , which States or international

organizations concerned consider ~~it~~ necessary, due to changes in operational requirements for OPMET data or to developments of the AFS , should be forwarded for consideration by the ICAO Regional Offices of Dakar, Senegal and Nairobi, Kenya as the case may be.

2.7 Documentation

2.7.1 The AMBEX Handbook is the main guidance material related to the AMBEX Scheme. It should be kept up-to-date by the ICAO Regional offices referred to above coordinated by the Secretary of the OPMET Task Force in close coordination with the Secretary of the MET Sub-group.

2.7.2 The AFI OPMET Data Banks Interface Control Document(ICD) is a supplementary document which provides users with guidance on the interrogation procedures and the content of the RODBs.

3. DEFINITIONS AND SYMBOLS

3.1 Within the AMBEX Scheme, the following definitions and symbols are used:

i) AMBEX: AFI MET Bulletins Exchange (Scheme);

ii) AMBEX Bulletin: A collection of AMBEX messages originating from MET offices within a collection area, always containing the same type of OPMET data and identified by an appropriate identifier. Bulletins should not exceed 1800 characters in length;

iii) ***National OPMET center (NOC).*** Normally, a NOC is associated with the State's national AFTN centre/switch. The role of the NOC is to collect all OPMET messages generated by the originating stations in the State and to send them to the responsible AMBEX bulletin compiling center (AMBEX BCC). Some NOCs serve also as AMBEX BCCs. National regulations should be developed to ensure that NOCs disseminate the international OPMET data within their own State, as necessary.

iv AMBEX Bulletin Compiling Centre (BCC): AMBEX centres (former TCC, MCC or ACC, etc..) are responsible for collection of OPMET messages from the originating stations or NOCs in their area of responsibility and for compiling these messages into AMBEX bulletins. FASID Tables MET 4A and MET 4B determine the areas of responsibility (or, collection areas) of the AMBEX centres for METAR/SPECI, and TAF, respectively.

v) OPMET Inter-regional Gateway (IROG) A designated centre charged with the responsibility of exchanging OPMET data between stations within the AFI Region and in adjacent regions, as prescribed in this Handbook. The plan of OPMET data exchange between regions through an IROG is based on pre-determined distributions responsibilities, and/or on a request/reply basis;

vi) YPYX: Fifth, sixth, seventh and eighth letter of an addressee indicator to be used:

a) with the normal four-letter location indicators, to designate BCCs

b) with indicators for pre-determined distribution within a BCC collection area.

vii) Regional OPMET Data Bank (RODB): A centre charged with task to collect OPMET bulletins from AMBEX centres, handle all types of OPMET bulletins, provide facilities for "request-reply" service to authorized users, maintain a catalogue of bulletins, quality control the incoming bulletins and inform AMBEX centres on any deficiencies, monitor the OPMET traffic and report to the ICAO Regional Office on the results

Note: The designated RODB and their responsibilities are described in ***Appendix E***

4. OPMET INFORMATION AND OPMET EXCHANGES

4.1 OPMET Data Type

4.1.1 The following OPMET data types should be handled by the AMBEX scheme:

Data type	Abbreviated name	WMO data type designator
Aerodrome reports	METAR SPECI	SA SP
Aerodrome forecasts	TAF: 24 and 30 hour	FT
SIGMET information	SIGMET SIGMET for TC SIGMET for VA	WS WC WV
Volcanic ash and tropical cyclone advisories	Volcanic Ash Advisory Tropical Cyclone Advisory	FV FK
Air-reports	AIREP SPECIAL (ARS)	UA
Administrative	ADMIN	NO

4.2 OPMET bulletins

4.2.1 The exchange of OPMET data is carried out through bulletins containing one or more meteorological messages (METAR, SPECI, TAF or other OPMET information). An OPMET bulletin contains messages of the same type.

4.2.2 The format of OPMET bulletins is determined by:

- *ICAO Annex 10, Aeronautical telecommunications*, as regards the AFTN envelope of the bulletin;
- WMO-No.386, *WMO Manual on the Global telecommunication System*, as regards the WMO abbreviated heading of the bulletin;
- *ICAO Annex 3* and WMO-No.306, *Manual on Codes*, as regards the format and coding of the information included in the bulletin.

4.3 Types of OPMET exchange

4.3.1 Regional exchange – AMBEX scheme

4.3.1.1 The AMBEX scheme covers the exchange of OPMET information in the AFI region. It includes several types of exchanges as described below.

4.3.1.1.1 *Regular Exchange under AMBEX*. This is a scheduled exchange that encompasses collection of messages from the originating stations, compiling of bulletins and their dissemination according to predetermined distribution schemes. The collection and distribution is carried out at fixed times and the bulletin content is defined in the current Handbook.

4.3.1.1.2 *Non-regular exchange*. This includes:

a) *Exchange on request (request-reply service)*. The RODBs store OPMET data and make them available on request.

b) *Exchange of non-routine reports:* SPECI; TAF AMD; SIGMET; TCA and VAA; ADMIN messages.;

4.3.2 Inter-regional OPMET exchange

4.3.2.1 Exchange of OPMET data between the AFI and the other ICAO Regions is carried out via designated centres, which serve as Inter-regional OPMET Gateways (IROG). An IROG is set up for sending/receiving specified OPMET data between AFI and every other ICAO region for which AFI OPMET data are required.

Note: The former name of these centres is ODREP.

4.3.2.2 Inter-regional OPMET exchange via IROGs is carried out through the ground segment of the AFS (currently, through the AFTN).

4.3.3 Exchange of OPMET information through the satellite segment of the AFS

4.3.3.1 The three satellite broadcasts provided by the United Kingdom (Satellite Distribution System for Aeronautical Information Relating to Air Navigation - SADIS) and the United States (International Satellite Communication System – ISCS/1 and ISCS/2), form another type of OPMET exchange, which is global in nature and is intended to cover the emerging requirement for global access to all available OPMET data.

4.3.3.2 All AFI data handled by the AMBEX scheme should be relayed to the SADIS for global broadcast.

4.3.4 Other OPMET exchanges

4.3.4.1 Where OPMET exchanges described in the above paragraphs are not sufficient, direct AFTN addressing should be utilized by the originating centres.

5 COMPOSITION OF AMBEX

5.1 Components of the AMBEX

5.1.1 AMBEX scheme involves a number of aeronautical meteorological stations, aeronautical telecommunication stations, aerodrome meteorological offices and other operational units. The following operational units should be considered as components of the AMBEX scheme:

- Originating station
- National OPMET center (NOC)
- AMBEX bulletin compiling centre (BCC)-AMBEX Centre
- Regional OPMET Data Banks (RODBs)
- Interregional OPMET gateway (IROG) .

5.2 Originating Station

5.2.1 It is an aeronautical meteorological station or an aerodrome meteorological office, or a forecasting office, or a MWO, or a TCAC, or a VAAC. The duties and responsibilities of these originating stations should be defined by the State's meteorological authority.

5.3 National OPMET Center (NOC).

5.3.1 Normally, a NOC is associated with the State's national AFTN centre/switch. The role of the NOC is to collect all OPMET messages generated by the originating stations in the State and to send them to the responsible AMBEX bulletin compiling center (AMBEX BCC). Some NOCs serve also as AMBEX BCCs. National regulations should be developed to ensure that NOCs disseminate the international OPMET data within their own State, as necessary.

5.4 AMBEX Bulletin Compiling Centre (AMBEX BCC or, in brief, AMBEX centre).

5.4.1 AMBEX centres are responsible for collection of OPMET messages from the originating stations or NOCs in their area of responsibility and for compiling these messages into AMBEX bulletins. FASID Tables MET 4A and MET 4B determine the areas of responsibility (or, collection areas) of the AMBEX centres for METAR/SPECI and AIREP SPECIAL, and TAF, respectively.

5.4.2 The AMBEX centres are responsible for the transmission of the bulletins compiled by them to:

- other AMBEX centres, according to predefined distribution lists, specific for each bulletin;
- AFI RODBs (Dakar and Pretoria);
- NOCs or other COM or MET offices in the States in their area of responsibilities, as agreed between the AMBEX centre and the States' authorities concerned.

Note: The former AMBEX scheme involved separate compiling centres for METAR and TAF (METAR Collection Centres, and TAF Collection Centres. In some cases, METAR from an aerodrome was compiled by one center, and the TAF from another center. The evolution of AMBEX should be towards unified AMBEX centers responsible for collecting/distributing of all OPMET data types within their area of responsibility.

5.5 Regional OPMET Data Banks (RODB)

5.5.1 Two centres have been designated by APIRG (APIRG/13 Conclusion 13/67, 2001), to serve as Regional OPMET Data Banks: Dakar and Pretoria. FASID Table MET 4C reflects the requirements for the operation of the AFI OPMET data banks to support the AMBEX Scheme.

5.5.2 The **main responsibilities** of the RODBs are defined, as follows:

- to support the AMBEX Scheme and to facilitate a regular exchange of OPMET information based on predetermined distribution within the AFI Region;
- to operate as Inter-regional OPMET Gateway (IROG) with responsibility of exchanging OPMET information between AFI Region and the adjacent Regions; and
- to provide facilities for request/response type of access to the stored OPMET data for users to obtain non-regular or occasional information.

Note. — The interrogation procedures applicable to the OPMET data banks and catalogues are provided in the "AFI Regional Interface Control Document (ICD) - OPMET Data Bank Access Procedures", *published and maintained by the ICAO Regional Offices in Dakar and Nairobi*

5.6 Inter-regional OPMET Gateways (IROG).

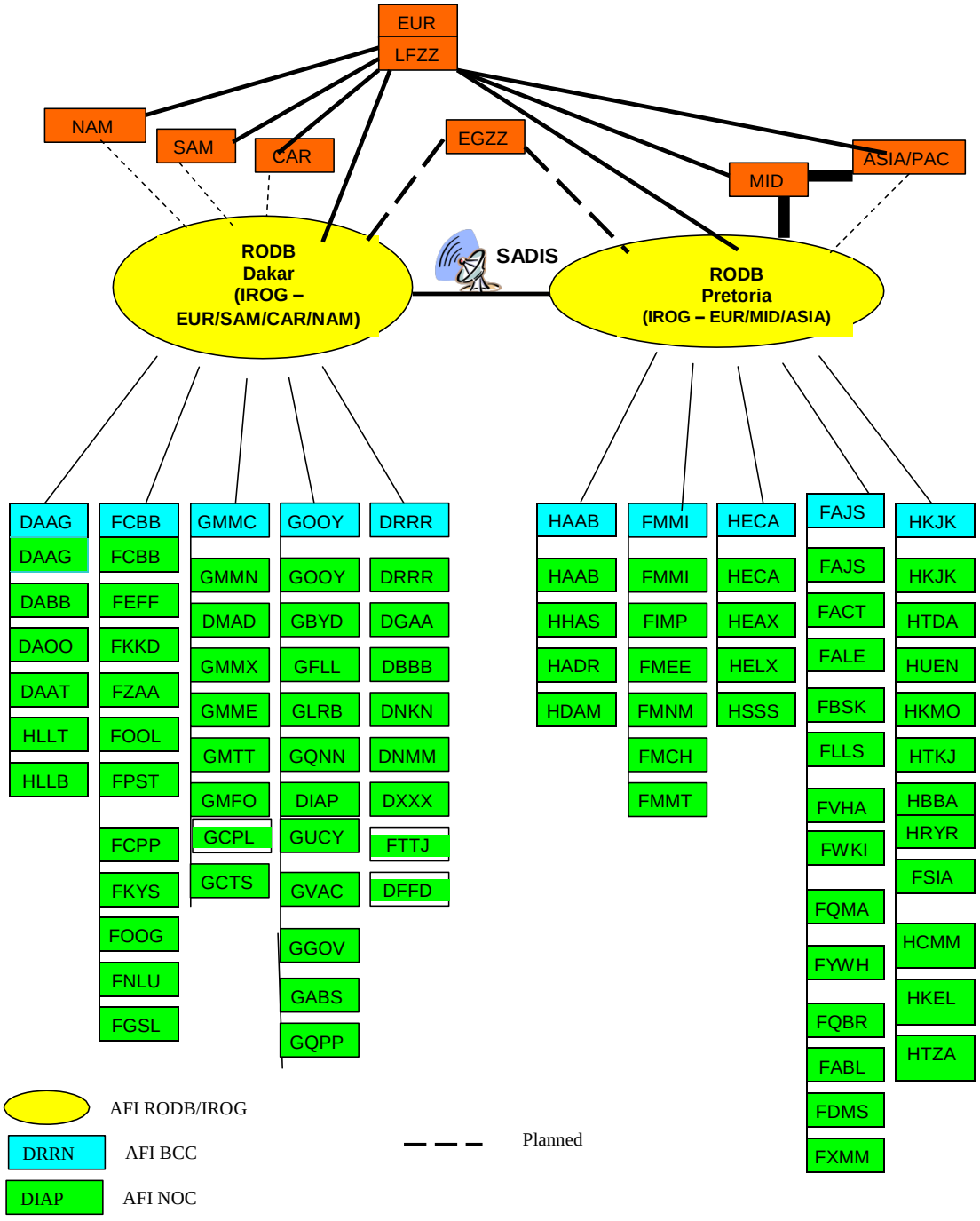
5.6.1 The Inter-regional OPMET Gateways in the AFI Region are the designated RODBs. Each RODB is assigned responsibility for exchange of OPMET information with other ICAO Regions. The responsibilities of the IROGs for AFI is shown in para. 11.1 of this Handbook.

