

INTERNATIONAL CIVIL AVIATION ORGANIZATION



AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG)

**REPORT OF THE NINTH MEETING OF THE
METEOROLOGY SUB-GROUP (MET/SG/9)**

(Dakar, Senegal, 21-23 October 2009)

Prepared by the Secretary of MET/SG

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PART 1 - HISTORY OF THE MEETING

1.1. Date and Site of the Meeting

1.1.1 The Ninth Meeting of the Meteorology Sub-group (MET/SG/9) was held at the premises of the ICAO Western and Central African Office (WACAF), Dakar, Senegal, from 21 to 23 October 2009.

1.2. Officers and Secretariat

1.2.1 Mr. Mam Sait Jallow, Deputy Regional Director of the Western and Central African Office opened the meeting. He expressed his appreciation to the participants attending this ninth meeting of the MET/SG, and highlighted the tasks to be accomplished during the meeting.

1.2.2 Mr. Jallow informed the meeting that the ICAO Council and the Air Navigation Commission have over the last few years expressed concern with the rate and level of implementation of the AFI Air Navigation Plan. Deficiencies identified by the Group and APIRG remain unresolved for a long time. He requested the Sub-Group to give the matter special attention during their deliberations.

1.2.3 He said he remained convinced that this group will provide the next APIRG meeting with substantial draft Decisions and Conclusions while keeping in mind, the main objective of improving meteorological services in the sub region.

1.2.4 The MET/SG/9 was chaired by Ms. G.E. Khambule, Senior Manager, Aviation Weather Centre, South African Weather Service and one session was chaired by the Vice Chairperson Mr. Cyrille Abondo, Chief of the Aeronautical Meteorology Service of Cameroon CAA. Mr. B. M. Sekwati, Regional Officer, Aeronautical Meteorology of the ICAO Eastern and Southern African Office, Nairobi, Kenya served as the Secretary and was assisted by Mr. A. 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 fifteen (15) participants from nine (9) Members including two (2) International Organizations i.e. IATA and ASECNA.

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

1.4. Working Languages

1.4.1 The discussions were conducted in English and French and the documentation was issued in both languages. The interpretation services were provided by two freelance interpreters.

1.5. Agenda

1.5.1 The following Agenda was adopted:

- Agenda Item 1: Election of Chairman and Vice-Chairman of the Sub-Group
- Agenda Item 2: Review of APIRG Conclusions and Decisions and Special AFI RAN meeting recommendations, Durban, South Africa, 24-29 November 2008
- Agenda Item 3: WAFS in the AFI Region
- Agenda Item 4: Review of the Report of the AFI OPMET Management Task Force First Meeting, 19 – 20 October 2009
- Agenda Item 5: Provision of SIGMET, tropical cyclone and volcanic ash advisories for the AFI Region
- Agenda Item 6: Deficiencies in the MET Field
- Agenda Item 7: New Challenges facing AFI Meteorological Services (including the future impact of the NextGen and SESAR)
- Agenda Item 8: Regional Meteorological Procedures
- Agenda Item 9: Terms of Reference, Work Programme and Composition of the MET/SG
- Agenda Item 10: Any other business

1.6. Draft Conclusions and Decisions

1.6.1 The MET/SG recorded its action in the form of draft conclusions, draft decisions, with the following significance.

1.6.2 Draft Conclusions

1.6.2.1 Draft Conclusions, when approved by the APIRG, deal with 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.

1.6.3 Draft Decisions

1.6.3.1 Draft Decisions, when approved by APIRG, deal with matters of concern only to the APIRG and its contributory bodies.

1.6.4 MET/SG Decisions

1.6.4.1 Decisions dealing with matters of concern only to the MET/SG.

PART II - REPORT ON THE AGENDA ITEMS

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. Ms. G.E. Khambule, Senior Manager, Aviation Weather Services, South African Weather Service and Mr. Cyrille Abondo, Chief of Aeronautical Meteorology, Cameroon CAA, were elected Chairperson and Vice-Chairperson respectively.

Agenda Item 2: Review of APIRG Conclusions and Decisions

2.1 The Sub-Group made an in-depth review of Conclusions and Decisions formulated by previous MET/SG meetings and which were adopted by the APIRG and Recommendations in the field of aeronautical meteorology developed at the Special AFI RAN Meeting held in Durban, South Africa, from 24 to 29 November 2008, to address aviation safety. It noted action taken and progress made so far on the implementation of these conclusions and decisions listed in **Appendix B**.

Agenda Item 3: WAFS in the AFI Region

3.1 The meeting reviewed the status of the implementation of the World Area Forecast System (WAFS) in the AFI Region on the basis of the reports from the fifth meeting of WAFS Operations Group (WAFSOPSG/5) and the fourteenth meeting of the Satellite Distribution System for information related to air navigation (SADIS) Operations Group (SADISOPSG/14) provided by the United Kingdom as an integral part of the ICAO aeronautical fixed service (AFS). The meeting also reviewed the detailed information provided by the World Area Forecast Centre (W AFC) London on the recent and forthcoming developments in the WAFS and SADIS.

3.2 The fourteenth meeting of the SADISOPSG, held in Bangkok from 15 to 17 July 2009, reviewed the Strategic Assessment Tables for the AFI Region which have been prepared by the SADIS Provider State on behalf of the SADISOPSG Strategic Assessment Team for the purposes of planning resources for the next 5 years (2010 to 2014 inclusive).

3.3 The meeting agreed on the proposed tables and formulated the following draft conclusion:

Draft Conclusion 9/1: SADIS Strategic Assessment Tables

That, the AFI SADIS Strategic Assessment Tables, as given in Appendix C to this report, be adopted and forwarded to the SADISOPSG for planning the future SADIS bandwidth requirements.

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

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

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

3.6 The meeting then formulated the following draft conclusion:

Draft Conclusion 9/2: Alternative SADIS 2G hardware

That, States review available new options for the SADIS 2G systems in order to benefit from such options by contacting vendors directly.

3.7 The member from the W AFC, London informed the meeting that at the request of SADISOPSG/13, the SADIS Provider State has conducted a third round of SADIS workstation software evaluations. The assessments were necessary in light of changes to the SADIS broadcast since the

previous round of evaluations in 2005/2006, notably the adoption of Amendment 74 to Annex 3 and the cessation of the SADIS 1G broadcast. By May 2009, the SADIS Provider had conducted 8 SADIS workstation software evaluations, with 7 of the packages available fulfilling the software requirements of SADISOPSG/13. The results of these evaluations were presented to SADISOPSG/14 and are also available to view at URL: <http://www.metoffice.gov.uk/sadis/software/index.html>

3.8 The meeting agreed that it would be beneficial for States to be provided with such valuable information and concluded that:

Draft Conclusion 9/3: SADIS Workstations evaluations

That, States assess whether their current workstations fulfil their needs and requirements of the SADISOPSG and contact their workstation providers directly if required.

3.9 The meeting was informed that to facilitate the implementation of WAFS upper-air forecasts in GRIB 2 code form, the SADIS Provider State has conducted initial trials using test data on the SADIS 2G satellite broadcast aimed at determining the likely transmission performance of this new data set. The results of the dissemination trials will be discussed within the SADISOPSG and WAFSOPSG in order to determine the future implementation of the GRIB 2 data, and any changes that may be necessary to accommodate the new data on the SADIS 2G service.

3.10 The MET/SG/9 was further informed that SADIS Provider State has received endorsement from SADISOPSG/14 to progress with the development of a second phase of SADIS FTP enhancements. This second phase will be aimed at delivering a *SADIS FTP Secure* service in 2010. Some of the technology utilised to deliver the initial phase of developments (outlined above) will be used to deliver the phase two enhancements – e.g. virtual server environment.

3.11 With regard to the recent developments of the WAFS, the member from WAFS, London, briefed the meeting on developments of WAFS upper-air data in the GRIB 2 code form. The meeting was informed that WAFS have provided a progress report to the WAFSOPSG/5 meeting (September 2009) outlining the steps taken towards delivery of GRIB 2 WAFS data.

3.12 Concerning coordination between WAFS and Tropical Cyclone Advisory Centres (TCACs), the WAFS Provider States have conducted a coordination trial with the TCACs, with a view to determining the feasibility of, and benefits for the WAFS from, establishing and maintaining contact with the TCACs in order to harmonise the information on TC in the WAFS SIGWX forecasts and the TCAC advisories. The WAFSOPSG/5 considered that the trial was a success, with good participation and valuable feedback which had been beneficial for the WAFS. With minimum effort on the part of the WAFS; it had led to greater awareness and harmonization between the TC information on the WAFS SIGWX charts and the advisory information issued by the TCACs.

3.13 The meeting was informed by the WAFS member that the WAFSOPSG/5 noted that the need for training related to the “roll-out” of the new gridded forecasts had been recognized by most planning and implementation regional groups (PIRGs) which had formulated conclusions calling for the WAFS Provider States to organize training seminars on the use of the new gridded WAFS forecasts for CB clouds, icing and turbulence. The group agreed that the availability of continuous training would be highly useful. It was therefore considered important to develop computer-based training products for distribution to States and a web-based training package. The web-based training package will be based around a free and open-source e-learning software platform and available to all States and WAFS users.

The outline of proposed training, including associated costs will be tabled for endorsement by the WAFSOPSG/6. The meeting welcomed such initiatives which would be beneficial to the Region and concluded on the following:

Draft Conclusion 9/4: Development of web-based training for States and WAFS users on the new gridded WAFS forecasts for CB clouds, icing and turbulence

That, the Sub- Group, welcomed the planned web-based training on the new gridded WAFS forecasts for CB clouds, icing and turbulence if endorsed by WAFSOPSG/6 and urged for the early implementation by WAFC Provider States in order for the AFI Region to benefit from such training.

Agenda Item 4: Review of the Recommendations of AFI OPMET Management Task Force First Meeting (AFI OPMET MTF/1)

4.1 The Group was presented with the Report of the First Meeting of the AFI OPMET Management Task Force (AFI OPMET MTF/1) held back to back with the MET/SG/9 meeting at the ICAO Western and Central African Office (WACAF), Dakar, Senegal, from 19 to 20 October 2009. The meeting recalled that the AFI OPMET MTF/1 was established by APIRG/16 meeting in Conclusion 16/54.

4.2 The meeting noted the election of Mr. **Nirison RAKOTOARIMANANA** from Madagascar CAA as Chairperson and Mr. **Akoi T. VANYANBAH** from Liberia CAA as Vice-Chairman of the Task Force.

4.3 The meeting made an in-depth review of the Recommendations of the AFI OPMET MTF/1 provided in **Appendix D** to this report. The meeting then adopted the following draft conclusions and a decision:

Draft Conclusion 9/5: 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 D**, 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;
- b) the IROG functions and the exchange of OPMET between the AFI region and adjacent regions in **Appendices F and G** be implemented by Dakar and Pretoria RODBs as the requirements for the Interregional OPMET exchange in the AFI region.

Draft Conclusion 9/6: 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) information related to the requirements of OPMET data from AOP aerodromes as given in **Appendix I**, be included in the AFI FASID MET Table 1A after the normal amendment of the FASID Table.

Draft Conclusion 9/7: OPMET Exchange Monitoring and Management Procedures at BCCs and RODBs

That, the OPMET management and monitoring procedures given in Appendices J and K, be implemented by the RODBs and the BCCs as the requirements for OPMET exchange monitoring and management procedures in the AFI region.

Draft Conclusion 9/8: Interface Control Document (ICD) for AFI OPMET Database Access Procedures

That,

- a) **the Procedures given in Appendix L 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) .**

Draft Decision 9/9: Future Work Programme and Composition of the Task Force

That, the updated work programme and the composition of the AFI OPMET MTF be as shown in Appendix M.

Draft Decision 9/10: Frequency of Meetings of the AFI OPMET M/TF

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.

Agenda Item 5: Provision of SIGMET, Tropical Cyclones and Volcanic Ash Advisories for the AFI Region

5.1 The meeting was informed that, ICAO Regional Offices in Dakar and Nairobi, conducted two SIGMET Tests based on Conclusions 16/56 of the APIRG/16 Meeting which adopted the procedures for conducting such tests.

5.2 The tests were also based on the results of the training workshop on SIGMET held in Dakar in May 2008, which recommended three different phases to carry out SIGMET tests using the procedures described in Appendix N of APIRG/16 report which are:

- Phase 1 : To assess the telecommunications facilities involving the dissemination of VAA (Volcanic Ash Advisory) and exchange of SIGMET information;
- Phase 2 : Test the-know-how of personnel at the meteorological watch offices (MWO) with regard to implementation and dissemination of SIGMET information;
- Phase 3: Test that will involve all stakeholders (meteorological services, volcanic observatories, flight information regions, area control centres, and international NOTAM offices) and which will refer to handling of the overall SIGMET procedures.