5.6.2 ***Support to the SADIS broadcast.*** The RODBs and IROGs should facilitate the global exchange of OPMET data carried out through the SADIS satellite broadcast. In order to achieve this, close liaison should be maintained between the IROGs and the corresponding SADIS gateways. Availability of AFI data on SADIS should be monitored and any systematic shortfalls of data identified should be reported to the relevant ICAO regional office.

5.7 Structure of the AMBEX Scheme

5.7.1 The overall structure of the AMBEX scheme is presented in the following diagram

AMBEX SCHEME



6. TAF EXCHANGE

6.1 General

6.1.1 Aerodrome forecast (TAF) should be prepared by the aerodrome meteorological offices (AMOs) or other meteorological offices, designated for provision of TAF by the State's meteorological authority, for all international aerodromes, for which TAF is required according to FASID Table MET 1A of the AFI ANP.

6.1.2 All TAFs required should be included in the regular AMBEX exchange. In addition, TAFs from a number of other, including domestic aerodromes, required by the users, should also be included in the regular AMBEX exchange, if so agreed by the States concerned.

Notes: *1) The recent requirement by airlines is that TAF for all international aerodromes listed in AFI FASID Table MET 1A should be available through regular exchange and through the satellite distribution system SADIS..*

2) SADIS User Guide (SUG) Annex 1 presents the requirements for OPMET data (METAR and TAF) by aviation users. When OPMET data from domestic airports (so called non-AOP airports) is required by users, the corresponding State is consulted on its agreement for providing this additional information. If the information is available and the State agrees to include it in the exchange, the additional airports are included in SUG Annex 1 and the State should provide the additional OPMET information on a continuous basis.

6.1.3 TAF exchanges not covered by the AMBEX Scheme, but required operationally, should be met by means of direct addressed AFTN messages.

6.1.4 The requirements for the exchange of 24 or 30-hour TAFs (so called "long" TAFs with WMO data designator – FT), are set in FASID Table MET 1A of the ANP. "Short" TAFs with 9- or 12-hour period of validity (WMO data designator - FC), are no longer issued by States in the AFI region

6.1.5 AMBEX messages and bulletins are normally sent via the AFTN. In exceptional circumstances, when the AFTN cannot give adequate support to AMBEX traffic, the temporary use of alternative existing communications systems should as far as possible be coordinated with the ICAO Regional Offices concerned.

6.1.6 Each AMBEX message and AMBEX bulletin should conform strictly to the Annex 10 message format.

6.1.7 Each AMBEX message and AMBEX bulletin should carry a WMO abbreviated heading (see **Appendix C)**.

6.1.8 Each AMBEX message or bulletin, should terminate with an equal (=) sign (signal no. 22 of International Telegraph Alphabet no.2 in the figure case).

6.1.9 The procedures described in this Handbook are intended for the manual preparation of AMBEX messages and bulletins. It is not intended, however, that the Handbook precludes the use of automated or semi-automated procedures. When required, the procedures described hereunder should be modified and applied in a manner which will fully exploit the capabilities of the equipment available. The AMBEX messages and bulletins produced by application of such modified procedures should be in a

format compatible with the format described in this Handbook.

6.2 Responsibilities and procedures to be followed by originating aerodrome meteorological offices (AMOs) and NOCs

6.2.1 Originating AMOs (or other designated forecasting offices) should prepare the required TAF messages for the periods of validity indicated in **Appendix B**. TAFs should be sent by the AMOs or NOCs and to the responsible AMBEX center before the cut-off time set up by this centre.

6.2.2 Aerodrome meteorological offices in preparing TAF should follow strictly the template for TAF in Annex 3, Appendix 5 and the WMO TAF code form (FM 51-XII TAF, WMO – No. 306, *Manual on Codes*, Volume I.1, Part A – *Alphanumeric Codes*).

6.2.3 TAFs should be monitored by the originating AMOs and amended TAF (TAF AMD) should be issued according to the established criteria. Amended TAFs should be sent by the originating station to the responsible AMBEX centre with no delay. The optional group BBB should be used in the WMO abbreviated heading to indicate amended TAF in accordance with **Appendix C**.

6.2.4 TAF messages should be quality controlled by the originating meteorological offices and, when necessary, a corrected TAF (TAF COR) should be sent immediately after an error in an already transmitted message had been identified.

6.2.5 Within five minutes of the time of preparation of the TAFs, an AMBEX message should be filed for transmission to the BCC concerned.

6.2.6 Not later than five minutes after being filed for transmission, the AMBEX messages should be sent to the BCCs. This means that BCCs should have available AMBEX messages from all stations in their area of responsibility (AOR) within ten minutes of the times shown in column 6 of **Appendix B.**

6.2.7 The following is an outline of the procedures to be applied in preparing an AMBEX message at an office other than a BCC:

Parts of Message		Resulting Page Copy
a)	Priority Indicator and Address	GG DRRNYPYX
b)	Date and Time of Filing and Originator	281010 DGAAYMYX
c)	WMO Abbreviated Heading (see **Appendix C)**	FTGH31 DGAA 281000
d)	TAF	TAF DGAA 281030Z 2812/2912 13010KT 9000 BKN020 TEMPO 2816/2820 3000 DZ BKN005 OVC05 FM290430 17010KT 9999 BKN015 BKN100 =
e)	Normal Ending.	

6.2.8 If an amendment to a TAF previously issued becomes necessary, a new AMBEX message should be prepared and sent to the BCC concerned. The WMO abbreviated heading for this message should be the same as for the AMBEX message containing the original TAF, with the addition of the optional groups AAA, AAB, AAC etc. (to indicate the first, second, third etc. amendment to the original TAF). Optional groups are also used for sending delayed TAFs, RRA, RRB, RRC, etc and corrected TAFs CCA, CCB, CCC, etc in accordance with **Appendix C**.

6.2.9 TAFs for individual aerodromes in the AMBEX Scheme should not be addressed to aerodromes in those cases where the AMBEX Scheme already caters reliably for their dissemination.

6.2.10 Requests for missing bulletins should be sent to the BCC responsible for compiling the bulletins and should be in the following format:

Parts of Message		Resulting Page Copy
a)	Priority Indicator and Address of the BCC concerned	GG HKJKYPYX
b)	Date and Time of filing and Originator	051305 FMMIYMYX
c)	**Text**	**RQM/SAYSSY, YBBN, YMML=**
d)	Normal ending	NNNN.

Note: Certain BCCs may require AFTN addresses other than those of the BCCs themselves to be used for request messages. A list of such addresses will be compiled and included in the AMBEX Handbook.

6.2.11 Provisions concerning request messages to the AFI RODBs are given in the ICD of the Dakar and Pretoria RODBs.

6.3 Responsibilities and procedures to be followed the AMBEX Centres (BCCs)

6.3.1 AMBEX centres should collect TAFs from the AMOs and/or NOCs in their area of responsibility and compile TAF Bulletins according to **Appendix B**. The areas of responsibility, as far as practicable, should group together aerodromes and their alternates. AMBEX centres should ensure that TAFs within their area of responsibility have common periods of validity.

6.3.2 AMBEX centres should establish a cut-off time for reception of TAFs from AMOs and/or NOCs in their area of responsibility, e.g., 15 minutes before the filing/transmission times specified in **Appendix B**. At the cut-of time AMBEX centres should compile TAF bulletin(s) containing all prescribed aerodromes, without indicating any missing TAF with “NIL”.

6.3.3 The filing time for 24- and 30-hour TAF bulletins should be **two hours** before the start of the validity period.

6.3.4 AMBEX centres should transmit the compiled TAF bulletins to other AMBEX centres and the RODBs according to the distribution lists as specified for each TAF bulletin in **Appendix B**.

6.3.5 AMBEX centres should transmit the TAF bulletins compiled by them, as well as TAF bulletins received from other AMBEX centres, as necessary, to the NOCs and/or other offices in the States in their area of responsibility, as agreed between the AMBEX centre and the meteorological authorities of the States concerned.

6.3.6 A TAF message received by a AMBEX centre after the scheduled transmission of the corresponding bulletin is a delayed TAF. The AMBEX centre should then prepare an AMBEX bulletin of all TAFs received. If a TAF is not available, for any reason, at the cut-off time, the latest **still valid** TAF for the missing station may be included instead.

6.3.7 Amended TAF (TAF AMD) received from an AMO or NOC should be distributed with no delay as an amended TAF bulletin to all recipients in the distribution list for the TAF bulletin, to which the originating aerodrome belongs. The optional BBB group should be used in the WMO bulletin heading accordingly.

6.3.8 Each BCC should establish a cut-off time for the reception of AMBEX messages from stations within its AOR. The cut-off time should be about **twenty minutes** after the times of preparation of TAFs shown in column 6 of **Appendix B.**

6.3.9 A new tape, containing the address, origin and WMO abbreviated heading of the bulletin, is prepared. The bulletin is then assembled by combining this new tape with the text portions of the AMBEX messages received and adding a normal ending. Details of the WMO abbreviated headings that should be used by BCCs in their bulletins are given in **Appendix C**.

6.3.10 AMBEX centres should disseminate their own bulletins to the centres ~~stations~~ listed in column 9 of **Appendix B**. This dissemination should take place some **thirty minutes** after the time for preparation of the TAFs shown in column 6 of **Appendix B**.

6.3.11 No addresses other than those listed in column 10 of **Appendix B** should be used except in response to request messages.

6.3.12 The following is an outline of the procedures to be followed by AMBEX centres in the preparation of AMBEX bulletins.

Parts of Bulletin	Resulting Page Copy
a) Priority Indicator and Address	GG DAZZYPYX FAJSYMYX FCZZXLBX GOOZZSNGX HAZZYPYX HEZZYPYX HKZZYPBX
b) Date and Time of Filing and Originator	281030 DRRNYPYX
c) WMO Abbreviated Heading (see **Appendix B**)	FTA033 DRRN 281000
d) TAFs received from the stations in the AOR, in order shown in column 2 of **Appendix B**	TAF DRRN 281010Z 2812/2912 24003KT 8000 BKN020 BECMG 2813/2815 SCT018CB BKN020 TEMPO 2817/2820 VRB03 TSRA SCT015CB BKN020 FM290600 16008KT 9999 BKN020 BKN120 =

TAF DGAA 281020Z 2812/2912 13010KT 9000 BKN020 TEMPO 2816/2820 3000 DZ BKN005 OVC050 FM290400 17010KT 9999 BKN015 BNK100 =

TAF DBBB 281030Z 2812/2912 26008KT 9000 BKN020 PROB30 TEMPO 2815/2818 3000 TSRA BKN005 SCT020CB FM290000 24006KT 9000 BKN010 =

TAF DNKN 281030Z 2812/2912 VRB03KT 9999 BKN015 PROB30 TEMPO 2813/2816 2000 FG BKN003 BKN010 FM282000 24006KT 9000 BKN020 =

TAF DNMM 281028Z 2812/2912 24006KT 9000 BKN020 PROB30 TEMPO 2814/2816 3000 DZ BKN005 BKN010=

TAF DXXX 281030Z 2812/2912 26008KT 9999 BKN015 BECMG 2815/2817 SCT015CB BKN020 TEMPO 2818/2820 22020G35KT 2000 TSRA SCT010CB BKN020 FM282030 26006 9999 BKN020 BKN100 =

TAF FTTJ 281030Z 2812/2912 12006KT CAVOK TEMPO 2818/2820 SCT030 =

TAF DFFD 281030Z 2812/2912 20004KT 9999 BKN020 BECMG 2814/2816 SCT018CB BKN020 TEMPO 2816/2818 24010KT TSRA SCT015CB BKN020 FM290600 22008KT 9999 BKN020 BKN100 =

e) Normal Ending NNNN.