5.3 Test results obtained from Phase 1 were analyzed and appropriate corrective measures entered into force prior to undertaking the Phase 2.

5.4 The results of the first two phases of the SIGMET Tests conducted in November 2008 and June 2009 were presented to the meeting. The group was informed that the short term recommended actions were implemented by the MWOs concerned and those needing medium to long term implementation solutions were presented for review and appropriate action by the meeting. In this regard, the meeting reviewed the summary of the tests results in **Appendix N** to this report and adopted the following conclusions:

Draft Conclusion 9/11: 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 Table in Attachment B to Appendix N of the APIRG/16 reports.**
- b) **upon receipt of a VAA message, the MWOs in the AFI Region act promptly to issue a corresponding SIGMET within ten (10) minutes; and**
- c) **the MWOs Provider States in the AFI Region take the required measures to display or print the incoming VAA message in the forecast room with visual and sound alarms.**

Draft Conclusion 9/12: 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 RODBs and State missions;**
- b) ICAO encourage arrangements for agreements between adjacent MWOs for the provision of SIGMET information in MWOs where telecommunications or organizational issues are still inadequate;**
- c) the WMO in coordination with ICAO 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.**

Agenda Item 6: Air Navigation Deficiencies in the MET field

6.1 The meeting reviewed and updated the list of deficiencies based on the uniform methodology approved by Council for identification, assessing, tracking and reporting of deficiencies of air navigation systems. The review also took into account the remedial action from States concerned and inclusion of additional deficiencies identified since APIRG/16 Meeting. The updated list of deficiencies in the meteorology field is at **Appendix O** to this report.

6.2 The meeting reviewed the availability of OPMET information in seventeen (17) ASECNA Member States presented by ASECNA. The results, indicated availability of METAR in ASECNA Member States, at 56% in 2009 and 50% in 2008 and the availability of TAF was 66% and 60% for the same period of time respectively.

6.3 The statistics showed that on the same period of assessment, the availability of OPMET at RODB Dakar from the non-ASECNA States was even worse. Many SIGMET information and aircraft reports (AIREPs) expected were not available at the RODB.

6.4 The meeting was concerned about the result of these assessments and invited the States concerned to improve the availability of OPMET data in the AFI region. To improve the availability of AIREPs and non-regular OPMET information in the region, the group felt that the coordination between ATM, MET and pilots should be strengthened. In order to improve on the availability of OPMET information, the MET/SG formulated the following conclusion:

Draft Conclusion 9/13: Improving availability of non-regular OPMET Information

That, the ICAO Regional Offices in Dakar and Nairobi, organize coordination meetings between ATM, MET and Pilots on regular basis, to improve the availability of non-regular OPMET information in the AFI region.

6.5 In order to improve the overall quality and availability of OPMET information in the WACAF Region, the group was informed of the Cooperative Development Project of Aviation Meteorological Services initiated by ICAO WACAF Office and funded by the International Financial Facility for Aviation Safety(IFFAS) being implemented in nine (9) WACAF States. The immediate objective of this project is to enhance aviation safety by reducing safety related MET deficiencies through improvement in the capability of each Participating State to regulate and/or provide aeronautical meteorological services. The meeting encouraged ICAO to extend this kind of project (resources permitting) to other affected States in the AFI Region.

Agenda Item 7: New challenges facing AFI Meteorological Services (including the future impact of the FAA NextGen and SESAR of Eurocontrol programmes)

7.1 The meeting was presented with the challenges that the meteorological service providers will have to address in meeting the requirements of the Global Air Traffic Management Operational Concept including programmes such as FAA NextGen and Eurocontrol SESAR.

7.2 The operational concept developed in Doc.9854 *Global Air Traffic Management Operational Concept* is intended to guide the implementation of CNS/ATM technology by providing a description of how the emerging and future ATM system should operate. This, in turn, will assist the aviation community to transition from the air traffic control environment of the twentieth century to the integrated and collaborative air traffic management system needed to meet aviation's needs in the twenty-first century.

7.3 The global air traffic management (ATM) operational concept presents the ICAO vision of an integrated, harmonized and globally interoperable ATM system. The planning horizon is up to and beyond 2025. The baseline against which the significance of the changes proposed in the operational concept may be measured is the global ATM environment in 2000.

7.4 The ATM system will be based on the provision of integrated services. These services consist of the seven concept components which are:

- a) Airspace organization and management;
- b) Aerodrome operations;
- c) Demand and capacity balancing;
- d) Traffic synchronization;
- e) Airspace user operations;
- f) Conflict management; and
- g) ATM service delivery management

7.5 In addition to the above there is the information service that entails the exchange and management of information used by the different processes and services. The information services comprise of:

- a) Information management;
- b) Aeronautical information;
- c) Temporality and issuance;
- d) Media;
- e) Meteorological information; and
- f) Essential services

7.6 The provision of meteorological information will be an integrated function of the ATM system. The information will be tailored to meet ATM requirements in terms of content, format and timeliness. The main benefits of meteorological information, for the ATM system, will be related to the following:

- a) the improved accuracy and timeliness of meteorological information will be used to optimize flight trajectory planning and prediction, thus improving the safety and efficiency of the ATM

system;

- b) the increased availability of shared meteorological information on-board the aircraft will allow the preferred trajectory to be refined in real time;
- c) better identification, prediction and presentation of adverse weather will allow the management of its effects more efficiently, thereby improving safety and flexibility, for example, by providing accurate and timely information on the need for diversion or re-routing;
- d) improved aerodrome reports and forecasts will facilitate the optimum use of available aerodrome capacity;
- e) increased availability of meteorological information (air-reports) from on-board meteorological sensors will contribute to improving forecast meteorological information and the display of real-time information; and
- f) meteorological information will contribute to minimizing the environmental impact of air traffic.

7.7 Performance management will be an important part of the quality assurance of meteorological information.

7.8 The United States Federal Aviation Administration (FAA) NextGen/Eurocontrol SESAR programmes are based on the Global Air Traffic Management Operational Concept. These would have a profound impact of the issuance and distribution of all operational meteorological (OPMET) information, including the representation and coding of forecasts. In particular, the influence of such concepts as “4-dimensional weather data cube” and “single authoritative source”, together with the need to harmonize the OPMET information with the aeronautical information service (AIS) data for flight planning purposes, was expected to be substantial and would have to be assessed accordingly. The meeting agreed that there was an urgent need for the AFI Region to be actively engaged to address the impending challenges and collaborative effort was required with other regions particularly ASIA/PAC, EUR and MID Regions. The meeting agreed to establish a core team of experts to collect information as appropriate to advise the Group with a view to provide information to APIRG at its next meeting. The meeting then formulated the following decision:

Decision 9/14: Core team of experts to collect and study the impacts of the Global Air Traffic Management Operational Concepts in the delivery of aeronautical meteorological services

That, a Core Team of experts be established consisting of members from ASECNA, Kenya, Morocco, South Africa and the United Kingdom to collect and study information on the impact of the Global Air Traffic Management Operational Concept on the provision of aeronautical meteorological services at a regional level (AFI Region).

Note 1: The team of experts will consist of specialists in ATM, CNS and MET.

Note 2: The team is expected to provide the results of their efforts to the Chairperson at the end of November 2009, January 2010 and March 2010.

Note 3: The Terms of reference to be developed by 30 October 2009.

Cost Recovery

7.9 The meeting recalled that the AFI Planning and Implementation Regional Group (APIRG) at its fourteenth meeting under Conclusions 14/37, 14/38 and sixteenth meeting under Conclusion 16/58 called for the need to implement cost recovery for aeronautical meteorological services by States including the conduct of seminars by WMO in coordination with ICAO. WMO in coordination with ICAO have conducted a series of seminars in cost recovery for aeronautical meteorological services since 1999 in English and French. The Sub-Group expressed its appreciation to the support provided by ICAO and WMO to participants at these seminars.

Quality Management System

7.10 The Sub-Group recalled that Amendment 72 to ICAO Annex 3 to the Chicago Convention – *Meteorological Service for International Air Navigation* which became applicable on 1 November 2001, introduced Recommended Practices concerning quality control and management of meteorological information supplied to users and the training of meteorological personnel. The provisions recommend conformity with the ISO 9000 series of quality assurance standards. The meeting was aware that Amendment 75 to Annex 3 applicable November 2010 included proposals to upgrade the Recommended Practices in quality management systems to a Standard.

7.11 The meeting was further informed that WMO and ICAO had conducted a seminar in Quality Management System (QMS) for aeronautical meteorological services in Casablanca, Morocco from 14 to 16 July 2009 in French and that another workshop will be conducted from 10 to 11 December 2009 in Nairobi, Kenya. In this regard, the meeting reviewed the proposal made by the Casablanca seminar on the implementation of QMS in the AFI region. The meeting also noted that the AFI Special RAN Meeting SP AFI RAN(2008) in Durban, South Africa developed Recommendations 6/15 and 6/16 which *inter alia* requested APIRG to adopt the MET Performance Objective of fostering quality management system(QMS) in the AFI AFI Region and that ICAO identify potential sources of technical and financial support for States for the implementation of quality systems (QMS) in the field of meteorology. The Recommendation relevant to APIRG will be actioned by the Group at the seventeenth meeting.

7.12 The AFI Comprehensive Implementation Programme (ACIP) was planning to conduct two seminars in French and English for trainers of trainers in QMS in 2010.

7.13 ASECNA informed the meeting that they would request assistance from ICAO in order to progress work in QMS. (AFI/SRAN/08) Recommendation 6/15 also refers).

Agenda Item 8: Review of Regional Meteorological Procedures in AFI ANP/FASID

8.1 The meeting reviewed the regional procedures developed by WAFSOPSG/4 and WAFSOPSG/5 meetings pertaining to the WAFS which would require to be introduced in the AFI ANP/FASID. The changes to be introduced are detailed below.

WAFSOPSG/4 Meeting

- 1) ANP: The use of word “products” is replaced by “forecasts”
- 2) FASID: FASID Table MET 5 *Requirements for WAFS forecasts to be provided by WAFS*
 - a) The word “products” is replaced by “forecasts” in the text
 - b) “cumulonimbus clouds, icing and clear air turbulence and in-cloud turbulence” are added to the required forecasts.
 - c) FASID Table MET/6 *Responsibilities of the WAFSs*: The Table is amended as FASID/Table MET 5 above.

WAFSOPSG/5 Meeting

- 1) FASID:
 - a) FASID Table MET 6 is deleted from the Plan. The Table has now become redundant since such responsibilities were now global and included in Annex 3
 - b) FASID Table MET 7 is deleted and replaced by links to the appropriate websites containing up-to-date list of international satellite communications system (ISCS) and satellite distribution for information relating to air navigation (SADIS) users.

8.2 In this regard, the meeting agreed to include the Meteorological Regional Procedures introduced by the WAFSOPSG/4 and WAFSOPSG/5 meetings, in the AFI ANP/FASID according to the normal procedures.

Draft Decision 9/15: Regional Meteorological Procedures

That, the Regional Meteorological Procedures introduced by the WAFSOPSG at its fourth and fifth meetings, be processed for inclusion in the AFI ANP/FASID according to the normal amendment procedures (of air navigation plans).

Agenda Item 9: Terms of Reference, Work Programme and Composition of the MET/SG

9.1 The meeting noted that the work programme has been subject to revision and consolidation to better reflect the work that is being undertaken by the MET/SG, and reviewed the Terms of Reference, the Work Programme and Composition of the MET/SG as given at **Appendix P** accordingly. Liberia indicated its desire to be a member of the Sub-Group and it would submit its application at the next meeting of APIRG. The meeting then endorsed the changes proposed and formulated the following decision:

Decision 9/16: Future work programme of the MET/SG

That, the work programme of the MET/SG be updated as shown in Appendix P.

Agenda Item 10: Any other business

10.1 There being no other business, the Chairman closed the meeting on 23 October 2009 and thanked the delegates for their contributions.



ORGANIZATION DE L'AVIATION CIVILE INTERNATIONALE

AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP
 METEOROLOGY SUB-GROUP NINTH MEETING (MET/SG/9)
 (Dakar, Senegal, 21-23 October 2009)

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REPORT REFERENCE	ACTION BY	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	STATUS
		<p>THEIR METEOROLOGICAL WATCH OFFICES (MWOs) ON THE PREPARATION AND ISSUANCE OF VOLCANIC ASH ADVISORIES AND SIGMETs IN ORDER TO KEEP THEIR AERONAUTICAL METEOROLOGICAL FORECASTERS CURRENT WITH THE PROCEDURES.</p> <p>TWO TESTS WERE CONDUCTED BY THE REGIONAL OFFICES IN FEBRUARY AND JUNE 2009. THE RESULTS OF WHICH WILL BE PRESENTED TO THE MEETING.</p>	
6) APIRG Con. 13/68	States	<p>BETTER COMMUNICATIONS FOR VOLCANO OBSERVATORIES</p> <p>THAT STATES CONCERNED MAKE EFFORTS TO ESTABLISH RELIABLE COMMUNICATIONS LINKS BETWEEN THEIR VOLCANO OBSERVATORIES AND METEOROLOGICAL WATCH OFFICES (MWOs) AND AREA CONTROL CENTRES (ACCs).</p>	ON-GOING
7) MET/SG Con. 6/2 APIRG Con. 14/32	States	<p>NEED FOR LATEST VERSION OF WORKSTATION SOFTWARE</p> <p>THAT STATES IN THE AFI REGION BE ENCOURAGED TO ACQUIRE THE LATEST VERSION OF WORKSTATION SOFTWARE FROM THEIR RESPECTIVE WORKSTATION SUPPLIERS FOR THE USE OF GRIB AND BUFR CODES.</p>	ON-GOING
8). MET/SG Con. 6/8 APIRG Con. 14/37	States	<p>COST RECOVERY OF AERONAUTICAL METEOROLOGICAL SERVICES</p> <p>THAT, WHEN ESTABLISHING A COST RECOVERY SYSTEM FOR AERONAUTICAL METEOROLOGICAL SERVICES, STATES IN THE AFI REGION USE RELEVANT ICAO AND WMO DOCUMENTS AND COOPERATE WITH AIRPORTS, AIR NAVIGATION SERVICES AND OTHER AERONAUTICAL PARTNERS, INCLUDING USERS.</p>	ON-GOING
9) APIRG Con. 14/38	WMO and Secretariat	<p>SEMINARS ON COST RECOVERY OF AERONAUTICAL METEOROLOGICAL SERVICES</p> <p>THAT WMO IN CO-ORDINATION WITH ICAO ORGANIZE SEMINARS ON COST RECOVERY OF AERONAUTICAL METEOROLOGICAL SERVICES FOR STATES REQUIRING THEM.</p>	ON-GOING
10) MET/SG Con. 6/9 APIRG Con. 14/39	States	<p>AUTONOMOUS ENTITIES AND METEOROLOGICAL SERVICE FOR AIR NAVIGATION</p> <p>THAT STATES IN THE AFI REGION WHEN CONSIDERING THE ESTABLISHMENT OF AUTONOMOUS ENTITIES TO MANAGE THEIR AIR NAVIGATION SERVICES, TAKE DUE ACCOUNT OF THE PROVISION OF METEOROLOGICAL SERVICE TO AIR NAVIGATION.</p>	ON-GOING
11) MET/SG Con. 6/10 APIRG Con. 14/40	States	<p>QUALITY MANAGEMENT</p> <p>THAT STATES IN THE AFI REGION GIVE PRIORITY TO IMPLEMENTATION OF A QUALITY MANAGEMENT SYSTEM (ISO 9000 SERIES OF STANDARDS) IN ORDER TO</p>	ON-GOING

REPORT REFERENCE	ACTION BY	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	STATUS
		IMPROVE METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION.	
12) APIRG Con. 14/41	Secretariat	<p>STUDY OF TRAINING AVAILABLE FOR AERONAUTICAL METEOROLOGICAL PERSONNEL IN THE AFI REGION</p> <p>THAT AS A FOLLOW-UP ACTION ON RECOMMENDATION 10/26 OF LIM AFI (COM/MET/RAC) 1988 AND RECOMMENDATION 14/17 OF AFI/7, 1997, REGIONAL OFFICES DAKAR AND NAIROBI CARRY OUT THE STUDY OF TRAINING AVAILABLE FOR AERONAUTICAL METEOROLOGICAL PERSONNEL IN THE AFI REGION.</p>	UNDERWAY.
13) APIRG Con. 14/42	Secretariat and WMO	<p>SEMINARS ON ATS/MET/PILOT COORDINATION</p> <p>THAT ICAO, IN CO-ORDINATION WITH WMO, ORGANIZE SEMINARS ON ATS/MET/PILOT CO-ORDINATION FOR THE AFI REGION.</p> <p>ACTION ON-GOING. SEMINARS SCHEDULED FOR 2010</p>	
14) APIRG Con. 15/81	W AFC, London	<p>TRAINING FOR THE USE OF GRIB AND BUFR CODES</p> <p>THAT THE UNITED KINGDOM, IN COORDINATION WITH ICAO AND WMO, BE INVITED TO CONSIDER PROVIDING TRAINING FOR THE USE OF GRIB AND BUFR CODES TO THOSE AFI STATES WHICH HAVE NOT BENEFITED FROM PREVIOUS TRAINING SEMINARS.</p>	DEFERRED (DUE TO LACK OF FUNDING)
15) APIRG Con. 15/82	States	<p>PROCUREMENT OF THE NECESSARY SADIS 2G HARDWARE</p> <p>THAT SADIS USERS IN THE AFI REGION BE INVITED TO:</p> <p>A) PROCURE THE NECESSARY SADIS 2G HARDWARE WELL AHEAD OF THE TERMINATION OF THE 1G SERVICE ON 31 DECEMBER 2008.</p>	Action taken by majority of states and in some cases states have opted for the ftp service
16) APIRG Con. 15/91	WMO, Secretariat	<p>PREPARATION OF THE VOLCANIC ASH HEADER LIST FOR THE AFI REGION</p> <p>THAT WMO, IN CONSULTATION WITH THE ICAO AND THE STATES, BE INVITED TO PREPARE THE VOLCANIC ASH SIGMET HEADER LIST FOR THE AFI REGION ON THE BASIS OF THE CURRENT SIGMET HEADER LIST AND REPLACING "WS" WITH "WV" IN THE HEADERS.</p>	COMPLETED AND WERE USED DURING THE SIGMET TESTS
17) APIRG Con.16/48	States	<p>RESPONSE BY STATES TO ICAO AFI REGIONAL OFFICES STATE LETTERS</p> <p>THAT STATES RESPOND PROMPTLY TO ICAO AFI REGIONAL OFFICES STATE LETTERS THAT SOLICIT INFORMATION ON THE STATUS OF IMPLEMENTATION OF THE RELEVANT DECISIONS OF THE MET/SG AND THE MET-RELATED CONCLUSIONS AND DECISIONS OF APIRG.</p>	ON-GOING
18) APIRG Con. 16/49	W AFC, LONDON	<p>TRAINING SEMINAR ON THE USE OF ICING, TURBULENCE AND CONVECTIVE CLOUDS FORECASTS IN GRIB2 CODE FORM</p> <p>THAT THE W AFC LONDON PROVIDER STATE BE INVITED, IN COORDINATION WITH ICAO AND WMO TO PROVIDE TRAINING SEMINARS ON THE USE OF ICING,</p>	STILL OUTSTANDING FOR IMPLEMENTATION IN 2010

REPORT REFERENCE	ACTION BY	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	STATUS
		TURBULENCE AND CONVECTIVE CLOUDS FORCASTS IN GRIB 2CODE FORM TO STATES.	
19) APIRG DEC. 16/50	ICAO Secretariat	<p>INDICATION OF THE TYPE OF VSAT IN THE FASID TABLE MET; IMPLEMENTATION OF SADIS IN TH AFI REGION</p> <p>THAT INFORMATION RELATED TO THE TYPE OF TH VSAT STATION BE INCLUDED IN THE FASID TABLE MET 7 OF THE AFI PLAN AS PRESENTED IN APPENDIX J TO THIS REPORT</p>	NOT RELEVANT, TABLE MET 7 DELETED
20) APIRG Con. 16/51	States	<p>SADIS FTP ACCOUNTS</p> <p>THAT APPROVED SADIS USERS IN THE AFI REGION WHO HAVE INTERNET CAPABILITIES AND DO NOT HAVE AN ACTIVE SADIS FTP ACCOUNT WRITE TO THE SADIS PROVIDER STATE TO HAVE AN ACCESS ACCOUNT</p>	ON-GOING. SEVERAL STATES HAVE APPLIED AND ACCORDED ACCESS ACCOUNT BY THE SADIS PROVIDER
21) APIRG Con. 16/52	ICAO Secretariat	<p>AVAILABILITY ON SADIS OF ASHTAMs AND NOTAMS RELATED TO VOLCANIC ASH(VA)</p> <p>THAT, IN ORDER TO IMPROVE THE AVAILABILTY ON SADIS OF ASHTAMs NOTAMs RELATED TO VA, THE ICAO AFI REGIONAL OFFICES IN THE AFI REGION REMIND STATES OF THE REQUIREMENT TO TRANSMIT ALL ASHTAMs AND NOTAMs RELATED TO VA TO THE AFTN ADDRESS EGZZVANW</p>	COMPLETED
22) APIRG Con. 16/53	ICAO Secretariat	<p>SADIS STRATEGIC ASSESSMENT TABLES</p> <p>THAT THE AFI SADIS STRATEGIC ASSESSMENT TABLES AS PRESENTED TO APPENDIX K TO THIS REPORT BE ADOPTED AND FORWARDED TO THE SADISOPSG FOR PLANNING THE FUTURE OF THE SADIS BANDWIDTH</p>	COMPLETED AT THE SADISOPSG/14
23) APIRG Dec. 16/54	ICAO Secretariat	<p>AFI OPMET Management Task Force (AFI OPMET/M TF)</p> <p>THAT, AN AFI OPMET MANAGEMENT TASK FORCE WITH THE TERMS OF REFERENCE AT THE APPENDIX F BE ESTABLISHED.</p>	COMPLETED
24) APIRG Dec. 16/55	ICAO Secretariat	<p>INCLUSION OF REGIONAL OPMET DATA BANKS AND SIGMET REQUIREMENTS IN THE AMBEX HANDBOOK</p>	COMPLETED
25) APIRG CON. 16/56	ICAO Secretariat	<p>ADOPTION OF PROCEDURES FOR CONDUCTING VA SIGMET TESTS FOR THE AFI REGION</p> <p>THAT:</p> <p>1)THE ICAO REGIONAL OFFICES IN THE AFI REGION:</p> <p>A) ASSUME THE RESPONSIBILITY FOR THE DEVELOPMENT OF ADDRESSEES RELATED TO THE VOLCANIC ASH ADVISORIES (VAA) COMING FROM THE VOLCANIC ASH ADVISORY CENTRE (VAAC), TOULOUSE AND INTENDED FOR THE AFI REGION;</p> <p>B) MAKE AVAILABLE TO INTER-REGIONAL OPMET GATEWAY (IROG), TOULOUSE ,WMO HEADERS THAT WOULD FACILITATE THE ESTABLISHMENT OF</p>	COMPLETED

REPORT REFERENCE	ACTION BY	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	STATUS
		<p>RECEPTION TESTS FOR VOLCANIC ASH ADVISORIES (VAA) WITHIN REASONABLE TIME LIMITS;</p> <p>C) REQUEST THOSE STATES MAINTAINING METEOROLOGICAL WATCH OFFICES (MWOS) IN THE AFI REGION TO IMPLEMENT WMO HEADINGS FOR VOLCANIC ASH SIGMET AND TRANSMITTED BY THOSE MWOS AND MAKE THEM AVAILABLE TO IROG TOULOUSE; AND</p> <p>2) THE PROCEDURES AT THE APPENDIX N BE ADOPTED FOR USE IN SIGMETS TESTS IN THE AFI REGION AFTER ACTION HAD BEEN COMPLETED ON ITEMS A) TO C). ABOVE.</p>	
26) APIRG 16/57	WMO, ICAO, VAAC, TOULOUSE	<p>SIGMET WORKSHOPS</p> <p>THAT WMO, IN COORDINATION WITH ICAO AND VAAC TOULOUSE PROVIDER STATE CONDUCT TWO TRAINING WORKSHOPS ONSIGMET DURING 2008, ONE IN ENGLISH AND ANOTHER IN FRENCH FOR THE AFI REGION.</p> <p>)</p>	TWO WORKSHOPS WERE CONDUCTED DURING 2008 IN WHICH AFI PERSONNEL PARTICIPATED, ONE IN DAKAR(ICA0) AND ANOTHER IN YEMEN (WMO).ANOTHER WORKSHOP IS PLANNED FOR NAIROBI 2009 DECEMBER
27) APIRG Con16/58	States	<p>LEGAL FRAMEWORK FOR AERONAUTICAL METEOROLOGICAL SERVICES</p> <p>THAT STATES IN IMPLEMENTING COST RECOVERY FOR AERONAUTICAL METEOROLOGICAL SERVICES IN ACCORDANCE WITH APIRG CONCLUSIONS 14/37 AND 14/38 PUT IN PLACE A NATIONAL LEGAL FRAMEWORK FOR AERONAUTICAL METEOROLOGICAL SERVICES WHICH INCLUDE COST RECOVERY ARRANGEMENTS.</p>	ON GOING
28) APIRG Con. 16/59	WMO, ICAO	<p>SUPPORT TO STATES IMPLEMENT QUALITY MANAGEMENT SYSTEMS (QMS)</p> <p>THAT: WMO IN COORDINATION WITH ICAO CONTINUE TO ASSIST STATES IN IMPLEMENTING QMS IN THE FORM OF:</p> <p>SEMINARS ON QMS FOR THE CHIEF EXECUTIVES OF METEOROLOGICAL AUTHORITIES (CEOS) AS A PRIORITY AND REQUEST THEM (CEOS) TO REPORT ON STATUS OF IMPLEMENTATION ON QMS IN THEIR SERVICES ON A REGULAR BASIS;</p> <p>SUPPORT FOR MORE DETAILED TRAINING FOR PERSONNEL WHO WOULD ACT AS A CORE GROUP IN THE</p>	ON GOING