6.3.13 TAFs received by an AMBEX Centre after the cut-off time, and which have still at least 6-hour validity left, should be included in one or more bulletins of delayed TAFs. The WMO Abbreviated Heading for such bulletins should be the same as for the bulletin from which the TAFs are missing, with the addition of the optional groups RRA, RRB, RRC etc. (to indicate the first, second, third etc. bulletin of delayed TAFs), in accordance with **Appendix C,** paragraph 4.

6.3.14 When an AMBEX centre receives amended TAFs from originating stations or NOCs, it should prepare bulletins of amended TAFs. The WMO abbreviated heading for such bulletins should be the same as for the bulletin containing the original TAF, with the addition of the optional groups AAA, AAB, AAC etc. (to indicate the first, second, third etc. amendment to TAFs in the original bulletin), in accordance with **Appendix C**, paragraph 4.

6.3.15 "NIL" to indicate a missing TAF should not be used in AMBEX bulletins.

6.3.16 If an AMBEX centre finds it impossible to meet the specified filing times due to systematic late receipt of TAFs from originating stations or NOCs, it should reach an agreement with these stations on another filing time for their AMBEX messages and thereafter propose to the Secretary of the AFI MET/SG that this filing time be incorporated in the Handbook.

6.3.17 In addition to its own AMBEX bulletins, each BCC should distribute bulletins received from other BCCs to the MET offices within its originating stations or NOCs.

6.4 Format and content of TAF bulletins

6.4.1 Issuance and period of validity:

6.4.1.1 24- and 30-hour TAFs 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), as shown in the table below.

Synoptic hours (UTC)	24-hour TAF		30-hour TAF	
	Period of validity	Filing Time	Period of validity	Filing Time
00	00-24	22 (-1)*	00-06 (+1)	22 (-1)*
06	06-06	04	06-12 (+1)	04
12	12-12	10	12-18 (+1)	10
18	18-18	16	18-24 (+1)	16

**Note: "-1" indicates the previous day and "+1" indicates the next day*

6.4.1.2 All TAFs in a AMBEX TAF bulletin should have a common period of validity. It is not allowed to mix "long" and "short" TAFs in one bulletin.

6.4.2 Each TAF message in a TAF bulletin should start with the code word TAF followed by the ICAO location indicator (CCCC) of the aerodrome and the date/time group (YYGGggZ), indicating the official time of issuance. Corrected TAF messages, should start with TAF COR. Amended forecasts should start with TAF AMD.

6.4.3 The use of the BBB group in the WMO heading for delayed, corrected, or amended TAFs is described in **Appendix C**.

6.4.4 The following is an outline of the format to be applied by a AMBEX centre in preparing a TAF bulletin, containing "long" TAFs (24 or 30 hour):

Parts of Message	**AMBEX FT Bulletin**
AFTN header	
Priority Indicator and Address	GG YBBBYPYX
Date and Time of filing and Originator	271104 ZBBBYPYX
WMO Abbreviated Heading	FTCI31 ZBBB 271100
TAF messages	TAF ZBAA 271000Z 2712/2812.….= TAF ZBTJ 271000Z 2712/2818…….=
AFTN Normal Ending	NNNN…..

6.4.5 A missing TAF in a non TAF bulletin should be indicated with "NIL", as shown in the following example:

TAF VTBD 281000Z NIL=

6.4.6 A cancelled TAF in a TAF bulletin should be indicated with "CNL", as shown in the following example:

TAF VTBD 281000Z 2812/2912 CNL=

7. SPECIAL AIREP EXCHANGE

7.1 The meteorological watch offices (MWO) are responsible for collection through their associated ATS units of special air reports (AIREP SPECIAL) received from aircrafts within their FIR or ACC ~~CTA~~.

Note: – Routine air-reports received by data-link communications should be relayed directly to the WAFCS by the ATS unit.

7.2 MWOs should collect all special air-reports and prepare one-hour collectives in the form of a UA bulletin for transmission to the responsible AMBEX centre at the time specified by the AMBEX centre.

Notes:
1) The transmission of air-reports to the WAFCs as required by Annex 3 should be arranged by the meteorological authorities concerned.
2) MWOs should follow the special requirements for the dissemination of special air-reports as defined by Annex 3,

7.3 AFI FASID Table 2B describes the exchange of SIGMET and special AIREP reports procedures.

8. METAR/SPECI EXCHANGE

8.1 General

8.1.1 Hourly METAR reports should be prepared by all international aerodromes listed in FASID Table MET 1A. METAR should be issued **on an hour intervals** for those aerodromes, included in the HF VOLMET broadcasts (cf. FASID Table ATS 2 – HF Radiotelephony VOLMET Broadcasts), or D-VOLMET.

8.1.2 METAR from all international aerodromes listed in Table AOP 1 of the Basic ANP and , in FASID Table MET 1A, should be included in the regular AMBEX exchange. In addition, METAR from a number of domestic aerodromes, required by the users, should also be included in the regular AMBEX exchange in accordance with para. 12.1.3, if so agreed by the States concerned.

Note: SADIS User Guide (SUG) Annex 1 presents the requirements for OPMET data (METAR and TAF) by aviation users. When OPMET data from domestic airports (so called non-AOP airports) is required by users, the corresponding State is consulted on its agreement for providing this additional information. If the information is available and the State agrees to include it in the exchange, the additional airports are included in SUG Annex 1 and the State should provide the additional OPMET information on a continuous basis.

8.1.3 Description of the AFI METAR bulletins included in the regular AMBEX exchange, containing the responsible compiling AMBEX centre, WMO bulletin identification, and the list of aerodromes included in the bulletin, is given in **Appendix A**.

8.1.4 The official hour of observation to be included in the METAR bulletin heading is indicated in the table in **Appendix A**.

8.1.5 All METAR bulletins should be sent to both RODBs Dakar and Pretoria. AMBEX centres should exchange METAR bulletins according to the distribution lists given in **Appendix A**.

7.1.6 SPECI reports should be disseminated in the same way as the METAR reports originated by the same aerodrome.

8.1.7 Exchange of METAR/SPECI messages outside AMBEX scheme, if necessary should be carried out by direct AFTN addressed messages.

8.2 Responsibilities of originating stations and NOCs

8.2.1 The originating stations (aeronautical meteorological stations) and/or NOCs should prepare METAR messages for the observation times indicated in **Appendix A** and send them to their responsible AMBEX center.

8.2.2 SPECI should be prepared between the regular observation times, following the requirements set in Annex 3 and sent with no delay to the responsible AMBEX centre.

8.2.3 In preparing METAR and SPECI messages the originating stations should follow strictly the specifications for METAR and SPECI in Annex 3 (Chapter 4 and Appendix 3 including the template in Table A3-2) and the WMO METAR and SPECI code forms (FM 15-XII METAR and FM 16-XII SPECI, WMO – No. 306, *Manual on Codes*, Volume I.1, Part A – *Alphanumeric Codes*).

8.2.4 METAR messages should be sent to the responsible AMBEX centre before the cut-off time specified by the AMBEX centre, to allow for timely compilation of the METAR bulletin. If, for some reason, a METAR message has not been sent before the cut-off time, the originating station/NOC should send it as soon as possible after that, as a **delayed message**. The originating stations/NOCs should follow strictly the schedules specified for METAR messages and keep to a minimum the number of delayed messages.

8.2.5 METAR and SPECI messages should be quality controlled by the originating stations/NOCs and, when necessary, a corrected message should be sent immediately after an error in an already transmitted message had been identified.

*Note: Procedures applying to the corrected and delayed messages are given in **Appendix C**.*

8.3 Responsibilities of AMBEX Centres

8.3.1 AMBEX centres should collect METAR messages from the aerodromes in their area of responsibility and compile METAR bulletins, according to **Appendix A**. The content of bulletins and the order of stations in each bulletin should be kept fixed until a bulletin change is requested and coordinated according to the established procedure.

8.3.2 AMBEX centers should determine a cut-off time for the reception of METAR from the stations in their area of responsibility. At the cut-off time, the AMBEX centre should compile METAR bulletin(s) containing all prescribed aerodromes, indicating any missing METAR with "NIL".

8.3.3 At scheduled transmission times AMBEX centres should transmit the compiled METAR bulletins to other AMBEX centres and RODBs according to the distribution lists specified for each METAR bulletin in **Appendix A**. METAR bulletins should be filed for transmission not later than 5 minutes after the observation time.

8.3.4 AMBEX centres should transmit the METAR bulletins compiled by them, as well as bulletins received from other AMBEX centres, as necessary, to the NOCs and/or other offices in the States in their area of responsibility, as agreed between the AMBEX centre and the meteorological authorities of the States concerned.

8.3.5 A SPECI when received by an AMBEX centre should be sent as a SPECI bulletin to the same addresses, to which METAR from the issuing aerodrome are sent. Normally, a SPECI bulletin should contain a single SPECI.

8.3.6 The WMO heading of a SPECI bulletin should be constructed in the same way as the WMO heading of the METAR bulletin, which contains the aerodrome, for which the SPECI is issued, by using SP data type designator instead of SA.

8.3.7 A METAR message received by the AMBEX centre after the scheduled transmission of the corresponding bulletin is a delayed METAR. The AMBEX centre should send a delayed bulletin as soon as one or more delayed messages are received or at specified times after the scheduled bulletin time (e.g., the first delayed bulletin (RRA) issued 10 minutes after the regular time; the second delayed bulletin (RRB) issued 20 minutes after the regular time, etc.).

8.3.8 As soon as a corrected METAR or SPECI message is received from a station the AMBEX centre should transmit it as a corrected bulletin to all recipients.

8.4 Format and content of METAR Bulletins

8.4.1 Each METAR message in a METAR bulletin should start with the code word METAR followed by the ICAO location indicator (CCCC) of the aerodrome and the date/time group (YYGGggZ), indicating the official time of observation. Corrected METAR messages, should start with METAR COR.

8.4.2 The following is an example of the format to be applied in preparing a METAR bulletin by the AMBEX centre:

Parts of Message	AMBEX SA Bulletin
AFTN header	
Priority Indicator and Address Date and Time of filing and Originator	GG VTBBYPYX 271304 ZBBBYPYX
WMO Abbreviated Heading	SACI31 ZBBB 271300
METAR messages	METAR ZBAA 271300Z ..…… = METAR ZBTJ 271300Z …….=
AFTN Normal Ending	NNNN

Note: The inclusion of the code name METAR in front of each message in the METAR bulletin is compulsory.

8.4.3 The rules related to the use of the BBB group in the WMO abbreviated heading, in regard to delayed or corrected bulletins, are given in **Appendix C**.

8.4.4 For METARs, which are not available at the time of compilation of the bulletin, the code word NIL should be inserted following the date/time group indicating the time of the observation.

Example: METAR ZBTJ 271200Z NIL=

8.5 Format and content of SPECI Bulletins

8.5.1 A SPECI message included in a SPECI bulletin should start with the code word SPECI followed by the ICAO location indicator (CCCC) of the aerodrome and a date/time group (YYGGggZ) indicating the time of the observation of the meteorological conditions for which the SPECI is issued. Corrected SPECI messages, should start with SPECI COR. The following is an example of the format to be applied in preparing a SPECI bulletin by the AMBEX centre:

Parts of Message	AMBEX SP Bulletin
AFTN header	
Priority Indicator and Address Date and Time of filing and Originator	GG VTBBYPYX 081647 ZBBBYPYX
WMO Abbreviated Heading	SPCI31 ZBBB 081645
SPECI message	SPECI ZBAA 081645Z ..…… =
AFTN Normal Ending	NNNN

9. EXCHANGE OF SIGMET AND ADVISORIES

9.*1* SIGMET should be prepared by the meteorological watch offices (MWO) designated by the State's meteorological authority. The MWOs and their areas of responsibility are given in the FASID Table MET 1B of AFI ANP.