REPORT REFERENCE	ACTION BY	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	STATUS
		<p>REGION (TRAINING OF TRAINERS);</p> <p>ATTACHMENTS OF STAFF FROM THE REGION TO STATES THAT HAVE ALREADY ADOPTED QMS THROUGH VCP OR OTHERWISE; AND</p> <p>FINANCIAL RESOURCES FOR ENGAGING CONSULTANCY SERVICES DURING THE INITIAL STAGES OF IMPLEMENTATION.</p>	
29) APIRG Con. 16/60	ICAO Secretariat	<p>REGIONAL METEOROLOGICAL PROCEDURES</p> <p>THAT THE REGIONAL METEOROLOGICAL PROCEDURES GIVEN AT APPENDIX O TO THE REPORT REPLACE THE EXISTING REGIONAL PROCEDURES OF THE AFI ANP/FASID (DOC 7474).</p>	COMPLETED
30) APIRG Dec. 16/61	States	<p>INTRODUCTION OF 30-HOUR TAF IN THE AFI REGION</p> <p>THAT INTERNATIONAL AERODROMES IN THE AFI REGION, AS APPLICABLE IN AMENDMENT 74 TO ANNEX 3 IN THE AFI REGION WITH THE CAPABILITY SHOULD ISSUE 30-HOUR TAF FROM 5 NOVEMBER 2008, AND THOSE WITH LIMITED CAPABILITY SHOULD ADVISE THE REGIONAL OFFICES ACCORDINGLY. A FURTHER ASSESSMENT PERIOD BE EXTENDED TO JUNE 2009 FOR THOSE UNABLE TO IMPLEMENT.</p>	COMPLETED
31) APIRG Con. 16/62	ICAO Secretariat	<p>REVIEW AND UPDATING OF FASID TABLE MET 1A</p> <p>THAT:</p> <p>a) FASID TABLE MET 1A BE REPLACED BY SINGLE LINK (I.E. A URL ADDRESS) TO THE GLOBAL DATABASE TO BE DEVELOPED BY THE SECRETARIAT IN LINE WITH SADISOPSG CONCLUSION 11/9; AND</p> <p>b) COLUMNS 6 AND 7 IN FASID TABLE MET 1A (THE DATABASE TO BE RE-NAMED "FORECASTS (TAF AND TREND) TO BE ISSUED FOR INTERNATIONAL AERODROMES") BE DELETED.</p>	COMPLETED
33) APIRG Dec. 16/64	Chair, MET/SG	<p>COORDINATION BETWEEN WMO REGIONAL ASSOCIATION 1 (AFRICA) AND APRIG ON AERONAUTICAL METEOROLOGY</p> <p>THAT, THE CHAIRPERSON OF THE METEOROLOGY SUB-GROUP LIAISE WITH THE WMO RAPPORTEUR FOR AERONAUTICAL METEOROLOGY PROGRAMME FOR REGIONAL ASSOCIATION1(AFRICA) ON MATTERS OF COMMON INTEREST WHEN REQUIRED.</p>	
SP RAN(2008) Rec. 6/15	APIRG	<p>FOSTER THE IMPLEMENTATION OF SIGMET AND QMS IN THE AFI REGION</p>	CONTINUING

REPORT REFERENCE	ACTION BY	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	STATUS
		<p>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</p>	
SP RAN(2008) Rec. 6/16	ICAO(ACIP)	<p>TECHNICAL AND FINANCIAL SUPPORT FOR THE IMPLEMENTATION OF QUALITY MANAGEMENT SYSTEMS IN THE AFI REGION</p> <p>THAT ICAO IDENTIFY POTENTIAL SOURCES OF TECHNICAL AND FINANCIAL SUPPORT FOR STATES FOR THE IMPLEMENTATION OF QUALITY MANAGEMENT SYSTEMS(QMS) IN METEOROLOGY</p>	ON GOING
SP RAN(2008) Rec. 6/17	APIRG	<p>IMPLEMENTATION OF TERMINAL AREA WARNINGS AND FORECASTS, PROVISION OF WAFS FORECASTS AND OPTIMIZATION OF OPMET DATA EXCHANGES AND TRAINING FOR EARONAUTICAL METEOROLOGICAL STAFF</p>	APIRG STILL TO TAKE ACTION

**SADIS STRATEGIC ASSESSMENT TABLES:
CURRENT (2009) AND PROJECTED DATA VOLUMES 2010-2013**

SUMMARY

Note. – 1 octet = 1 byte = 1 character

Table 1. OPMET data volumes per day (in K bytes)

<i>Region</i>	<i>Current 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>	<i>Projected 2012</i>	<i>Projected 2013</i>
AFI	877	888	911	934	957

Table 2. BUFR data volumes per day (in K bytes)

<i>Region</i>	<i>Current 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>	<i>Projected 2012</i>	<i>Projected 2013</i>
AFI	0	200	200	200	200

Table 3. AIS data volumes per day (in K bytes)

<i>Region</i>	<i>Current 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>	<i>Projected 2012</i>	<i>Projected 2013</i>
AFI	0	2	2	2	2

APPENDIX B

SADIS STRATEGIC ASSESSMENT TABLES CURRENT (2009) AND
PROJECTED DATA VOLUMES 2010-2013

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

Table 1. AFI— OPMET data volumes

<i>OPMET data</i>	<i>Current 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>	<i>Projected 2012</i>	<i>Projected 2013</i>
ALPHANUMERIC DATA					
Number of FC bulletins issued per day	134	140	145	150	155
Number of FT bulletins issued per day	334	340	350	360	370
Number of SA bulletins issued per day	2127	2150	2200	2250	2300
Number of SP bulletins issued per day	43	45	50	55	60
Number of SIGMET bulletins issued per day	12	15	15	15	15
BINARY DATA					
Number of other bulletins issued per day	0	0	0	0	0
TOTALS					
Total number of OPMET bulletins per day	2660	2690	2760	2830	2900
Average size of OPMET bulletin (bytes)	330	330	330	330	330
Total estimated OPMET data volume per day (in K bytes)	877	888	911	934	957

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

Table 2. AFI — PNG data volumes

<i>Graphical information in the PNG chart form</i>	<i>Current 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>	<i>Projected 2012</i>	<i>Projected 2013</i>
TOTALS					
Total number of PNG charts per day	0	2	2	2	2
Average size of charts (bytes)	100000	100000	100000	100000	100000
Total estimated volume of PNG charts per day (in K bytes)	0	200	200	200	200

Note. – Provision is made for the distribution of PNG-encoded VAG

Table 3. AFI — AIS data volumes

<i>AIS data</i>	<i>Current 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>	<i>Projected 2012</i>	<i>Projected 2013</i>
ALPHANUMERIC AIS DATA (NOTAM related to volcanic ash, ASHTAM)					
Number of ASHTAM bulletins issued per day	0	2	2	2	2
Number of NOTAM bulletins issued per day	0	2	2	2	2
TOTALS					
Total number of AIS bulletins per day	0	4	4	4	4
Average size of AIS bulletin (byte)	600	600	600	600	600
Total estimated volume of AIS data per day (in K bytes)	0	2	2	2	2

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

- END -

Recommendations of the AFI OPMET MTF/1

Title of Recommendation	Rec. Number	AFI OPMET MTF/1 Recommendation	Type of Recommendation		
			MTF	MET/SG	APIRG
AFI OPMET INFORMATION EXCHANGE REQUIREMENTS	1/1	That, the OPMET data type, OPMET bulletin and types of OPMET exchange in Appendix C to this report, be implemented by Dakar and Pretoria Regional OPMET Data Banks (RODB), AMBEX Bulletin Compiling Centres (BCC) and National OPMET Centres (NOC) as the OPMET requirements in the AFI region.	Recommendation	Draft Conclusion	Conclusion
INTERREGIONAL OPMET EXCHANGE AND IROG FUNCTIONS	1/2	That, the IROG functions and the exchange of OPMET between the AFI region and adjacent regions in Appendix D and E to this report paper, be implemented by Dakar and Pretoria RODBs as the requirements for the Interregional OPMET exchange and IROG functions in the AFI region.	Recommendation	Draft conclusion	Conclusion
REVISION OF THE REQUIREMENTS OF OPMET DATA FROM NON-AOP AERODROMES IN THE AFI REGION	1/3	That, information related to the requirements of OPMET data from non-AOP aerodromes as given in Appendix F to this report, 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 SUG.	Recommendation	Draft Conclusion	Conclusion
REVISION OF THE REQUIREMENTS OF OPMET DATA FROM AOP AERODROMES IN THE AFI REGION	1/4	That, information related to the requirements of OPMET data from AOP aerodromes, be included in the AFI FASID MET Table 1A, as given in Appendix G to this report.	Recommendation	Draft Conclusion	Conclusion
OPMET EXCHANGE MONITORING AND MANAGEMENT PROCEDURES AT BCC AND RODB	1/5	That, the OPMET management and monitoring procedures given in Appendices H and I to this report, be implemented by the RODBs and the BCC as the requirements for OPMET exchange monitoring and management procedures in the AFI region.	Recommendation	Draft Conclusion	Conclusion

Title of Recommendation	Rec. Number	AFI OPMET MTF/1 Recommendation	Type of Recommendation		
			Recommendation	Draft Conclusion	Conclusion
INTERFACE CONTROL DOCUMENT FOR AFI OPMET DATABASE ACCESS PROCEDURES	1/6	That, 1. the Procedures given in Appendix J to this report, be implemented as the Regional Interface Control Document (ICD) for AFI OPMET Database Access Procedures. 2. The ICD be published by the ICAO Regional Office through AIP Sup.	Recommendation	Draft Conclusion	Conclusion
PROVISION OF INFORMATION ON PRETORIA RODB	1/7	That, South Africa provides: 1. information to ensure that Pretoria RODB meets AMBEX requirements 2. the AFTN address and e-mail of the Pretoria RODB Manager 3. The internet access address of the Pretoria RODB	Recommendation	Decision	
FUTURE WORK PROGRAMME AND COMPOSITION OF THE TASK FORCE	1/8	That, the work programme and the composition of the MTF be as shown at Appendix K to this report.	Recommendation	Draft Decision	Decision
FREQUENCY OF THE MEETINGS OF THE MTF	1/9	That, the Task Force meets once a year to consider yearly activities (review new users OPMET requirements from SADIS, review results of SIGMET Tests, review results of OPMET monitoring by the RODBs, assess the performance of the RODBs, etc.). The yearly meeting will be held alternatively between RODB Dakar and Pretoria.	Recommendation	Draft Conclusion	Conclusion

OPMET INFORMATION AND OPMET EXCHANGES

1.1 OPMET Data Type

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

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

1.2 OPMET bulletins

1.2.1 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.

1.2.2 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.

1.3 Types of OPMET exchange

1.3.1 Regional exchange – AMBEX scheme

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

1.3.1.1.1 *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.

1.3.1.1.2 *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.

1.3.2 Inter-regional OPMET exchange

1.3.2.1 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.

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

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

1.3.3.1 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.

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

1.3.4 Other OPMET exchanges

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

INTER-REGIONAL OPMET EXCHANGE - IROG FUNCTIONS

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 Exchange of OPMET data between Regions
Dakar	AFI and EUR, SAM, NAM, CAR, and MID, ASIA/PAC as backup
Pretoria	AFI and MID, ASIA/PAC, and EUR, SAM, NAM, CAR as backup

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

- a) *Dakar IROG* relays all AFI bulletins to IROG Toulouse in the EUR Region, which serves the EUR, SAM, NAM and MID Regions, and should receive and store all required OPMET bulletins from these Regions;
- b) *Pretoria IROG* relays all AFI bulletins to IROG London 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;

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 at para.3.1.1 to the HAMBEX Handbook.

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.

APPENDIX G

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

IROG RESPONSIBILITIES

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, Jeddah 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, Jeddah, 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.

UPDATED FASID TABLE MET 2A FROM USERS NEW REQUIREMENTS

OPMET INFORMATION (METAR, SPECI AND TAF) REQUIRED IN ISCS AND SADIS

EXPLANATION OF THE TABLE

Column

1 Aerodromes in the AOP Tables of the Air Navigation Plans

Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a state wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

2 Aerodromes not listed in the AOP Tables of the Air Navigation Plans

Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a state wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

3 Location indicator

4 Availability of METAR/SPECI

5 Requirement for aerodrome forecasts in TAF code

C - Requirement for 9-hour validity aerodrome forecasts in TAF code (9H)*

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

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

6 Availability of OPMET information

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

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

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

* Not a regional requirement in the AFI Region, required for EUR Region.

+ Only 24 hour TAFs are a regional requirement.

- MET 2A - AFI

Aerodrome where service is to be provided			OPMET to be provided		
Listed in AOP Tables	Not Listed in AOP Tables	ICAO Location Indicator	S/ASP	TAF	Availabilit
1	2	3	4	5	6
Algeria					
ADRAR/TOUAT-CHEIKH SIDI MOHAMED BELKEBIR		DAUA			F
ALGER/HOUARI BOUMEDIENE		DAAG	Y	T	F
ANNABA/RABAH BITAT		DABB	Y	T	F
	BATNA/MOSTEFA BEN BOULAI	DABT	Y	T	
	BECHAR/BOUDGHENE BEN ALI LOTFI	DAOR	Y	T	F
	BEJAI/SOUMMAM-ABANE RAMDANE	DAAE	Y	C	F
	BISKRA Y	DAUB	Y	C	F
	BORDJ MOKHTAR	DATM	Y	T	
	BOU SAADA	DAAD	Y	T	F
CONSTANTINE/MED BOUDIAF		DABC		T	F
	DJANET/TISKA	DAAJ	Y	C	F
	ECH CHELIT	DAOI	Y	T	
	EL BAYADH	DAOY	Y	T	
	EL GOLEA	DAUE	Y	T	F
	EL OUED/GUEMAR	DAUO	Y	C	F
GHARDAIA/NOUMERAT-MOUFDI ZAKARIA		DAUG			F
	GHRISS	DAOV	Y	T	F
	HASSI RMEL	DAFH	Y	T	
HASSI MESSAOUD/OUED IRARA-KRIM BEL		DAUH			F
	ILLIZI/TAKHAMALT	DAAP	Y	C	F
	IN GUEZZAM	DATG	Y	ET	F
IN SALAH		DAUI			F
	IJEL/FERHAT ABBAS	DAAV	Y	C	F
	LAGHOAT AFB	DAUL	Y	T	
	MECHERIA AIRFORCE BASE	DAAY	Y	T	
ORAN/ES SENIA		DAOO	Y	T	F
	ORAN/AFARAOU	DAOL	Y		
	OUARGLA	DAUU	Y	C	F
	SETIF	DAAS	Y	T	
TAMANRASSET/AGUENAR		DAAT		T	F
TEBESSA/CHEIKH LARBI TEBESSI		DABS			F
	TIARET ABDELHAFID BOUSSOUF AIN BOU CHEKIF	DAOB	Y	C	F
	TINDOUF	DAOF	Y	T	
	TIMIMOUN	DAUT	Y	C	F
TLEMCEN/ZENATA-MESSALI EL HADJ		DAON		T	F
	TOUGGOURT/SIDI MAHDI Y	DAUK	Y	C	F
ZARZAITINE/IN AMENAS		DAUZ			F
Angola					
	CABINDA	FNCA	Y	T	F
HUAMBO		FNHU			F
LUANDA/4 DE FEVEREIRO		FNLU	Y	X	F
Ascention Ile (RU)					
	ASCENTION	FHAW		T	F
	WIDEAWAKE/ASCENSION	FHAW	Y	T	
Benin					
COTONOU/CADJEHOUN		DBBB	Y	X	F

Aerodrome where service is to be provided			OPMET to be provided		
Listed in AOP Tables	Not Listed in AOP Tables	ICAO Location Indicator	S/S/P	TAF	Availability
1	2	3	4	5	6
Botswana					
FRANCISTOWN		FBSK	Y	T	F
GABORONE/SIR Seretse Khama Intl		FBSK	Y	X	F
	GHANZI	FBGZ	Y		F
	JWANENG	FBJW	Y		
KASANE		FBKE	Y	T	F
MAUN		FBMN	Y	T	F
SELIBE-PHIKWE		FBSP	Y	T	F
	TS ABONG¹	FBTS	Y		
British Indian Ocean Territory (United Kingdom)					
	DIEGO GARCIA (SEE/VOIR/VES "KJDG")	FJDG	Y	T	F
Burkina Faso					
BOBO DIOULASSO		DFOO			F
OUAGADOUGOU/AEROPORT		DFFD	Y	X	F
Burundi					
BUJUMBURA			Y	T	F
Cameroon					
DOUALA/AEROPORT		FKKD	Y	X	F
GAROUA		FKKR	Y		F
MAROUA/SALAK		FKKL			F
N'GAOUNDERE		FKKN			F
YAOUNDE/NSIMALEN		FKYS	Y	T	F
Canary Islands (Spain)					
FUERTEVENTURA		GCFV		T	F
GRAN CANARIA		GCLP	Y	T	F
HIERRO		GCHI			F
LA PALMA		GCLA			F
LANZAROTE		GCRR		T	F
TENERIFE NORTE (AD CIVIL)		GCXO	Y	T	F
TENERIFE SUR/REINA SOFIA		GCTS	Y	T	F
Cape Verde					
AMILCAR CABRAL/SAL ISLAND		GVAC	Y	X	F
PRAIA INTL		GVNP	Y	T	F
	RABIL/BOA VISTA ISLAND	GVBA	Y	T	
	SAO PEDRO/SAO VICENTE ISLAND	GVSV	Y	T	F
Central African Republic					
	BANGASSOU	FEFG	Y		F
BANGUI/M'POKO		FEFF	Y	X	F
BERBERATI		FEFT			F
Chad					
	ABECHE	FTTC	Y		
	FAYA LARGEAU	FTTY	Y		

¹ The State has indicated unwillingness to provide the requested information since this is only a synoptic station.

Aerodrome where service is to be provided		OPMET to be provided			
Listed in AOP Tables	Not Listed in AOP Tables	ICAO Location Indicator	SASP	TAF	Availability
1	2	3	4	5	6
	<i>MOUNDOU</i>	FTTD	Y		F
N'DJAMENA/HASSAN DJAMOUS		FTTJ	Y	X	F
	<i>SARH</i>	FTTA	Y		F
Comoros					
DZAOUDZI PAMANDZI		FMCH	Y	T	F
MORONI/IHAHAIA		FMCH	Y	X	T
Congo					
BRAZZAVILLE/MAYA-MAYA		FCBB	Y	F	F
	<i>DOLISIE</i>	FCPD	Y		F
	<i>IMPFONDO</i>	FCOI	Y		F
	<i>OUESSO</i>	FCOU	Y		F
POINTE NOIRE		FCPP	Y	T	F
Côte d'Ivoire					
ABIDJAN/FELIX HOUPHOUET BOIGNY		DIAP	Y	X	F
BOUAKE		DIAP			F
	<i>KORHOGO</i>	DIKO	Y		F
	<i>MAN</i>	DIMN	Y		F
	<i>SAN PEDRO</i>	DISP	Y		F
	<i>YAMO USSOUKRO</i>	DIYO	Y		F
Democratic Republic of the Congo					
GOMA		FZNA			F
	<i>KALEMIE</i>	FZRF	Y		F
	<i>KAMINA-BASE</i>	FZSA	Y	T	F
	<i>KASESE</i>	FZOS	Y	T	F
	<i>KINDU</i>	FZOA	Y	T	F
KINSHASA/N'DJILI		FZAA	Y	X	F
	<i>KINSHASA/N'DOLO</i>	FZAB	Y	T	F
KISANGANI-BANGOKA		FZIC			F
LUBUMBASHI-LUANO		FZQA			F
	<i>MALEBO</i>	FZBN	Y	T	F
	<i>MBANDAKA</i>	FZEA	Y	T	F
MBUJI-MAYI		FZWA			F
Djibouti					
DJIBOUTI/AMBOULI		HDAM	Y	T	F
Egypt					
	<i>ABU SIMBEL</i>	HEBL	Y	T	F
ALEXANDRIA / INTL		HEAX	Y	T	F
ALMAZA AFB / MILITARY		HEAZ			F
ASWAN / INTL		HESN	Y	T	F
ASYUT / INTL		HEAT			F
	<i>BORG EL ARAB / INTL</i>	HEBA		T	F
CAIRO/INTL		HECA	Y	T	F
	<i>EL ARISH / INTL</i>	HEAR		T	F
HURGHADA / INTL		HEGN	Y	T	F
LUXOR / INTL		HELX	Y	T	F

Aerodrome where service is to be provided			OPMET to be provided		
Listed in AOP Tables	Not Listed in AOP Tables	ICAO Location Indicator	S/SP	TAF	Availabilit
1	2	3	4	5	6
	<i>MARSA ALAM / INTL</i>	HEMA	Y	T	F
MERSA MATRUH		HEMM		T	F
	<i>PORT SAID/ INTL</i>	HEPS	Y	T	F
SHARK EL OWEINAT/INTL		HEOW			F
SHARM EL SHEIKH / INTL		HESH		T	F
ST.CATHERINE / INTL		HESC		T	F
TABA / INTL		HETB		T	F
Equatorial Guinea					
	<i>BATA</i>	FGBT	Y		F
MALABO		FGSL	Y	X	F
Eritrea					
ASMARA AIS/APP/COM/MET/TWR		HHAS	Y	T	F
ASSAB		HHSB	Y		F
Ethiopia					
ADDIS ABABA/BOLE COM/MET/NOF		HAAB	Y	X	F
DIRE DAWA		HADR	Y	T	F
Gabon					
FRANCEVILLE/MVENGUE		FOON			F
LIBREVILLE/LEON M'BA		FOOL	Y	X	F
	<i>MOANDA</i>	FOOD	Y		F
PORT-GENTIL		FOOG			F
Gambia					
BANJUL INTERNATIONAL		GBYD		X	F
Ghana					
ACCRA/KOTOKA INTERNATIONAL		DGAA	Y	X	F
KUMASI		DGSI			F
	TAKORADI	DGTK	Y	T	
TAMALE		DGLE			F
Guinea					
	<i>BOKE/BARALANDE</i>	GUOK	Y	T	F
CONAKRY/GBESSIA		GUCY	Y	X	F
	<i>FARANAH/BADALA</i>	GUFH	Y		F
KANKAN/KANKAN		GUXN			F
LABE/TATA		GULB			F
N'ZEREKORE/KONIA		GUNZ			F
Guinea-Bissau					
BISSAU/OSWALDO VIEIRA INTL		GGOV	Y	T	F
Ile de la Réunion					
SAINT DENIS GILLOT		FMEE	Y	X	F
	SAINT PIERRE/PIERREFONDS	FMEP	Y	T	