9.2 SIGMET should be distributed to the two RODBs, either directly or through the responsible AMBEX centre. The RODBs should make SIGMET messages available on request. In order to facilitate that, the originating MWOs, should use fixed WMO headings for their SIGMET bulletins as given in **Appendix E**.

9.3 SIGMET messages should be distributed to other ICAO regions and made available for uplink through SADIS. This distribution should be carried out through the relevant Inter-regional OPMET Gateways (IROGs).

9.4 Detailed information on the format of the SIGMET messages is provided in the AFI Regional SIGMET Guide, 9th edition, 2007, Amendment 2, June 2011, at the Web page

http://www.icao.int/wacaf/edocs/WACAF_Regional_SIGMET_Guide_en.pdf

9.5 Tropical Cyclone Advisories (TCAs) and volcanic ash advisories (VAAs) should be issued by the designated tropical cyclone and volcanic ash advisory centres (TCAC and VAAC), as indicated in the FASID Table MET 3A and MET 3B.

9.6 The TCACs and VAACs should send the advisories to the RODBs. The RODBs should make TCAs and VAAs messages available as appropriate or on request. In order to facilitate that, the originating TCACs and VAACs should use fixed WMO headings for their TCA and VAA bulletins as given in **Appendix E**

9.7 VAA and TCA messages should be distributed to other ICAO regions and made available for uplink through SADIS. This distribution should be carried out either directly by the VAACs and TCACs or through the relevant Inter-regional OPMET Gateway (IROG) such as Toulouse, France.

10. REGIONAL OPMET DATA BANKS (RODB)

10.1 The AFI Regional OPMET Data Banks and the AFTN addresses to be used for direct access to the banks are shown below:

RODB	AFTN ADDRESS	AMBEX CENTRES AND AREA OF RESPONSIBILITY
Dakar	GOOYYZYZ	Alger/DAMM Brazzaville/FCBB Casablanca/GMMC Dakar/GOOO Niamey/DRNN
Pretoria	FAJSYMYX	Addis Ababa/HAAB Antananarivo/FMMI Cairo/HECA Johannesburg/FAJS Nairobi/HKNA

10.2 Responsibilities:

10.2.1 Collect OPMET bulletins from the AMBEX centres in the area of responsibility and store them in a data base.

10.2.2 Handle all type of OPMET bulletins, as described in chapter 4 ~~p. 3.1.1~~.

10.2.3 Provide facilities for "request-reply" service to the authorized users.

10.2.4 Maintain a catalogue of bulletins and introduce changes to the bulletins when necessary according to the established procedures.

10.2.5 Quality control the incoming bulletins and inform the AMBEX centres of any discrepancies or shortfalls.

10.2.6 Monitor the OPMET traffic by carrying out regular tests on the availability and timeliness of the bulletins; report to the ICAO Regional Office on the results.

10.3 The interrogation procedures applicable to the designated RODBs and the OPMET information stored are presented in the AFI Regional Interface Control Document (ICD) - OPMET Data Bank Access Procedures.

10.4 Guidance on the management and quality control is provided in chapter 12 of this Handbook.

11. INTER-REGIONAL OPMET EXCHANGE - IROG FUNCTIONS

11.1 Inter-regional OPMET Gateways (IROGs) are designated in the AFI Region for the ~~the~~ purpose of exchanging OPMET data between the AFI and the other ICAO Regions, as shown in the table below.

AMBEX IROG	For Ex~~c~~change of OPMET data between Regions
Dakar	AFI and EUR; SAM, NAM, CAR; MID, ASIA/PAC as backup to Pretoria
Pretoria	AFI and MID; ASIA/PAC, EUR; SAM, NAM, CAR as backup to Dakar

11.2 IROGs and their functions are described at **Appendix D.** IROGs arrange for relaying all AMBEX bulletins to a corresponding OPMET Gateway in the other ICAO regions concerned. In particular:

- *Dakar IROG* relays all AFI bulletins to ROC Toulouse in the EUR Region, which serves the EUR, SAM, NAM and CAR Regions, and should receive and store all required OPMET bulletins from these Regions;
- *Pretoria IROG* relays all AFI bulletins to ROC Toulouse in the EUR Region and IROG Bangkok in the ~~the~~ ASI/PAC Regions, and should receive and store all required OPMET bulletins from MID, ASIA/PAC, EUR, SAM Regions;

11.3 The following principles are applied to IROGs:

a) IROGs should have reliable and efficient AFTN connection to the regions, for which they have exchange responsibilities, with adequate capacity to handle the OPMET data flow between the regions;

b) IROGs should be associated with AFTN relay centres capable of handling efficiently the volume of traffic anticipated;

c) IROGs should be capable of handling all OPMET data types, as described in para.4.1.1.

11.4 In order to avoid duplication of the OPMET traffic and information, all inter-regional OPMET exchange should be directed through the IROGs. Inter-regional exchange via direct AFTN addressing from the originator or AMBEX centre to recipients in the other ICAO Regions should be avoided, except when bilateral or other agreements require such direct exchanges.

12. MANAGEMENT OF OPMET EXCHANGE UNDER THE AMBEX SCHEME

12.1 OPMET Bulletins Update Procedure

12.1.1 Information for changes of AMBEX bulletins should be disseminated to all AMBEX centres and national OPMET centres (NOC) concerned well in advance in order to allow the centres to introduce the necessary changes to their message handling systems. In this regard, a lead time period of two months (*or two AIRAC cycles*) is considered appropriate.

12.1.2 The AMBEX centre planning the change, should send a notification by e-mail or fax to the ICAO Regional Office, Dakar or Nairobi with copy to all AMBEX Focal Points. The notification should include detailed information of the changes and the proposed time schedule. The Regional Office should inform all other ICAO Regional Offices of the changes to be introduced and the effective date of implementation.

12.1.3 All requests by users for changes to AMBEX bulletins should be addressed to the ICAO Regional Office concerned. The Regional Office should carry out the necessary coordination with the Sates and AMBEX centres concerned. The duration of the coordination process should be minimized so that the period between the user request and the implementation of the change (if agreed) should normally be less than 3 months.

12.2 Quality Management of OPMET Exchange under the AMBEX Scheme

12.2.1 Objectives and Scope

12.2.1.1 **Objectives:** Develop a management system that provides general guidance on procedures applied to OPMET exchange, which includes quality control aspects and introduces a non-real-time monitoring for OPMET exchange.

12.2.1.2 **Scope:** Management of OPMET data exchange will be organized in the following sections:

Quality Control	***Data quality control applies to OPMET validation and correction during data processing and during preparation of messages***
OPMET monitoring	***Monitor and evaluate the performance indicators for the scheduled OPMET data***

12.2.2 Quality Control – General Requirements

12.2.2.1 Quality control (QC) consists of examination of OPMET data at NOCs, AMBEX Centres and RODBs to check the messages for formatting and coding errors, as well as, for time and space consistency.

12.2.2.2 OPMET data should be checked in real time or as close to it as possible, at the first point, i.e., the originator, which may be: meteorological station, aerodrome meteorological office or meteorological watch office. Errors may occur during coding or transcription of meteorological messages by the observer or forecaster. The originating office should apply quality control procedures during data processing and preparation of messages, in order to eliminate the main sources of errors.

12.2.2.3 The national OPMET centre (NOC) should apply QC procedures on the incoming messages from national sources and on the compiled national bulletins.

12.2.2.4 It is also advisable to apply QC checks at the AMBEX Centre, where the AMBEX bulletins are received or compiled. If automation is available it should be used, or partly assisted by computing facilities. The principle is that every message should be checked, preferably at the various points along the data chain.

12.2.2.5 The checks that have already been performed by originating offices and AMBEX Centres are usually repeated at the OPMET data banks. Erroneous messages found by the RODB should be either rejected or corrected by reference back to the source or by the data bank itself. Data corrected by the data banks should be flagged in the database for record purpose.

12.2.2.6 As a result of the quality control process described above, OPMET data of established quality will be used in the exchange and stored in the data banks. The RODBs should compile information with regard to errors that were found and compile records, such as the numbers and types of errors detected during quality control. Such non-conformities should be reported to ICAO Regional Office, Dakar or Nairobi for follow-up action.

12.2.3 Quality Control Procedures

12.2.3.1 General guidance on the quality control procedures for each type of OPMET is outlined in **Appendix F.**

12.3 OPMET Monitoring

12.3.1 Monitoring of Scheduled OPMET Data

12.3.1.1 The monitoring shall focus on the measurement of three performance indicators (PIs), viz., Compliance, Availability and Regularity indices of the scheduled, routine OPMET data (SA, FT, FC) exchanged in the region. The PIs are described in detail in **Appendix F**.

12.3.1.2 Monitoring Reference. The monitoring shall involve the recording and analysis of data provided by the AFTN circuit. The three PIs should be monitored against the respective AMBEX Tables.

12.3.1.3 Methodology: Data is monitored with reference to the procedures defined in **AppendixG** the EUR OPMET Data Monitoring Procedures as produced by APIRG MET/SG (Bulletin Management Group).

12.3.2 Monitoring of Non-Scheduled OPMET data

12.3.2.1 Monitoring of non-routine OPMET data shall be executed for FK, FV, WC, WS, and WV.

12.3.2.2 Monitoring of SIGMET, VAA and TCA should be performed during the scheduled regional SIGMET tests in accordance with the procedures published by the Regional Offices, Dakar and Nairobi.

12.3.2.3 The monitoring results shall be presented in bulletin-oriented format, one line per bulletin indicating the abbreviated header (TTAAii CCCC YGGgg), the FIR/UIR where applicable, receipt time and originator.

12.4 AMBEX Focal Points

12.4.1 In order to facilitate exchange of information between the AMBEX centres a system of AMBEX focal points have been developed. Contact details of the persons designated as AMBEX focal points by the relevant State's authorities is provided in **Appendix GI**.

APPENDIX A

AMBEX COLLECTION AND DISSEMINATION OF METAR (SA) BULLETINS

Table A : METAR

Explanation of Table

Column

1: Name of the AMBEX Centre (BCC) compiling the bulletin.

2. ICAO location indicator of the AMBEX Centre compiling the bulletin.

3. Bulletin identifier- The identifier to be used in the WMO abbreviated heading of AMBEX METAR bulletins prepared by the BCC in Column 1.

4. ICAO location indicator of the aerodrome forming part of the collection area of the BCC in Column 1.

5. Name of the aerodrome forming part of the collection area of the BCC in Column 1.

6. Preparation - Times at which BCC in column 1 should prepare METAR bulletins for further dissemination.

7. Distribution of the bulletin to other AMBEX centres and RODBs – Name of the AMBEX/RODB Centre

8. Distribution of the bulletin to other AMBEX centres and RODBs – AFTN address of the AMBEX/RODB Centre.

Note: The RODB responsible for storing the bulletin is in ***bold***

Notes:
1 Aerodromes with shaded text are included in the HF VOLMET Broadcast
2 The RODB responsible for storing the bulletin is in bold
3 Non-AOP aerodeomes indicated in *italics*

AMBEX CENTRE		**METAR BULLETIN**				**DISSEMINATION TO**	
Name	**CCCC**	**Bul. Id.**	**CCCC**	**Aerodrome**	**Prepar.**	**RODB/AMBEX Centre**	**AFTN Adress**
1	2	3	4	5	6	7	8
ADDIS ABABA	HAAB	SAEA31	HAAB HAAY HADR HDAM	Addis Ababa Asmara Dire Dawa Djibouti	H+10	Addis Ababa Nairobi Dakar Brazzaville Niamey Antananarivo Cairo **Johannesburg**	HAABYMYX HKZZYPBX GOZZSNGX FCZZXLBX DRZZNAZX FMZZYPYY HEZZYPYX **FAJSYMYX**
ALGER	DAMM	SAAF31	DAMM DABB DAOO DAAT DTTA HLLT HLLB	Alger Annaba Oran Tamanrasset Tunis Tripoli Benghazi	H+10	Cairo Casablanca **Dakar** Niamey	HEZZYPYX GMZZYPYX **GOOYYZYZ** DRZZNAZX
ANTANA NARIVO	FMMI	SAI031	FMMI FMNM FIMP FMCH FMEE FMMT	Antananarivo Mahajanga Mauritius Moroni Saint-Denis Toamasina	H+10	Nairobi Addis Ababa **Johannesburg** Nairobi	HKZZYPBX HAZZYPYX **FAJSYMYX** HKZZYPBX
BRAZZA VILLE	FCBB	SAAM31	FCBB FCPP FEFF FKKD FKYS FZAA FOOL FOOG FNLU FGSL FPST	Brazzaville Pointe Noire Bangui Douala Yaounde Kinshasa Libreville Port Gentil Luanda Malabo Sao Tome	H+10	**Dakar** Niamey Addis Ababa Johannesburg Nairobi	**GOOYYZYZ** DRZZNAZX HAZZYPYX FAJSYMYX HKZZYPBX
CAIRO	HECA	SAAF32	HECA HEAX HELX HSSS	Cairo Alexandria Luxor Khartoum	+10	Addis Ababa Nairobi Antananarivo Niamey **Johannesburg**	HAZZYPYX HKZZYPBX FMZZYPYX DRZZNAZX **FAJSYMYX**