Aerodrome where service is to be provided			OPMET to be provided		
Listed in AOP Tables	Not Listed in AOP Tables	ICAO Location Indicator	S/ASP	TAF	Availability
1	2	3	4	5	6
Kenya					
ELDORET/INTL.		HKEL	Y	T	F
	<i>KISUMU</i>	HKKI	Y	T	F
	<i>MALINDI</i>	HKML	Y	T	F
MOMBASA/MOI INTL		HKMO	Y	T	F
NAIROBI/JOMO KENYATTA AIRPORT TWR/APP/NOF/CIVIL AIRLINES		HKJK	Y	X	F
	<i>NAIROBI/WILSON</i>	HKNW	Y	T	F
Lesotho					
MASERU MOSHOESHOE I		FXMM	Y	T	F
Liberia					
MONROVIA/ROBERTS INTL		GLRB	Y	T	F
	<i>MONROVIA/SPRIGGS PAYNE</i>	GLMR	Y	T	F
Libyan Arab Jamahiriya					
BENGAZI/BENINA		HLLB	Y	T	F
	EL BEIDA / LABRAQ	HLLQ	Y	T	
	GAMAL ABD EL NASSER AIR BASE	HLGN	Y	T	
	GARDABYA	HLGD	Y	T	
	<i>GHADAMES</i>	HLTD	Y	T	F
	GHAT	HLGT	Y	T	
	HON	HLON	Y	T	
	<i>KUFRA</i>	HLKF	Y	T	F
SEBHA		HLLS			F
TRIPOLI/INTERNATIONAL		HLLT	Y	T	F
	TRIPOLI/MITIGA	HLLM	Y	T	
Madagascar					
ANTANANARIVO/IVATO		FMMI	Y	X	F
ANTSIRANANA/ARRACHART		FMNA	Y	T	F
MAHAJANGA/PH. TSIRANANA		FMNM	Y	T	F
NOSY-BE		FMNN			F
SAINTE-MARIE		FMMS	Y		F
TOAMASINA		FMMT	Y	T	F
TOLAGNARO		FMSD			F
	TOLIARA	FMST	Y	T	
Malawi					
BLANTYRE/CHILEKA		FWCL		Y	F
LILONGWE/KAMUZU INTERNATIONAL		FWKI	Y	X	F
Mali					
BAMAKO/SENOU		GABS	Y	X	F
GAO		GAGO			F
KAYES		GAKD			F
KIDAL		GAKL			F
MOPTI/AMBODEDJO		GAMB			F
NIORO		GANR			F
TOMBOUCTOU		GATB			F

Aerodrome where service is to be provided			OPMET to be provided		
Listed in AOP Tables	Not Listed in AOP Tables	ICAO Location Indicator	S/S/P	TAF	Availabilit
1	2	3	4	5	6
Mauritania					
ATAR		GQPA			F
	<i>KAEDI</i>	GQNK	Y		F
NEMA		GQNI			F
NOUADHIBOU		GQPP	Y	T	F
NOUAKCHOTT/AEROPORT		GQNI	Y	X	F
ZOUERATT/TAZADIT		GQPZ			F
Mauritius					
	<i>RODRIGUES/PLAINE CORAIL AIRPORT</i>	FIMR	Y	T	F
SIR SEEWOOSAGUR RAMGOOLAM INTERNATIONAL AIRPORT		FIMP	Y	X	F
Morocco					
AGADIR/AL MASSIRA		GMAD	Y	X	F
AL HOCEIMA/CHERIF EL IDRISSE		GMTA			V
	<i>CASABLANCA/ANFA</i>	GMMC	Y		
CASABLANCA/MOHAMMED V		GMMN	Y	X	F
ERRACHIDIA/MOULAY ALI CHERIF		GMFK	Y	T	F
FES/SAISS		GMFF	Y	X	F
	<i>LAAYOUNE/HASSAN 1 Y T F</i>	GMLL	Y	T	F
MARRAKECH/MENARA		GMMX	Y	X	F
	<i>NADOR/EL AROUI</i>	GMMW	Y		F
OUARZAZATE		GMMZ	Y	T	F
OUJDA/ANGADS		GMFO	Y	X	F
RABAT/SALE		GMME	Y	X	F
TANGER/IBN BATOUTA		GMTT	Y	X	F
TAN-TAN/PLAGE BLANCHE		GMAT			F
TETOUAN/SANIAT R'MEL		GMTN			F
Mozambique					
BEIRA		FQBR	Y	T	F
	<i>CHIMOIO</i>	FQCH	Y	T	
	<i>INHAMBANE</i>	FQIN	Y	T	
	<i>LICHINGA</i>	FQLC	Y	T	
MAPUTO		FQMA	Y	X	F
	<i>NAMPULA</i>	FQNP	Y	T	F
	<i>PEMBA</i>	FQPB	Y	T	
	<i>QUELIMANE</i>	FQQL	Y	T	F
	<i>TETE/CHINGODZI</i>	FQTT	Y	T	F
	<i>VILANKULO</i>	FQVL	Y	T	
Namibia					
	<i>GROOTFONTEIN</i>	FYGF	Y	T	
HOSEA KUTAKO INTL AIRPORT		FYWH	Y	X	F
KEETMANSHOOP		FYKT			F
	<i>ONDANGWA</i>	FYOA	Y	T	
WALVIS BAY		FYWB			F
	<i>WINDHOEK/EROS</i>	FYWE	Y	T	

Aerodrome where service is to be provided			OPMET to be provided		
Listed in AOP Tables	Not Listed in AOP Tables	ICAO Location Indicator	S/SP	TAF	Availabilit
1	2	3	4	5	6
Niger					
AGADES SUD		DRZA			F
	MARADI	DRRM	Y		
NIAMEY		DRRN	Y	X	F
	TAHOUA	DRRT	Y		
ZINDER		DRZR			F
Nigeria					
ABUJA		DNAA	Y	X	F
	<i>BENIN</i>	DNBE	Y	T	F
CALABAR		DNCA			F
	<i>ENUGU</i>	DNEN	Y	T	F
	<i>IBADAN (NEW)</i>	DNIB	Y	T	F
ILORIN		DNIL			F
	<i>JOS</i>	DNJO	Y	T	F
KADUNA (NEW)		DNKA			F
KANO/MALLAM AMINU KANO		DNKN	Y	X	F
LAGOS/MURTALA MUHAMMED		DNMM	Y	X	F
MAIDUGURI		DNMA			F
	MINNA	DNMN	Y		
	OWERRI	DNIM	Y	T	
PORT HARCOURT		DNPO	Y	X	F
SOKOTO		DNZO			F
	YOLA	DNYO	Y	T	
Réunion (France)					
SAINT DENIS GILLOT		FMEE	Y	X	F
Rwanda					
	KAMEMBE	HRZA	Y	T	
KIGALI/GREGOIRE KAYIBANDA (ATC/RCC/DNA/NOF/MET)		HRZR	Y	T	F
Sao Tome and Principe					
SAO TOME/INTERNATIONAL,SAO TOME ISLAND		FPST	Y	X	F
Senegal					
CAP SKIRING		GOGS			F
DAKAR/YOFF		GOOY	Y	X	F
SAINT LOUIS		GOSS			F
TAMBACOUNDA		GOTT			F
ZIGUINCHOR		GOGG			F
Seychelles					
SEYCHELLES INTERNATIONAL		FSIA	Y	T	F
Sierra Leone					
FREETOWN/LUNGI		GFLL	Y	X	F
Somalia					
BERBERA		HCMH			F
BURAO		HCMV			F
EGAL INTERNATIONAL AIRPORT		HCMH			F

KISIMAYU		HCMK			F
MOGADISHU		HCMM	Y	T	F
South Africa					
	ALEXANDER BAY	FAAB	Y		F
BLOEMFONTEIN (BLOEMFONTEIN AIRPORT)		FABL	Y	T	F
CAPE TOWN (CAPE TOWN INTERNATIONAL AIRPORT)		FACT	Y	X	F
DURBAN (DURBAN INTERNATIONAL AIRPORT)		FADN	Y	X	F
	EAST LONDON	FAEL	Y	T	F
	GEORGE (GEORGE AIRPORT)	FAGG	Y	T	F
	HOEDSPRUIT AFB	FAHS	Y	T	
	KIMBERLEY (KIMBERLEY AIRPORT)	FAKM	Y	T	F
	KRUGER MPUMALANGA INT	FAKN	Y	T	
LANSERIA		FALA			F
MAFIKENG INTL. AD		FAMM			F
	MAKHADO	FALM	Y	T	
NELSPRUIT		FANS			F
O.R TAMBO INTERNATIONAL AIRPORT		FAJS	Y	X	F
	PIETERMARITZBURG	FAPM	Y	T	
	PILANESBERG	FAPN	Y	T	
PIETERSBURG (CIVIL)		FAPI			F
PORT ELIZABETH (PORT ELIZABETH AIRPORT)		FAPE			F
	POLOKWANE INTERNATIONAL	FAPP	Y	T	
	PRETORIA/WONDERBOOM	FAWB	Y	T	
	RAND	FAGM	Y		F
	RICHARDS BAY	FARB	Y	T	
	UMTATA	FAUT	Y	T	
UPINGTON		FAUP			F
	WATERKLOOF (SAAF)	FAWK			F
Spain					
MELILLA		GEML			F
Sudan					
	DONGOLA/DONGOLA	HSDN	Y	T	F
	EL OBEID/EL OBEID INTERNATIONAL	HSOB	Y	T	F
JUBA/JUBA		HSSJ			F
KASSALA/KASSALA		HSKA			F
KHARTOUM/KHARTOUM (CIVIL AVIATION DEPT.)		HSSS	Y	T	F
	MALAKAL	HSSM	Y	T	
PORT SUDAN/PORT SUDAN		HSPN			F
Swaziland					
MANZINI/MATSAPHA		FDMS	Y	T	F
Togo					
AEROPORT INTERNATIONAL GNASSINGBE EYADEMA		DXXX	Y	X	F
NIAMTOUGOU		DXXG	Y		F
	SOKODE Y F	DXSK	Y		F
Tunisia					
DJERBA/ZARZIS		DTTJ	Y	T	F
	EL BORMA	DTTR	Y	T	
	GABES Y	DTTG	Y	C	F
	GAFSA/KSAR	DTTF	Y	C	F
MONASTIR/HABIB BOURGUIBA		DTMB	Y	T	F
SFAX/THYNA		DTTX	Y		F
TABARKA/7 NOVEMBRE		DTKA	Y		F

TOZEUR/NEFTA		DTTZ	Y	T	F
TUNIS/CARTHAGE		DTTA	Y	T	F
Uganda					
ENTEebbe (INTL)		HUEN	Y	X	F
	MASINDI	HUMI	Y		
United Republic of Tanzania					
DAR ES SALAAM APP, TWR, NOF, MET, COM, CIVIL AIRLINES		HTDA	Y	X	F
	DODOMA	HTDO	Y		
	KIGOMA	HTKA	Y		
KILIMANJARO APP, TWR, AIS, MET, CIVIL AIRLINES		HTKJ	Y	T	F
	MBEYA	HTMB	Y		
	MTWARA	HTMT	Y		
	MWANZA	HTMW	Y	T	F
	PEMBA	HTPE	Y		
	SHINYANGA/IBADAKULI	HTSY	Y		
	SONGEA	HTSO	Y		
	TABORA	HTTB	Y		
	TANGA	HTTG	Y	T	F
ZANZIBAR - KISAUNI		HTZA	Y	T	F
Western Sahara					
EL AAIUN		GSAI			F
VILLACISNEROS		GSAI			F
Zambia					
	KASAMA	FLKS	Y		
LIVINGSTONE		FLLI			F
LUSAKA/INTL		FLLS	Y	X	F
MFUWE		FLMF			F
	MONGU	FLMG	Y		
NDOLA		FLND			F
Zimbabwe					
	CHIREZDI/BUTALO RANGE	FVCZ	Y	T	
	GWERU/THORNHIL	FVTL	Y	T	
HARARE INTERNATIONAL		FVHA	Y	X	F
	HWANGE NATIONAL PARK		Y	T	
	KARIBA		Y	T	
	MASVINGO		Y	T	
J.M. NKOMO		FVBU			F
VICTORIA FALLS		FVHA			F

UPDATED FASID TABLE MET 1A

METEOROLOGICAL SERVICES REQUIRED AT AERODROMES

EXPLANATION OF THE TABLE

Column

- 1 Name of the aerodrome or location where meteorological service is required
- Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a state wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.*
- 2 ICAO location indicator of the aerodrome
- 3 Designation of aerodrome:
 RG - international general aviation, regular use
 RS - international scheduled air transport, regular use
 RNS - international non-scheduled air transport, regular use
 AS - international scheduled air transport, alternate use
 ANS - international non-scheduled air transport, alternate use
- 4 Name of the meteorological office responsible for the provision of meteorological service at the aerodrome indicated in column 1
- 5 ICAO location indicator of the responsible meteorological office
- 6 Requirement for trend forecasts
- 7 Requirement for aerodrome forecasts in TAF code
- C - Requirement for 9-hour validity aerodrome forecasts in TAF code (9H)*
 T - Requirement for 18/24-hour validity aerodrome forecasts in TAF code (18/24H)[±]
 X - Requirement for 30-hour validity aerodrome forecasts in TAF code (30H)
- 8 Availability of OPMET information
- F - Full : OPMET data as listed issued for the aerodrome all through the 24-hour period
 P - Partial : OPMET data as listed not issued for the aerodrome for the entire 24-hour period
 N - None : No OPMET data issued for the time being

* Not a regional requirement in the AFI Region, required for EUR Region.

+ Only 24 hour – TAFs are a regional requirement.

MET 1A - AFI

Aerodrome where service is to be provided Responsible MET Office			Responsible MET Office		Forecasts to be provided		Availability of OPMET
Name	ICAO Location Indicator	Use	Name	ICAO Location Indicator	TR	TAF	
1	2	3	4	5	6	7	8
Algeria							
ADRAR/TOUAT-CHEIKH SIDI MOHAMED BELKEBIR	DAUA	RS	ADRAR/TOUAT-CHEIKH SIDI MOHAMED BELKEBIR	DAUA			F
ALGER/HOUARI BOUMEDIENE	DAAG	RS	ALGER/HOUARI BOUMEDIENE	DAAG	Y	T	F
ANNABA/RABAH BITAT	DABB	RS	ANNABA/RABAH BITAT	DABB	Y	T	F
CONSTANTINE/MED BOUDIAF	DABC	RS	CONSTANTINE/MED	DABC		T	F
GHARDAIA/NOUMERAT-MOUFDI ZAKARIA	DAUG	RS	GHARDAIA/NOUMERAT-MOUFDI ZAKARIA	DAUG			F
HASSI MESSAOUD/OUED	DAUH	RS	HASSI MESSAOUD/OUED	DAUH			F
IRARA-KRIM BELKACEM IN SALAH	DAUI	RS	IRARA-KRIM BELKACEM IN SALAH	DAUI			F
ORAN/ES SENIA	DAOO	RS	ORAN/ES SENIA	DAOO	Y	T	F
TAMANRASSET/AGUENAR	DAAT	AS	TAMANRASSET/AGUENAR	DAAT		T	F
TEBESSA/CHEIKH LARBI TEBESSI	DABS	RS	TEBESSA/CHEIKH LARBI TEBESSI	DABS			F
TLEMCCEN/ZENATA-MESSALI EL HADJ	DAON	RS	TLEMCCEN/ZENATA-MESSALI EL HADJ	DAON		T	F
ZARZAITINE/IN AMENAS	DAUZ	RS	ZARZAITINE/IN AMENAS	DAUZ			F
Angola							
HUAMBO	FNHU	RS	LUANDA/4 DE FEVEREIRO	FNLU			F
LUANDA/4 DE FEVEREIRO	FNLU	RS	LUANDA/4 DE FEVEREIRO	FNLU	Y	X	F
Benin							
COTONOU/CADJEHOUN	DBBB	RS	COTONOU/CADJEHOUN	DBBB	Y	X	F
Botswana							
FRANCISTOWN	FBFT	RS	GABORONE/SIR Seretse Khama Intl	FBSK	Y	T	F
GABORONE/SIR Seretse Khama Intl	FBSK	RS	GABORONE/SIR Seretse Khama Intl	FBSK	Y	X	F
KASANE	FBKE	RS	GABORONE/SIR Seretse Khama Intl	FBSK	Y	T	F
MAUN	FBMN	RS	GABORONE/SIR Seretse Khama Intl	FBSK	Y	T	F
SELIBE-PHIKWE	FBSP	RS	GABORONE/SIR Seretse Khama Intl	FBSK F	Y	T	F
Burkina Faso							
BOBO DIOULASSO	DFOO	RS	OUAGADOUGOU/AEROPORT	DFFD			F
OUAGADOUGOU/AEROPORT	DFFD	RS	OUAGADOUGOU/AEROPORT	DFFD	Y	X	F
Burundi							
BUJUMBURA	HBBA				Y	T	F
Cameroon							
DOUALA/AEROPORT	FKKD	RS	DOUALA/AEROPORT	FKKD	Y	X	F
GAROUA	FKKR	AS	GAROUA	FKKR	Y		F
MAROUA/SALAK	FKKL	RS	DOUALA/AEROPORT	FKKD			F
N'GAOUNDERE	FKKN	RS	DOUALA/AEROPORT	FKKD			F
YAOUNDE/NSIMALEN	FKYS	RS	YAOUNDE/NSIMALEN	FKYS	Y	T	F
Canary Islands (Spain)							
FUERTEVENTURA	GCFV	RS	GRAN CANARIA T F	GCLP		T	F
GRAN CANARIA	GCLP	RS	GRAN CANARIA	GCLP	Y	T	F
HIERRO	GCHI	RS	GRAN CANARIA	GCLP			F
LA PALMA	GCLA	RS	GRAN CANARIA	GCLP			F

Aerodrome where service is to be provided Responsible MET Office				Responsible MET Office		Forecasts to be provided		Availability of OPMET
Name 1	ICAO Location Indicator 2	Use 3	Name 4	ICAO Location Indicator 5	TR 6	TA F 7	8	
LANZAROTE	GCRR	RS	GRAN CANARIA	GCLP		T	F	
TENERIFE NORTE (AD CIVIL)	GCXO	RS	TENERIFE NORTE (AD CIVIL)	GCXO	Y	T	F	
TENERIFE SUR/REINA SOFIA	GCTS	RS	TENERIFE SUR/REINA SOFIA	GCTS	Y	T	F	
Cape Verde								
AMILCAR CABRAL/SAL ISLAND	GVAC	RS	AMILCAR CABRAL/SAL ISLAND	GVAC	Y	X	F	
PRAIA	GVNP	RS	AMILCAR CABRAL/SAL ISLAND	GVAC	Y	T	F	
Central African Republic								
BANGUI/M'POKO	FEFF	RS	BANGUI/M'POKO	FEFF	Y	X	F	
BERBERATI	FEFT	RS	BANGUI/M'POKO	FEFF			F	
Chad								
N'DJAMENA/HASSAN DJAMOUS	FTTJ	RS	N'DJAMENA/HASSAN DJAMOUS	FTTJ	Y	X	F	
Comoros								
DZAOUDZI PAMANDZI	FMCZ	RS	MORONI/IHAHAIA	FMCH	Y	T	F	
MORONI/IHAHAIA	FMCH	RS	MORONI/IHAHAIA	FMCH		Y	T	
Congo								
BRAZZAVILLE/MAYA-MAYA	FCBB	RS	BRAZZAVILLE/MAYA-MAYA	FCBB	Y	F	F	
POINTE NOIRE	FCPP	RS	POINTE NOIRE	FCPP	Y	T	F	
Côte d'Ivoire								
ABIDJAN/FELIX HOUPHOUET BOIGNY	DIAP	RS	ABIDJAN/FELIX Houphouet Boigny	DIAP	Y	T X	F	
BOUAKE	DIBK	RS	ABIDJAN/FELIX Houphouet Boigny	DIAP			F	
Democratic Republic of the Congo								
GCMA	FZNA	RS	KINSHASA/N'DJILI	FZAA			F	
KINSHASA/N'DJILI	FZAA	RS	KINSHASA/N'DJILI	FZAA	Y	X	F	
KISANGANI-BANGOKA	FZIC	AS	KINSHASA/N'DJILI	FZAA			F	
LUBUMBASHI-LUANO	FZQA	AS	KINSHASA/N'DJILI	FZAA			F	
MBUJI-MAYI	FZWA	AS	KINSHASA/N'DJILI	FZAA			F	
Djibouti								
DJIBOUTI/AMBOULI	HDAM	RS	DJIBOUTI/AMBOULI	HDAM	Y	T	F	
Egypt								
ALEXANDRIA / INTL	HEAX	RS	CAIRO/INTL	HECA	Y	T	F	
AL MAZA AFB / MILITARY	HEAZ	RNS					F	
ASWAN / INTL	HESN	RS	CAIRO/INTL	HECA	Y	T	F	
ASYUT / INTL	HEAT	RS					F	
CAIRO/INTL	HECA		CAIRO/INTL	HECA	Y	T	F	
HURGHADA / INTL	HEGN	RS	CAIRO/INTL	HECA	Y	T	F	
LUXOR / INTL	HELX	RS	CAIRO/INTL	HECA	Y	T	F	
MERSA MATRUH	HEMM	RS	CAIRO/INTL	HECA		T	F	
SHARK EL OWEINAT/INTL	HEOW	AS					F	
SHARM EL SHEIKH / INTL	HESH	RS	CAIRO/INTL	HECA		T	F	
ST CATHERINE / INTL	HESC	AS	CAIRO/INTL	HECA		T	F	
TABA / INTL	HETB	RS	CAIRO/INTL	HECA		T	F	

Aerodrome where service is to be provided Responsible MET Office			Responsible MET Office		Forecasts to be provided		Availability of OPMET
Name	ICAO Location Indicator	Use	Name	ICAO Location Indicato	TR	TA F	
1	2	3	4	5	6	7	8
Equatorial Guinea							
MALABO	FGSL	RS	MALABO	FGSL	Y	T X	F
Eritrea							
ASMARA AIS/APP/COM/MET/TWR	HHAS	RS	ASMARA AIS/APP/COM/MET/TWR	HHAS	Y	T	F
ASSAB	HHSB	RS	ASSAB	HHSB	Y		F
Ethiopia							
ADDIS ABABA/BOLE COM/MET/NOF	HAAB	RS	ADDIS ABABA/BOLE COM/MET/NOF	HAAB	Y	X	F
DIRE DAWA	HADR	RS	ADDIS ABABA/BOLE COM/MET/NOF	HAAB	Y	T	F
Gabon							
FRANCEVILLE/MVENGUE	FOON	RS	LIBREVILLE/LEON M'BA F	FOOL			F
LIBREVILLE/LEON M'BA	FOOL	RS	LIBREVILLE/LEON M'BA	FOOL	Y	X	F
PORT-GENTIL	FOOG	RS	LIBREVILLE/LEON M'BA F	FOOL			F
Gambia							
BANJUL INTERNATIONAL	GBYD	RS	BANJUL INTERNATIONAL	GBYD		X	F
Ghana							
ACCRA/KOTOKA INTERNATIONAL	DGAA	RS	ACCRA/KOTOKA INTERNATIONAL	DGAA	Y	X	F
KUMASI	DGSI	RS	ACCRA/KOTOKA INTERNATIONAL	DGAA			F
TAMALE	DGLE	RS	ACCRA/KOTOKA INTERNATIONAL	DGAA			F
Guinea							
CONAKRY/GBESSIA	GUCY	RS	CONAKRY/GBESSIA	GUCY	Y	X	F
KANKAN/KANKAN	GUXN	RS	CONAKRY/GBESSIA	GUCY			F
LABE/TATA	GULB	RS	CONAKRY/GBESSIA	GUCY			F
N'ZEREKORE/KONIA	GUNZ	RS	CONAKRY/GBESSIA	GUCY			F
Guinea-Bissau							
BISSAU/OSWALDO VIEIRA INTL	GGOV	RS	BISSAU/OSWALDO VIEIRA INTL	GGOV	Y	T	F
Kenya							
ELDORET/INTL.	HKEL	RS	ELDORET/INTL.	HKEL	Y	T	F
MOMBASA/MOI INTL	HKMO	RS	MOMBASA/MOI INTL	HKMO	Y	T	F
NAIROBI/JOMO KENYATTA AIRPORT TWR/APP/NOF/CIVIL AIRLINES	HKJK	RS	NAIROBI/JOMO KENYATTA AIRPORT TWR/APP/NOF/CIVIL AIRLINES	HKJK	Y	X	F
Lesotho							
MASERU MOSHOESHOE I	FXMM	RS	MASERU MOSHOESHOE I Y T F	FXMM	Y	T	F
Liberia							
MONROVIA/ROBERTS INTL	GLRB	RS	MONROVIA/ROBERTS INTL	GLRB	Y	T	F