AMBEX CENTRE		**METAR BULLETIN**				**DISSEMINATION TO**	
Name	**CCCC**	**Bul. Id.**	**CCCC**	**Aerodrome**	**Prepar.**	**RODB/AMBEX Centre**	**AFTN Adress**
1	2	3	4	5	6	7	8
CASA BLANCA	GMMC	SAMC31	GMMC GMAA GMMX GMME GMTT GCLP GCTS	Casablanca Agadir Marrakech Rabat Tanger Las Palmas Tenerife Sur	H+10	Alger **Dakar** Cairo	DAZZYPYP **GOOYYZYZ** HEZZYPYX
DAKAR	GOOY	SAA032	GOOY DIAP GBYD GABS GUCY GFLL GLRB GQPP GQNN GVAC GGOV	Dakar Abidjan Banjul Bamako Conakry Freetown Monrovia Nouadhibou Nouakchott Sal Bissau	H+10	Casablanca Alger Niamey Johannesburg Brazzaville Nairobi Addis Ababa Toulouse **Dakar** Rio de Janeiro	GMMCYPYX DAZZYPYP DRZZNAZX FAJSYMYX FCZZXLBX HKZZYPBX HAZZYPYX LFZZMAFI **GOOYYZYZ** SBGLYMYX
JOHANNE SBURG	FAJS	SAAP32	FAJS FABL FACT FALE FBSK FVHA FWKI FLLS FDMS FQBR FQMA FXMM FYWH	Johannesburg Bloemfontein Cape Town King Shaka Gaborone Harare Lilongwe Lusaka Manzini Beira Maputo Maseru Windhoek	H+10	Addis Ababa Antananarivo Brazzaville Cairo Dar Es Salaam Dakar Nairobi Toulouse **Johannesburg** Rio de Janeiro Bangkok Jeddah	HAZZYPYX FMZZYPYX FCZZXLBX HFZZYPYX HTDAYMYX GOOYYZYZ HKZZYPBX LFZZMAFI **FAJSYMYX** SBGLYMYX VTBDYMYX OEJNYMYX

AMBEX CENTRE		**METAR BULLETIN**				**DISSEMINATION TO**	
Name	**CCCC**	**Bul. Id.**	**CCCC**	**Aerodrome**	**Prepar.**	**RODB/AMBEX Centre**	**AFTN Adress**
1	2	3	4	5	6	7	8
NAIROBI	HKJK	SAEA32	HKJK HKMO HTDA HTKJ HBBA HUEN HRYR FSIA HCMM	Nairobi Mombasa Dar-Es-Salaam Kilimanjaro Bujumbura Entebbe Kigali Mahe Mogadishu	+10	Addis Ababa Antananarivo **Johannesburg** Brazzaville Dakar Cairo Niamey	HAABYPYX FMZZYPYX **FAJSYMYX** FCZZXLBX GOZZSNGX HEZZYPYX DRZZNAZX
NIAMEY	DRRN	SAAO33	DRRN DGAA DBBB DNKN DNMM DXXX FTTJ DFFDY	Niamey Accra Cotonou Kano Lagos Lome N'djamena Ouagadougou	+10	Addis Ababa Alger Cairo Brazzaville **Dakar** Johannesburg Nairobi	HAZZYPYX DAZZYPYP HEZZYPYX FCZZXLBX **GOOYYZYZ** FAJSYMYX HKZZYPBX

APPENDIX B

AMBEX COLLECTION AND DISSEMINATION OF LONG TAF (FT) BULLETINS

Table B : FT TAF

Explanation of the Table

Column

1: Name of the AMBEX Centre (BCC) compiling the bulletin.

2. ICAO location indicator of the AMBEX Centre compiling the bulletin.

3. Bulletin identifier- The identifier to be used in the WMO abbreviated heading of AMBEX TAF (FT) bulletins prepared by the BCC in Column 1.

4. ICAO location indicator of the aerodrome forming part of the collection area of the BCC in Column 1.

5. Name of the aerodrome forming part of the collection area of the BCC in Column 1.

6. Bulletin Filing Time -The latest filing times for AMBEX bulletins containing TAFs with the validities listed in Column 8.

7. Start of validity period

8. TAF validity

9. Distribution of the bulletin to other AMBEX centres and RODBs – Name of the AMBEX/RODB Centre

10. Distribution of the bulletin to other AMBEX centres and RODBs – AFTN address of the AMBEX/RODB Centre

Notes: 1 The RODB responsible for storing the bulletin is in bold

AMBEX CENTRE		**TAF BULLETIN**						**DISSEMINATION TO**	
Name	**CCCC**	**Bul. Id.**	**CCCC**	**Aerodrome**	**Filing Tiùme**	**Start of validity**	**TAF validit**	**RODB/ AMBEX Centre**	**AFTN Adress**
1	2	3	4	5	6	7	8	9	10
ADDIS ABABA	HAAB	FTEA31	HAAB	Addis Ababa	0400 1000 1600 2200	0600 1200 1800 0000	30h	Addis Ababa Nairobi Dakar Brazzaville Niamey Antananarivo Cairo **Johannesburg** Jeddah	HAABYMYX HKZZYPBX GOZZSNGX FCZZXLBX DRZZNAZX FMZZYPYY HEZZYPYX **FAJSYMYX** OEJDYPYX
		FTEA39	HAAY HADR HDAM	Asmara Dire Dawa Djibouti	0400 1000 1600 2200	0600 1200 1800 0000	24h		
ALGER	DAMM	FTAF39	DAMM DABB DAOO DAAT DTTA HLLT HLLB	Alger Annaba Oran Tamanrasset Tunis Tripoli Benghazi	0400 1000 1600 2200	0600 1200 1800 0000	24h	Cairo Casablanca **Dakar** Niamey	HEZZYPYX GMZZYPYX **GOOYYZYZ** DRZZNAZX
ANTANA NARIVO	FMMI	FTI031	FMMI FIMP FMEE FMCH	Antananarivo Mauritius Saint-Denis Moroni	0400 1000 1600 2200	0600 1200 1800 0000	30h	Nairobi Addis Ababa **Johannesburg** Nairobi	HKZZYPBX HAZZYPYX **FAJSYMYX** HKZZYPBX
		FTI039	FMNM FMMT	Mahajanga Toamasina	0400 1000 1600 2200	0600 1200 1800 0000	24h		
BRAZZA VILLE	FCBB	FTAM31	FCBB FEFF FKKD FZAA FOOL FPST FGSL	Brazzaville Bangui Douala Kinshasa Libreville Sao Tome Malabo	0400 1000 1600 2200	0600 1200 1800 0000	30h	**Dakar** Niamey Addis Ababa Johannesburg Nairobi	**GOOYYZYZ** DRZZNAZX HAZZYPYX FAJSYMYX HKZZYPBX
		FTAM39	FCPP FKYS FOOG FNLU	Pointe Noire Yaounde Port Gentil Luanda	0400 1000 1600 2200	0600 1200 1800 0000	24h		

AMBEX CENTRE		**TAF BULLETIN**						**DISSEMINATION TO**	
Name	**CCCC**	**Bul. Id.**	**CCCC**	**Aerodrome**	**Filing Tiùme**	**Start of validity**	**TAF validit**	**RODB/ AMBEX Centre**	**AFTN Adress**
1	2	3	4	5	6	7	8	9	10
CAIRO	HECA	FTAF39	HECA HEAX HELX HSSS	Cairo Alexandria Luxor Khartoum	0400 1000 1600 2200	0600 1200 1800 0000	24h	Addis Ababa Nairobi Antananarivo Niamey **Johannesburg**	HAZZYPYX HKZZYPBX FMZZYPYX DRZZNAZX **FAJSYMYX**
CASA BLANCA	GMMC	FTMC31	GMMC GMAA GMMX GMME GMTT	Casablanca Agadir Marrakech Rabat Tanger	0400 1000 1600 2200	0600 1200 1800 0000	30h	Alger **Dakar** Cairo	DAZZYPYP **GOOYYZYZ** HEZZYPYX
		FTMC39	GCLP GCTS	Las Palmas Tenerife Sur	0400 1000 1600 2200	0600 1200 1800 0000	24h		
DAKAR	GOOY	FTA032	GOOY GBYD GABS GFLL GLRB GQNN DIAP	Dakar Banjul Bamako Freetown Monrovia Nouakchott Abidjan	0400 1000 1600 2200	0600 1200 1800 0000	30h	Casablanca Alger Niamey Johannesburg Brazzaville	GMMCYPYX DAZZYPYP DRZZNAZX FAJSYMYX FCZZXLBX
		FTA039	GUCY GQPP GVAC GGOV	Conakry Nouadhibou Sal Bissau	0400 1000 1600 2200	0600 1200 1800 0000	24h	Nairobi Addis Ababa Toulouse **Dakar**	HKZZYPBX HAZZYPYX LFZZMAFI **GOOYYZYZ**
JOHANNESBURG	FAJS	FTAP32	FAJS FACT FALE FBSK FVHA FWKI FLLS FQMA	Johannesburg Cape Town King Shaka Gaborone Harare Lilongwe Lusaka Maputo	0400 1000 1600 2200	0600 1200 1800 0000	30h	Addis Ababa Antananarivo Brazzaville Cairo Dar Es Salaam Dakar Nairobi Toulouse	HAZZYPYX FMZZYPYX FCZZXLBX HFZZYPYX HTDAYMYX GOOYYZYZ HKZZYPBX
		FTAP39	FQBR FABL FDMS FXMM FYWH	Beira Bloemfontein Manzini Maseru Windhoek	0400 1000 1600 2200	0600 1200 1800 0000	24h	**Johannesburg** Rio de Janeiro Bangkok Jeddah	LFZZMAFI **FAJSYMYX** SBGLYMYX VTBDYMYX OEJNYMYX

AMBEX CENTRE		**TAF BULLETIN**						**DISSEMINATION TO**	
Name	**CCCC**	**Bul. Id.**	**CCCC**	**Aerodrome**	**Filing Tiùme**	**Start of validity**	**TAF validit**	**RODB/ AMBEX Centre**	**AFTN Adress**
1	2	3	4	5	6	7	8	9	10
NAIROBI	HKJK	FTEA32	HKJK HTDA HUEN	Nairobi Dar-Es-Salaam Entebbe	0400 1000 1600 2200	0600 1200 1800 0000	30h	Addis Ababa Antananarivo **Johannesburg** Brazzaville Dakar Cairo Niamey	HAABYPYX FMZZYPYX **FAJSYMYX** FCZZXLBX GOZZSNGX HEZZYPYX DRZZNAZX
		FTEA39	HKMO HTKJ HBBA HRYR FSIA HCMM	Mombasa Kilimanjaro Bujumbura Kigali Mahe Mogadishu	0400 1000 1600 2200	0600 1200 1800 0000	24h		
NIAMEY	DRRR	FTAO33	DRNN DGAA DBBB DNKN DNMM DXXX FTTJ DFFDY	Niamey Accra Cotonou Kano Lagos Lome N'djamena Ouagadougou	0400 1000 1600 2200	0600 1200 1800 0000	30h	Addis Ababa Alger Cairo Brazzaville **Dakar** Johannesburg Nairobi	HAZZYPYX DAZZYPYP HEZZYPYX FCZZXLBX **GOOYYZYZ** FAJSYMYX HKZZYPBX

APPENDIX C

WMO ABBREVIATED HEADINGS
(for use in AMBEX messages and bulletins)

1. Each AMBEX bulletin should have a WMO abbreviated heading in accordance with WMO No. 386, Manual on the Global Telecommunication System, Part II – Operational Procedures for the GTS. The symbolic form of the WMO abbreviated heading is as follows:

TTAAii CCCC YYGGgg (BBB)

2. Explanation of symbols

2.1. TTAAii - TT - This group is used in accordance with WMO No. 386, Manual on the Global Telecommunication System, Part II – Operational Procedures for the GTS, Attachment II-5.

2.1.1 **TT** - Data type designator, used for OPMET data as follows:

Data Type	Abbreviated Name	WMO data type designator TT
Aerodrome reports	METAR SPECI	SA SP
Aerodrome forecasts	TAF: 24 and 30 hour 9 and 12 hour	FT FC
SIGMET information	SIGMET SIGMET for TC SIGMET for VA	WS WC WV
Volcanic ash and tropical cyclone advisories	VAA TCA	FV FK
Air-reports	AIREP	UA
Administrative	ADMIN	NO

2.1.2 **AA** - Geographical designator, composed of two letters according to WMO No. 386, Manual on the Global Telecommunication System, Part II – Operational Procedures for the GTS, Attachment II-5, Table C1. The following principles shall apply:

a) For AMBEX bulletins containing OPMET data from a single State or territory, the AA designator should be chosen from Table C1, Part I – Country or territory designators;

b) For AMBEX bulletins containing OPMET data from more than one State or territory, a suitable AA designator should be chosen from Table C1, Part II – Area Designators;

c) The part of the Table C1, Part II – Area Designators, which is relevant to the AMBEX scheme is reproduced bellow.

2.1.3 In AMBEX messages prepared by offices other than BCCs for transmission to BCCs, the following geographical designators should be used:

NOC	AA	NOC	AA
Abidjan	IV	Casablanca	MC
Accra	GH	Conakry	GN
Addis Ababa	ET	Cotonou	BJ
Aden	DY	Dakar	SG
Agadir	MC	Dar-es-Salaam	TN
Alger	AL	Djibouti	DJ
Alexandria	EG	Douala	CM
Annaba	AL	Durban	ZA
Antananarivo	MG	Entebbe	UG
Asmara	ET	Freetown	SL
Bamako	MI	Gaborone	BC
Bangui	CE	Harare	ZW
Banjul	GB	Jeddah	SD
Beira	MZ	Johannesburg	ZA
Beirut	LB	Kano	NI
Benghazi	LY	Khartoum	SU
Bissau	GW	Kigali	RW
Bloemfontein	ZA	Kilimanjaro	TN
Brazzaville	CG	Kinshasa	ZR
Bujumbura	BI	Lagos	NI
Cairo	EG	Las Palmas	CR
Cape Town	ZA	Libreville	GO
Lilongwe	MW	Niamey	NR
Lomé	TG	Nouadhibou	MT
Luanda	AN	Nouakchott	MT
Lusaka	ZB	Oran	AL
Luxor	EG	Ouagadougou	HV
Madinah	SD	Pointe Noire	CG
Mahajanga	MG	Port Gentil	GO
Mahé	SC	Rabat	MC
Malabo	GQ	Riyadh	SD
Manzini	SV	Saint-Denis	RE
Maputo	MZ	Sal	CV
Marrakech	MC	Sao Tomé	TP
Maseru	LS	Tamanrasset	AL
Mauritius	MA	Tanger	MC
Mogadishu	SI	Tenerife	CR
Mombasa	KN	Toamasina	MG
Monrovia	LI	Tunis	TS
Moroni	IC	Tripoli	LY
Nairobi	KN	Windhoek	NM
N'Djamena	CD	Yaounde	CM

2.1.4 In bulletins prepared by BCCs, the following geographical designators should be used:

BCC	AA	BCC	AA
Addis Ababa	EA	Casablanca	MC
Alger	AF	Dakar	AO
Antananarivo	IO	Johannesburg	AP
Brazzaville	AM	Nairobi	EA
Cairo	AF	Niamey	AO

2.1.5 **ii** Number used to differentiate two or more bulletins which contain data in the same code and which originate from the same geographical area and from the same originating centre. It shall be a number with a maximum of two digits. The IROGs may use numbers 36 to 38. The numbers 31 to 35, 39 shall be used in AMBEX bulletins for purposes other than those of IROGfunctions. .

2.2 **CCCC:** ICAO location indicator of location preparing the AMBEX bulletin (BCCs) or AMBEX messages (offices other than BCCs).

2.3. **YYGGgg**: Date-time group. To be used as follows:

2.3.1 YY - Day of the month

2.3.2 GGgg - hours and minutes.

- For METAR bulletins/messages: the standard time of observation in UTC.
- For TAF bulletins: the full hour in UTC (the last two digits shall be 00) preceding the transmission time.
- For all other bulletin/messages - the time of compilation in UTC.

2.4. BBB - Optional group indicating an amended, corrected or delayed bulletin.

2.4.1 An abbreviated heading defined by TTAAii CCCC YYGGgg shall be used only once. Consequently, if this abbreviated heading has to be used again for an addition, a correction or an amendment, it shall be mandatory to add an appropriate BBB indicator, which shall be added after the date-time group. The indicator BBB shall be used as defined below:

- RRx – for delayed routine meteorological messages/bulletins;
- CCx – for corrections to previously relayed messages/bulletins;
- AAx – for amendments to TAF messages/bulletins;
- Pxx – for segmenting a large set of information into several bulletins.

Note 1: *The "x" above is an alphabetic character of A through X, indicating the sequential number of the irregular bulletin of certain type. For instance, for amended TAFs, AAA is used for the first amendment, AAB for the second, AAC for the third, etc; for delayed METARs or TAFs, RRA is used for the first delayed message, RRB for the second, etc.; and, for corrections to any OPMET bulletin, CCA is used for the first correction, CCB for the second, etc.*

Note 2: *The use of the third letter A, B, C, etc. permits differentiation between bulletins/messages*

with the same type of information of the original bulletin/message. For example, assuming that a certain bulletin had the following abbreviated heading: "FTA031 DIAP 281000", a delayed bulletin containing TAF(s) which are missing from the original bulletin will bear the heading: "FTA033 DRRN 281000 RRA"; and a second delayed bulletin, containing additional missing TAF(s) will bear the heading: "FTA031 DIAP 281000 RRB".

Note 3: *The following data designators should be used by BCCs*:

	TAF	**METAR**
- Addis Ababa	FTEA31 HAAB FTEA39 HAAB	SAEA 31
Alger	FTAF31 DAMM	SAAF 31
- Antananarivo	FTIO31 FMMI FTIO39 FMMI	SAIO 31
- Brazzaville	FTAM31 FCBB FTAM39 FCBB	SAAM 31
Cairo	FTAF32 HECA	SAAF 32
- Casablanca	FTMC31 GMMC FTMC39 GMMC	SAMC 31
- Dakar	FTAO32 GOOY FTAO39 GOOY	SAAO 32
- Johannesburg	FTAP32 FAJS FTAP39 FAJS	SAAP 32
- Nairobi	FTEA32 HKJK FTEA39 HKJK	SAEA 32
Niamey	FTAO33 DRRN	SAAO 33

APPENDIX D

EXCHANGE OF OPMET DATA BETWEEN THE AFI, EUR, MID AND ASIA REGION

IROGsRESPONSIBILITIES

1. DAKAR IROG

1.1. Outgoing responsibilities

1.1.1 The whole set of METAR, TAF, AIREP SPECIAL and SIGMET bulletins, as described in appendices A, B, C and D of this Handbook, received by RODB DAKAR shall be distributed to Rio de Janeiro and ROC Toulouse, which shall send them to the EUR ROCs deserving other adjacent regions and to the SADIS.

1.2. Incoming responsibilities

1.2.1 The bulletins containing the required international OPMET data as indicated in the FASID Table MET 1A (or 2A) shall be sent by Rio de Janeiro, Jedda and ROC Toulouse to IROG DAKAR, that shall send the bulletins following the States requirements.

1.2.2 Regular contacts with the adjacent IROG (s) shall insure the efficiency of the data exchange. A list of exchanged bulletins should be agreed and updated, as necessary.

2. PRETORIA IROG

2.1. Outgoing responsibilities

2.1.1 The whole set of METAR, TAF, AIREP SPECIAL and SIGMET bulletins, as described in appendices A, B, C and D of this Handbook received by RODB Pretoria shall be distributed to Rio de Janeiro, Jeddah, Bangkok and ROC Toulouse, that shall send to the EUR ROCs deserving other adjacent regions and to the SADIS

2.2. Incoming responsibilities

2.2.1 The bulletins containing the required international OPMET data as indicated in the FASID table MET 1A (or 2A) shall be sent by Rio de Janeiro, Jedda, Bangkok and ROC Toulouse to IROG PRETORIA, that shall send the bulletins following the States requirements.

2.2.2 Regular contacts with the adjacent IROG(s) should insure the efficiency of the data exchange. A list of exchanged bulletins should be agreed and updated, as necessary

APPENDIX E

AFI REGIONAL OPMET DATA BANKS AND SIGMET REQUIREMENTS

The AFI Regional OPMET Data Banks (RODBs) and the AFTN address to be used for direct access to the banks are shown below:

RODB	AFTN Address	AMBEX Centres of Responsibility
Dakar	GOOYYZYZ	Alger/DAMM, Brazzaville/FCBB Casablanca/GMMC Dakar/GOOO Niamey/DRNN
Pretoria	FAJSYMYX	Addis Ababa/HAAB, Antananarivo/FMMI Cairo/HECA Johannesburg/ (FAJS)** Nairobi/HKNA ** BCC located at South African Weather Service HQ.

Responsibilities:

1. Collect OPMET bulletins from AMBEX centres in the area of responsibility and store them in the data base;
2. Handle all types of OPMET bulletins;
3. Provide facilities for "request-reply" service to authorized users;
4. Maintain a catalogue of bulletins and introduce changes to the bulletins when necessary according to established procedures;
5. Quality control the incoming bulletings and inform AMBEX centres on any deficiencies;
6. Monitor the OPMET traffic by carrying on regular test on the availability and timeliness of the bulletins; report to the ICAO Regional Office on the results.

APPENDIX E-1

WMO HEADINGS FOR SIGMET BULLETINS USED BY AFI METEOROLOGICAL WATCH OFFICES (MWOs)

EXPLANATION OF THE TABLE

Col 1: State and name of the MWO

Col 2: ICAO location indicator of the MWO

Col 3: $T_1T_2A_1A_2$ii group of the WMO heading for the WS SIGMET bulletin

Col 4: $T_1T_2A_1A_2$ii group of the WMO heading for the WC SIGMET bulletin (tropical cyclone)

Col 5: $T_1T_2A_1A_2$ii group of the WMO heading for the WV SIGMET bulletin (volcanic ash)

Col 6: ICAO location indicator of the FIR/CTA served by the MWO

Col 7: Remarks

WMO HEADINGS FOR SIGMET BULLETINS
USED BY AFI METEOROLOGICAL WATCH OFFICES

MWO Location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
ALGERIA ALGER/Baraki	DAAL	WSAL31		WVAL31	DAAA	
ANGOLA LUANDA/4 de Fevereiro	FNLU	WSAN31		WVAN31	FNAN	
BOTSWANA GABORONE/Sir Seretse Khama	FBSK	WSBC31	WCBC31	WVBC31	FBGR	
BURUNDI BUJUMBURA/Bujumbura	HBBA	WSBI31		WVB131	HBBA	
CANARY ISLANDS (Spain) GRAN CANARIA/Gran Canary, Canary I	GCLP	WSCR31		WVCR31	GCCC	
CAPE VERDE SAL I/Amilcar Cabral	GVAC	WSCV31		WVCV31	GVSC	
CHAD N'DJAMENA/N'djamena	FTTJ	WSCD31		WVCD31	FTTT	
CONGO BRAZZAVILLE/Maya-Maya	FCBB	WSCG31		WVCG31	FCCC	
D.R. CONGO KINSHASA/N'Djili	FZAA	WSZR31	WCZR31	WVZR31	FZAA	
EGYPT CAIRO/Cairo International	HECA	WSEG31	WCEG31	WVEG31	HECC	
ETHIOPIA ADDIS ABABA/Bole Intl	HAAB	WSET31		WVET20	HAAA	
ERITREA ASMARA	HHAS	WSEI31		WVEI31	HHAA	
GHANA ACCRA/Kotoka Int'l	DGAA	WSGH31		WVGH31	DGAC	
KENYA KENYA/Jomo Kenyatta Int'l	HKJK	WSKN31	WCKN31	WVKN31	HKNA	
LIBERIA MONROVIA/Roberts Int'l	GLRB	WSLI31		WVSL31	GLRB	
LIBYAN ARAB JAMAHIRIYA TRIPOLI/Tripoli Int'l	HLLT	WSLY31		WVLY31	HLLL	
MADAGASCAR ANTANANARIVO/Ivato	FMMI	WSMG31	WCMG20	WVMG20	FMMM	
MALAWI LILONGWE/Lilongwe Int'l	FWKI	WSMW31	WCMW31	WVMW31	FWLL	

MWO Location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
MAURITIUS MAURITIUS/Sir Seewoosagur Ramgoolam Int'l	FIMP	WSMA31		WVMA31	FIMM	
MOROCCO CASABLANCA/Anfa	GMMC	WSMC31		WVMC31	GMMM	
MOZAMBIQUE MAPUTO/Maputo Int'l	FQMA	WSMZ31	WCMZ20	WVMZ31	FQBE	
NAMIBIA WINDHOEK/Hosea Kutako	FYWH	WSNM31		WVNM31	FYWH	
NIGER NIAMEY/Diori Hmani Int'l	DRRN	WSNR31		WVNR31	DRRR	
NIGERIA KANO/Mallam Aminu Kano Int'l	DNKN	WSNI31		WVNI31	DNKK	
RWANDA KIGALI/Gregoire Kayibanda	HRYR	WSRW31		WVRW31	HRYR	
SENEGAL Leopold Sedar Senghor	GOOY	WSSG31		WVSG31	GOOO	
SEYCHELLES MAYE/Seychelles Int'l	FSIA	WSSC31	WCSC20	WVSC31	FSSS	
SOMALIA MOGADISHU/Mogadishu	HCMM	WSSI31		WVSI31	HCSM	
SOUTH AFRICA JOHANNESBURG/Johannesburg	FAJS	WSZA31	WCZA31	WVZA31	FACA FAJA FAJO	
SUDAN KHARTOUM/Khartoum	HSSS	WSSU31		WVSU31	HSSS	
TUNISIA TUNIS/Carthage	DTTA	WSTS31		WVTS31	DTTC	
UGANDA ENTEBBE/Entebbe Int'l	HUEN	WSUG31		WVUG31	HUEC	
UNITED REPUBLIC OF TANZANIA DAR-ES-SALAAM/Dar-es-Salaam	HTDA	WSTN31	WCTN31	WVTN31	HTDC	
ZAMBIA LUSAKA/Lusaka Int'l	FLLS	WSZB31		WVZB31	FLFI	
ZIMBABWE HARARE/Harare	FVHA	WSZW31	WCZW31	WVZW31	FVHA	

APPENDIX F

OPMET Quality Control and Monitoring Procedures

(To be developed and confirmed by the QC team of the OPMET Management Task Force)

1 Quality Control Procedures

1.1 OPMET Data Validation

1.1.1 The AMBEX Centres and RODBs should not modify the content of the meteorological data, e.g. visibility, QNH etc., but only items contained in the WMO bulletin headings, such as, location indicators or observation times.

1.1.2 WMO Abbreviated Heading (TTAAii CCCC YYGGgg BBB) Validation

TT	Message Type, shall comprise two alphabetical characters
AA	Location Indicator, shall comprise two alphabetical characters
ii	comprise two digits, from 01 to 99
CCCC	A 4-letter ICAO location indicator shall comprise 4 alphabetical characters
YYGGgg	The date time group of the bulletin, shall be configured to validate it with the current time
BBB	BBB is an optional group. The use of BBB group shall comply with the rules in the WMO abbreviated heading, in regard to delayed, corrected and amended bulletins.

Examples	After QC check
METAR with incorrect YYGGgg: SABM31 VYMD 100830 **UTC** VYMD 100830Z 18005KT 8000 FEW025 31/18 Q1000 =	 SABM31 VYMD **100830** VYMD 100830Z 18005KT 8000 FEW025 31/18 Q1000 =
TAF without AHL: 112324 WIDDYMYX TAF WIDD 112324Z 1200/1224 00000KT 4000 RA BKNT017 BECMG 1203/1205 20010KT 9000 SCT017=	 **FTID31 WIDD 112300** TAF WIDD 112324Z 1200/1224 00000KT 4000 RA BKNT017 BECMG 1203/1205 20010KT 9000 SCT017=
TAF with invalid BBB: FTBN31 OBBI 030525 **AMD** TAF AMD OBBI 030525Z 0306/0406 16010KT CAVOK BECMG 0308/0312 33017KT 5000 PROB30 TEMPO 0308/0314 0800 DU=	 FTBN31 OBBI 030525 **AAA** TAF AMD OBBI 030525Z 0306/0406 16010KT CAVOK BECMG 0308/0312 33017KT 5000 PROB30 TEMPO 0308/0314 0800 DU=

1.1.3 METAR/SPECI Validation

For each individual METAR or SPECI within a bulletin the following additional fields shall be validated:

Prefix checks	METAR METAR COR SPECI SPECI COR	SA SA SP SP
Observation Time YYGGggZ	The report shall have a valid date and time of observation, including the character 'Z'. In a SPECI bulletin, this group will be same as (or very close to) the YYGGgg, part of the abbreviated bulletin heading.	
End-of-message format "="	Each METAR or SPECI report shall be terminated by the "=" character.	

Examples	After QC check
METAR with Observation Time error: SAPK31 OPKC **030159** RRA OPKC **030200** 26004 8000 BKN020 27/23 Q1007 NOSIG=	 SAPK31 OPKC **030200** RRA OPKC **030200** 26004 8000 BKN020 27/23 Q1007 NOSIG=
METAR with mistyped observation time: SAID31 WADD **120100** METAR WADD **121000Z** 17004KT 9999 FEW018CB SCT120 BKN300 28/26 Q1005=	 SAXX31 WADD **120100** METAR WADD **120100Z** 17004KT 9999 FEW018CB SCT120 BKN300 28/26 Q1005=
SPECI with incorrect Message Type, TT: **SANZ31** NZKL 040000 **SPECI** NZWP 040000Z 17005KT 010V240 25KM FEW020 FEW020CB SCT035 BKN050 18/15 Q1018 NOSIG=	 **SPNZ31** NZKL 040000 AAA **SPECI** NZWP 040000Z 17005KT 010V240 25KM FEW020 FEW020CB SCT035 BKN050 18/15 Q1018 NOSIG=

1.1.4 TAF Validation

For each individual TAF within a bulletin, the following additional items shall be validated:

Prefix checks	TAF TAF COR TAF AMD	FT or FC FT or FC FT or FC
Issue Time YYGGggZ	If the field is included, it shall have a valid date and time of origin of forecast including 'Z'.	
Validity $Y_1Y_1G_1G_1/Y_2Y_2G_2G_2$	Some TAFs are still produced with a 4-digit validity period. These shall be corrected by inserting a date consistent with the current date and the date time group of the bulletin header. If a TAF is received without a validity period it shall be discarded.	
End-of-Message format "="	Each forecast shall be terminated by the "=" character.:	

Examples	After QC check
TAF with issue time error (wrong date): FCID31 WIII 181630 TAF WIII **041630Z** 0418/0503 00000KT 9000 FEW025 BECMG 0422/0424 16005KT=	 FCID31 WIII 181630 TAF WIII **181630Z** 0418/0503 00000KT 9000 FEW025 BECMG 0422/0424 16005KT=
TAF with mistyped Validity Period: FTPH31 RPLL 132200 TAF RPLC 132200Z **1400/1428** 04006KT 9999 SCT036 BKN300 TEMPO 1400/1406 02010KT 5000 –SHRA FEW020 BKN270 TX32/1405Z TN22/1421Z=	 FTPH31 RPLL 132200 TAF RPLC 132200Z **1400/1424** 04006KT 9999 SCT036 BKN300 TEMPO 1400/1406 02010KT 5000 –SHRA FEW020 BKN270 TX32/1405Z TN22/1421Z=
TAF with Validity error (wrong date): FCMS33 WMKK 170748 TAF WMKK 170700Z **3009/3018** 30005KT 9999 FEW017CB SCT140 BKN270=	 FCMS33 WMKK 170748 TAF WMKK 170700Z **1709/1718** 30005KT 9999 FEW017CB SCT140 BKN270=
TAF with 4-digit Validity period: FTXX31 WIDD 170121 TAF WIDD **0618** 06010G20KT 9999 SCT018 BECMG 1712/1714 00000KT 7000=	 FTXX31 WIDD 170121 TAF WIDD **1706/1718** 06010G20KT 9999 SCT018 BECMG 1712/1714 00000KT 7000

1.1.5 SIGMET Validation

CCCC on the AHL	A valid 4-letter ICAO location indicator indicating the FIR for which the SIGMET was	
Prefix checks	SIGMET for TS, CB, TURB, ICE, MTW, DS and SS	WS
	SIGMET for VA	WV
	SIGMET for TC	WC
Validity Period DDHHMM/DDHHMM	Shall have a valid period of validity. Validity periods may be corrected if: • Missing VALID string • Incorrect SIGMET number format • Incorrectly formatted validity period	
Note: For SIGMET validation, please refer to the format described in the AFI (WACAF or ESAF) Regional SIGMET Guide		

Examples	After QC check
SIGMET without TTAAii: **SIGMET** OYSN 121525Z OYSC SIGMET 1 VALID 121530/122130 OYSNSANAA FIR EMBD TS OBS/FCST OVER WESTERN AND SOUTHWESTERN MOUNTAINS AND COASTAL AREAS CB TOPS FL36 NC=	 **WSXX31** OYSN 121525Z OYSC SIGMET 1 VALID 121530/122130 OYSNSANAA FIR EMBD TS OBS/FCST OVER WESTERN AND SOUTHWESTERN MOUNTAINS AND COASTAL AREAS CB TOPS FL36 NC=
SIGMET with incorrect number format WCPH30 RPLL 210445 SIGMET **NO 01** VALID 210000/210600 RPLL TC OBS N0830 E12900 ….=	 WCPH30 RPLL 210445 SIGMET **01** VALID 210000/210600 RPLL TC OBS N0830 E12900 … =
SIGMET with incorrect formatted validity period: WSIN90 VIDP 181800 VIDP SIGMET 06 VALID **18/1600** **TO 18/2000 UTC** VIDPDELHI FIR ISOL TS … = WSSD20 OEJD 220503 OEJD SIGMET 01 VALID **220500** **TO 220900** OEJN- JEDDAH FIR ….=	 WSIN90 VIDP 181800 VIDP SIGMET 06 VALID **181600/182000** VIDPDELHI FIR ISOL TS … = WSSD20 OEJD 220503 OEJD SIGMET 01 VALID **220500/220900** OEJN-JEDDAH FIR

1.2 Quality Control Methods

OPMET Data	Elements Defining	Control Methods
METAR METAR COR SPECI (SA,SP)	• AHL • Code name • Observation date/time	Software verification Manual validate Periodic Quality Control & PI Monitoring
TAF TAF AMD TAF COR (FT,FC)	• AHL • Code name • Originating station ICAO location indicator • Date/time of issue • Date, time of starting, time of end of the period the forecast refers to	Software verification Manual validate Periodic Quality Control & PI Monitoring
SIGMET (WS, WC, WV)	• AHL • SIGMET Sequence No • Date/time groups indicating the period of validity Additional Checks (recommended): • Name of the FIR or the CTA the message is issued for • Location indicator of the MWO originating the message	Software verification Manual validate Periodic SIGMET Quality Control Monitoring
Volcanic Ash Advisory FV	• Type of message • • Issue date and time Additional Checks (recommended): • • Location indicator or name of the VAAC centre originating the message	Software verification Manual validate Periodic VA Quality Control Monitoring
Tropical Cyclone Advisory FK	• Type of message • Issue date and time Additional Checks (recommended): • Location indicator or name of the TCAC centre originating the message	Software verification Manual validate Periodic TC Quality Control Monitoring

2 OPMET Monitoring

2.1 Monitoring of Scheduled OPMET data

2.1.1 Performance Indicators (PIs). The indices to be used by the RODBs are based on those developed by the European BMG for monitoring the SADIS distribution (ref. SADISOPSG/8, IP/5 – *SADIS OPMET Performance Indices*).

(i) Compliance Index

The AMBEX Compliance index can be calculated from:

$$V_{bul\ compliance} = \frac{No\ of\ reports\ received\ for\ a\ bulletin}{No\ of\ reports\ required\ for\ the\ bulletin}$$

The Compliance Index is to assess the level of compliance to the AMBEX scheme. The determination of the compliance index is performed as follows:

- Total number of reports received for AMBEX bulletin during the monitoring period, include reports in the retard bulletins.
- Weed out correction and amendment bulletins, as these are re-transmitted messages, can be disregarded.

(ii) Availability Index

The availability index measures the current coverage of the OPMET distribution against the AMBEX exchange requirements. The determination of the availability index is performed on a daily basis from the data captured during the monitoring period. If at least one non-NIL report is received from the aerodrome during the 24-hour period, that aerodrome is considered to have been available. The daily availability index of a particular bulletin can be calculated as:

$$V_{bul\ availability} = \frac{No\ of\ aerodromes\ for\ which\ one\ or\ more\ non\text{-}NIL\ data\ type\ are\ received}{No\ of\ aerodromes\ required\ in\ the\ bulletins}$$

(iii) Regularity Index

The regularity index measures the consistency in the number of reports provided by an aerodrome. The computation of Regularity Index assumes that the number of report follows a normal distribution and attempts to ascertain the distribution characteristics (mean and standard deviation) from a set of data. These
characteristics are used to determine if subsequent number of reports from an aerodrome is "regular".

Denoting mean and standard deviation by μ and σ , a threshold report numbers (τ) can be established as:

$$\boldsymbol{\tau = \mu - \sigma}$$

The threshold is a reporting characteristic of an aerodrome. If the subsequent daily number of reports meets or exceeds the threshold, it is considered "regular". The daily regularity index for a bulletin can be expressed as:

$$V_{bul\ regularity} = \frac{No\ of\ aerodromes\ for\ which\ the\ number\ of\ reports\ equals\ or\ exceeds\ the\ threshold}{No\ of\ aerodromes\ required\ in\ the\ bulletin}$$

2.2 Monitoring of non-scheduled OPMET data

2.2.1 Monitoring of non-scheduled OPMET data should be executed for FK, FV, WC, WS, and WV types of bulletins.

2.2.2 The monitoring results should be presented in bulletin-oriented format, one line per bulletin indicating the abbreviated header (TTAAii CCCC YGGgg), the FIR/UIR where applicable, receipt time and originator.

2.2.3 Example non-routine OPMET monitoring result file formats:

TT	AAii	CCCC	YYGGgg	FIR/UIR Rx	Time	Origin
WS	PF21	NTAA	271004	NTTT	271004	NTAAYMYX
WS	IN90	VIDP	271000	VIDP	271007	VECCYMYX
WS	BW20	VGZR	271100	VGZR	271030	VGZRYMYX
WS	CI31	RCTP	271150	RCTP	271150	RCTPYMYX
WS	MS31	WMKK	272013	WBFC	272013	WMKKYMYX
WS	CI35	ZGGG	272225	ZGZU	272228	ZGGGYZYX
FV	AU01	ADRM	270323		270330	YMMCYMYX
FK	PQ30	RJTD	270500		270504	RJTDYMYX

Explanations to the table:

- TT: Type of bulletin FK, FV, WC, WS, WV
- AAii: Bulletin ID
- CCCC: Compiling Station
- YYGGgg: Standard time of report
- FIR/UIR: ICAO Location indicator of the FIR/UIR or blank (4 spaces) as applicable
- RxTime: Time of receipt
- Origin: Originator address.

2.2.4 Analysis of Monitoring Results:

2.2.4.1 Each RODB collects and analyses the relevant result in order to determine the effectiveness and suitability of the quality management system and to highlight any possible improvement to ICAO Regional Offices, Dakar and Pretoria.

2.3 Examples of Monitoring Results – PI Measurements

The following tables show values of Compliance, Availability and Regularity Index for ASIA/PAC OPMET bulletins compiled by Singapore RODB in March 05:

TABLE A	ROBEX Compliance Index		
	SA	FT	FC
AE31 VECC	0.81	--	
AS31 VABB	---	0.99	
AS31 VTBB	0.96	0.99	
SA32 VABB	--	0.98	
AS32 VTBB	--	0.85	
AU31 YBBN	1.00	0.99	0.97

Note: *Entry dashed out (--) means no reports of this type (SA or FT) are required*

TABLE B	**Availability Index**		
	SA	**FT**	**FC**
AE31 VECC	0.98	--	
AS31 VABB	---	1.00	
AS31 VTBB	0.99	1.00	
SA32 VABB	--	0.99	
AS32 VTBB	--	0.96	
AU31 YBBN	1.00	1.00	1.00
.	.	.	.
.	.	.	.

TABLE C	**Regularity Index**		
	SA	**FT**	**FC**
AE31 VECC	0.86	--	
AS31 VABB	---	0.96	
AS31 VTBB	0.93	0.96	
SA32 VABB	--	0.96	
AS32 VTBB	--	0.96	
AU31 YBBN	0.90	0.90	0.96
.	.	.	.
.	.	.	.

APPENDIX G

AMBEX FOCAL POINTS (*to be replaced by IP/02*)

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	State/*Etat*/ Organisation	Name/*Nom et Prénom*	Address/*Adresse*	E-mail	Fax	Telephone
1	Algeria					
2	Cameroon	ABONDO Cyrille	Chef de Service de la Météorologie Aéronautique	abondocyrille@yahoo.com	+237 22 30 33 62	+ 237 22 30 30 90
3	Congo	**OLEMBE Alexis Laurence**	B.P. 218 Brazzaville Aéroport CONGO	aolembe@yahoo.fr	+242 282 00 51	+242 972 16 77 / +242 411 48 95
4	Egypt					
5	Ethiopia					
6	Kenya					
7	France					
8	Madagascar	RAKOTONDRIANA Jérôme **RABENASOLO Mamitiana Alain**	Direction Générale de la Météo, BP 1254 Antananarivo B.P. 46 Ivato Aéroport MADAGASCAR	madagascarmto@asecna.org; jerome@asecna.mg mamyalain6@yahoo.fr	+261 202 258 115 +261 20 22 581 15	+ 261 33 12 108 05 +261 3410 034 54
9	Morocco					
10	Niger	**YERIMA Ladan**	B.P. 1096 Niamey Aéroport NIGER	E-mail : yeriladan@yahoo.fr	+227 20 73 55 12	+227 94 85 22 27
11	Nigeria	IKEKHUA O. Felix Mrs. M. O. Iso	NIMET	felix_ikekhua@yahoo.com maryottuiso@yahoo.com	+234 9 4130710 +234 9 4130711	+234 1 477 16 62 +234 9 4130709 + 234 9 4130710
12	Senegal (Rapporteur)	DIEME Saïdou	ASECNA Sénégal	saidoudieme@yahoo.fr	+221 33 820 06 00 +221 33 820 02 72/	+221 33 869 22 03 : +221 77 652 53 87

			B.P. 8132 Dakar Aéroport Yoff SENEGAL	saidoudieme@yahoo.fr	+221 33 820 06 00	
13	South Africa					
14	United Kingdom (RU)					
15	ASECNA	NGOUAKA Dieudonné	ASECNA DG BP 3144 Dakar, Sénégal	ngouakadie@asecna.org	+221 33 8234654	+221 33 8695714
16	IATA					
17	WMO/OMM	Mr Scylla Siliayo,	WMO Scientific Officer, Aeronautical Meteorological Division Weather and Disaster Risk Reduction Services Department	ssillavo@wmo	+ 41.22.730.81.28	: + 41.22.730.84.08
18	EUR BMG					
19	IROG Toulouse					
20	ASIA/PAC/M TSF					

Appendix H

Terms of Reference, Work programme and composition of the AFI OPMET Management Task Force (MTF)

1. Terms of Reference

- Review the OPMET exchange scheme in the AFI Region and develop proposals for their optimization taking into account the requirements by the aviation users and the current trends for global OPMET exchange;
- Develop monitoring and management procedures related to AMBEX exchange and other exchange of OPMET information;
- Regularly update the regional guidance material related to OPMET exchange;
- Liaise with other groups dealing with communication and/or management aspects of the OPMET exchange in AFI and other ICAO Regions (ASIA/PAC OPMET/M TF, DMG EUR Region, CNS/MET SG MID Region, etc.).

2. Composition

The Task Force is composed of experts from:

a) Algeria, Cameroon, ~~Congo, Ethiopia, Egypt~~, Kenya, France, ~~Liberia~~, Madagascar, Morocco, Niger, Nigeria, Senegal (Rapporteur), South Africa, ~~UK~~ and ASECNA.

b) Representatives of IATA and WMO are invited to participate in the work of the Task Force.

Appendix I

MTF Future Work Programme for 2013 – 2017 (*5 years: Current and next triennium*)

	Task	Source	Recent Progress Next milestone and its deadline	Status of Implementation	Final Result (completion)
1	Examine the existing and any new requirements for OPMET exchange in AFI and adjacent regions and assess the feasibility of satisfying these requirements, taking into account the availability of the data;	APIRG/16 Décision. 16/54	a) Specific amendments of the AMBEX Handbook undertaken by APIRG/18 b) Develop back up procedures for the AFI RODBs (2013?)	a) Implementation by States underway b) Still under development by the RODBs (expected completion by 2013)	OPMET exchange in AFI and adjacent regions, improved
2	Keep under review the AMBEX scheme and other OPMET exchange schemes and prepare proposal for updating the optimizing of the schemes;	APIRG/16 Décision. 16/54	c) the AMBEX scheme reviewed by MTF/4 (September 2012) d) Continuous review of the AMBEX scheme	c) Reviewed and submitted to MET/SG/11 (if any) d) Continuous basis	Exchange of OPMET information through AMBEX, improved
3	Review and update the procedures for interregional OPMET exchange and ensure the availability of the required AFI OPMET data for the AFS satellite broadcast (SADIS);	APIRG/16 Décision. 16/54	e) The related Chapter of the AMBEX Handbook reviewed (Sept 2012) f) SADISOPSG/17 Concl. Reviewed g) Continuous review of the procedures h) SADISOPSG/18 Concl. Review (2013): yearly	e) Implemented by MTF/4 f) Implemented by MTF/4 g) Continuous basis h) Yearly basis	Efficient inter-regional OPMET exchanges and availability of AFI OPMET on SADIS, improved
4	Keep under review and provide timely amendments of the regional guidance materials on the OPMET exchange; to ensure that guidance material covers procedures for the exchange of all required OPMET data types: SA, SP, FT, WS, WC, WV, FK, FV, UA;	APIRG/16 Décision. 16/54	i) The related Chapter of the AMBEX Handbook reviewed (Sept. 2010) j) Continuous review	i) Implemented by MTF/2 j) Continuous basis	Regional guidance material for the issuance of OPMET established and improved
5	Conduct trials and develop procedures for monitoring and management of the OPMET exchange; to foster implementation of quality	APIRG/16 Décision. 16/54	k) procedures for monitoring and management of the OPMET exchange reviewed (Sept 2010) l) SIGMET Tests conducted yearly (since Nov./2008 to Nov. 2011)	k) Implemented by MTF/2 l) Implemented in 2008/2011 m) To be implemented by November 2012	SIGMET exchange and management of other OPMET,

	Task	Source	Recent Progress Next milestone and its deadline	Status of Implementation	Final Result (completion)
	management of OPMET data by the AMBEX centres and the RODBs; and		m) Three SIGMET Tests planned for November 2012 n) A joined OPMET monitoring by the RODBs every three months: end of March, June, September and October o) Assessment of the RODBs during yearly meeting	n) Not implemented yet, procedures for implementation just endorsed by APIRG/18 o) Implemented by MTF/4 in 2012, yearly basis	enhanced
6	Prepare regional plan for the transition to XML coded OPMET information in coordination with the relevant APRIG contributing bodies.	APIRG/16 Decision. 16/54	p) Final decision on future OPMET XML coded format awaited from MET Div (2014) q) AFI Regional Plan to be prepared after the adoption by the MET Div Meeting)	p) Development of transition Plan postponed q) Plan to be prepared by MTF in 2015	A regional OPMET format transition plan established