Aerodrome where service is to be provided Responsible MET Office			Responsible MET Office		Forecasts to be provided		Availability of OPMET
Name 1	ICAO Location Indicator 2	Use 3	Name 4	ICAO Location Indicator 5	TR 6	TAF 7	
Libyan Arab Jamahiriya							
BENGHAZI/BENINA	HLLB	RS	BENGHAZI/BENINA	HLLB	Y	T	F
SEBHA	HLLS	RS	BENGHAZI/BENINA	HLLB			F
TRIPOLI/INTERNATIONAL	HLLT	RS	TRIPOLI/INTERNATIONAL	HLLT	Y	T	F
Madagascar							
ANTANANARIVO/IVATO	FMMI	RS	ANTANANARIVO/IVATO	FMMI	Y	X	F
ANTSIRANANA/ARRACHART	FMNA			FMMI	Y	T	F
MAHAJANGA/PH. TSIRANANA	FMNM	RS	MAHAJANGA/PH. TSIRANANA Y T F	FMNM	Y	T	F
NOSY-BE	FMNN	RS	MAHAJANGA/PH. TSIRANANA	FMNM			F
SAINTE-MARIE	FMMS	RS	TOAMASINA	FMMT	Y		F
TOAMASINA	FMMT	RS	TOAMASINA	FMMT	Y	T	F
TOLAGNARO	FMSD	RS	ANTANANARIVO/IVATO	FMMI			F
Malawi							
BLANTYRE/CHILEKA	FWCL	RS	BLANTYRE/CHILEKA	FWCL		Y	F
LILONGWE/KAMUZU INTERNATIONAL	FWKI	RS	LILONGWE/KAMUZU INTERNATIONAL	FWKI	Y	X	F
Mali							
BAMAKO/SENOU	GABS	RS	BAMAKO/SENOU	GABS	Y	X	F
GAO	GAGO	RS	BAMAKO/SENOU	GABS			F
KAYES	GAKD	RS	BAMAKO/SENOU	GABS			F
KIDAL	GAKL	RS	BAMAKO/SENOU	GABS			F
MOPTI/AMBODEDJO	GAMB	RS	BAMAKO/SENOU	GABS			F
NIORO	GANR	RS	BAMAKO/SENOU	GABS			F
TOMBOUCTOU	GATB	RS	BAMAKO/SENOU	GABS			F
Mauritania							
ATAR	GQPA	RS	NOUAKCHOTT/AEROPORT	GQNN			F
NEMA	GQNI	RS	NOUAKCHOTT/AEROPORT	GQNN			F
NOUADHIBOU	GQPP	RS	NOUADHIBOU	GQPP	Y	T	F
NOUAKCHOTT/AEROPORT	GQNN	RS	NOUAKCHOTT/AEROPORT	GQNN	Y	X	F
ZOUERATT/TAZADIT	GQPZ	RS	NOUAKCHOTT/AEROPORT	GQNN			F
Mauritius							
SIR SEEWOOSAGUR RAMGOOLAM INTERNATIONAL AIRPORT	FIMP	RS	SIR SEEWOOSAGUR RAMGOOLAM INTERNATIONAL AIRPORT	FIMP	Y	X	F
Morocco							
AGADIR/AL MASSIRA	GMAD	RS	AGADIR/AL MASSIRA	GMAD	Y	X	F
AL HOCEIMA/CHERIF EL IDRISI	GMTA	RS	CASABLANCA/MOHAMMED V	GMMN			V
CASABLANCA/MOHAMMED V	GMMN	RS	CASABLANCA/MOHAMMED V	GMMN	Y	X	F
ERRACHIDIA/MOULAY ALI CHERIF	GMFK	RS	CASABLANCA/MOHAMMED V	GMMN	Y	T	F
FES/SAISS	GMFF	RS	FES/SAISS	GMFF	Y	X	F
MARRAKECH/MENARA	GMMX	RS	MARRAKECH/MENARA	GMMX	Y	X	F
OUARZAZATE	GMMZ	RS	CASABLANCA/MOHAMMED V	GMMN	Y	T	F
OIJDA/ANGADS	GMFO	RS	OIJDA/ANGADS	GMFO	Y	X	F
RABAT/SALE	GMME	RS	RABAT/SALE	GMME	Y	X	F
TANGER/IBN BATOUTA	GMTT	RS	TANGER/IBN BATOUTA	GMTT	Y	X	F

Aerodrome where service is to be provided Responsible MET Office			Responsible MET Office			Forecasts to be provided		Availability of OPMET
Name 1	ICAO Location Indicator 2	Use 3	Name 4	ICAO Location Indicator 5	TR 6	TAF 7	8	
TAN-TAN/PLAGE BLANCHE	GMAT	RS	CASABLANCA/MOHAMMED V	GMMN			F	
TETOUAN/SANIAT R'MEL	GMTN	RS	TANGER/IBN BATOUTA	GMTT			F	
Mozambique								
BEIRA	FQBR	RS	BEIRA	FQBR	Y	T	F	
MAPUTO	FQMA	RS	MAPUTO	FQMA	Y	X	F	
Namibia								
HOSEA KUTAKO INTL AIRPORT	FYWH	RS	HOSEA KUTAKO INTL AIRPORT	FYWH	Y	X	F	
KEETMANSHOOP	FYKT	RS	HOSEA KUTAKO INTL AIRPORT	FYWH			F	
WALVIS BAY	FYWB	RS	HOSEA KUTAKO INTL AIRPORT	FYWH			F	
Niger								
AGADES SUD	DRZA	RS	NIAMEY	DRRN			F	
NIAMEY	DRRN	RS	NIAMEY	DRRN	Y	X	F	
ZINDER	DRZR	RS	NIAMEY	DRRN			F	
Nigeria								
ABUJA	DNAA	RS	KANO/MALLAM AMINU KANO	DNKN	Y	X	F	
CALABAR	DNCA	RS	LAGOS/MURTALA MUHAMMED	DNMM			F	
ILORIN	DNIL	RS	LAGOS/MURTALA MUHAMMED	DNMM			F	
KADUNA (NEW)	DNKA	RS	KATSINA	DNKT			F	
KANO/MALLAM AMINU KANO	DNKN	RS	KANO/MALLAM AMINU KANO	DNKN	Y	X	F	
LAGOS/MURTALA MUHAMMED	DNMM	RS	LAGOS/MURTALA MUHAMMED	DNMM	Y	X	F	
MAIDUGURI	DNMA	RS	KANO/MALLAM AMINU KANO	DNKN			F	
PORT HARCOURT	DNPO	RS	LAGOS/MURTALA MUHAMMED	DNMM	Y	X	F	
SOKOTO	DNSO	RS	KANO/MALLAM AMINU KANO	DNKN			F	
Réunion (France)								
SAINT DENIS GILLOT	FMEE	RS	SAINT DENIS GILLOT	FMEE	Y	X	F	
Rwanda								
KIGALI/GREGOIRE KAYIBANDA (ATC/RCC/DNA/NOF/MET)	HRYR	RS	KIGALI/GREGOIRE KAYIBANDA (ATC/RCC/DNA/NOF/MET)	HRYR	Y	T	F	
Sao Tome and Principe								
SAO TOME/INTERNATIONAL,SAO TOME ISLAND	FPST	RS	SAO TOME/INTERNATIONAL,SAO TOME ISLAND	FPST	Y	X	F	
Senegal								
CAP SKIRING	GOGS	RS	DAKAR/YOFF	GOOY			F	
DAKAR/YOFF	GOOY	RS	DAKAR/YOFF	GOOY	Y	X	F	
SAINT LOUIS	GOSS	RS	DAKAR/YOFF	GOOY			F	
TAMBACOUNDA	GOTT	RS	DAKAR/YOFF	GOOY			F	
ZIGUINCHOR	GOGG	RS	DAKAR/YOFF	GOOY			F	
Seychelles								
SEYCHELLES INTERNATIONAL	FSIA	RS	SEYCHELLES INTERNATIONAL	FSIA	Y	T	F	

Aerodrome where service is to be provided Responsible MET Office			Responsible MET Office			Forecasts to be provided		Availability of OPMET
Name 1	ICAO Location Indicator 2	Use 3	Name 4	ICAO Location Indicator 5	TR 6	TAF 7	8	
Sierra Leone								
FREETOWN/LUNGI	GFLI	RS	FREETOWN/LUNGI	GFLI	Y	X	F	
Somalia								
BERBERA	HCMH	AS	MOGADISHU	HCMM			F	
BURAO	HCMV	RS	MOGADISHU	HCMM			F	
EGAL INTERNATIONAL AIRPORT	HCMH	RS	MOGADISHU	HCMM			F	
KISIMAYU	HCMK	AS	MOGADISHU	HCMM			F	
MOGADISHU	HCMM	RS	MOGADISHU	HCMM	Y	T	F	
South Africa								
BLOEMFONTEIN (BLOEMFONTEIN AIRPORT)	FABL	RS	BLOEMFONTEIN (BLOEMFONTEIN AIRPORT)	FABL	Y	T	F	
CAPE TOWN (CAPE TOWN INTERNATIONAL AIRPORT)	FACT	RS	CAPE TOWN (CAPE TOWN INTERNATIONAL AIRPORT)	FACT	Y	X	F	
DURBAN (DURBAN INTERNATIONAL AIRPORT)	FADN	RS	DURBAN (DURBAN INTERNATIONAL AIRPORT)	FADN	Y	X	F	
LANSERIA	FALA	RS	O.R TAMBO INTERNATIONAL AIRPORT	FAJS			F	
MAFIKENG INTL. AD	FAMM	AS	O.R TAMBO INTERNATIONAL AIRPORT	FAJS			F	
NELSPRUIT	FANS	RS	GROOTFONTEIN	FAGF			F	
O.R TAMBO INTERNATIONAL AIRPORT	FAJS	RS	O.R TAMBO INTERNATIONAL AIRPORT	FAJS	Y	X	F	
PIETERSBURG (CIVIL)	FAPI	AS	O.R TAMBO INTERNATIONAL AIRPORT	FAJS			F	
PORT ELIZABETH (PORT ELIZABETH AIRPORT)	FAPE	AS	O.R TAMBO INTERNATIONAL AIRPORT	FAJS			F	
UPINGTON	FAUP	AS	O.R TAMBO INTERNATIONAL AIRPORT	FAJS			F	
Spain								
MELILLA	GEML	RS	MELILLA	GEML			F	
Sudan								
JUBA/JUBA	HSSJ	RS	KHARTOUM/KHARTOUM (CIVIL AVIATION DEPT.)	HSSS			F	
KASSALA/KASSALA	HSKA	AS	KHARTOUM/KHARTOUM (CIVIL AVIATION DEPT.)	HSSS			F	
KHARTOUM/KHARTOUM (CIVIL AVIATION DEPT.)	HSSS	RS	KHARTOUM/KHARTOUM (CIVIL AVIATION DEPT.)	HSSS	Y	T	F	
PORT SUDAN/PORT SUDAN	HSPN	RS	WADI/NUBA LAKE	HSSW			F	
Swaziland								
MANZINI/MATSAPHA	FDMS	RS	MANZINI/MATSAPHA	FDMS	Y	T	F	
Togo								
AEROPORT INTERNATIONAL GNASSINGBE EYADEMA	DXXX	RS	AEROPORT INTERNATIONAL GNASSINGBE EYADEMA	DXXX	Y	X	F	
NIAMTOUGOU	DXNG	RS	AEROPORT INTERNATIONAL GNASSINGBE EYADEMA	DXXX	Y		F	

Aerodrome where service is to be provided Responsible MET Office			Responsible MET Office		Forecasts to be provided		Availability of OPMET
Name 1	ICAO Location Indicator 2	Use 3	Name 4	ICAO Location Indicator 5	TR 6	TAF 7	
Tunisia							
DJERBA/ZARZIS	DTTJ	RS	TUNIS/CARTHAGE	DTTA	Y	T	F
MONASTIR/HABIB BOURGUIBA	DTMB	RS	TUNIS/CARTHAGE	DTTA	Y	T	F
SFAX/THYNA	DTTX	RS	TUNIS/CARTHAGE	DTTA	Y		F
TABARKA/7 NOVEMBRE	DTKA	RS	TUNIS/CARTHAGE	DTTA	Y		F
TOZEUR/NEFTA	DTTZ	RS	TABARKA/7 NOVEMBRE	DTKA	Y	T	F
TUNIS/CARTHAGE	DTTA	RS	TUNIS/CARTHAGE	DTTA	Y	T	F
Uganda							
ENTEBBE (INTL)	HUEN	RS	ENTEBBE (INTL)	HUEN	Y	X	F
United Republic of Tanzania							
DAR ES SALAAM APP, TWR, NOF, MET, COM, CIVIL AIRLINES	HTDA	RS	DAR ES SALAAM APP, TWR, NOF, MET, COM, CIVIL AIRLINES	HTDA	Y	X	F
KILIMANJARO APP, TWR, AIS,MET, CIVIL AIRLINES	HTKJ	RS	KILIMANJARO APP, TWR, AIS,MET, CIVIL AIRLINES	HTKJ	Y	T	F
ZANZIBAR - KISAUNI	HTZA	RS	ZANZIBAR - KISAUNI	HTZA	Y	T	F
Western Sahara							
EL AAIUN	GSAI	RS	EL AAIUN	GSAI			F
VILLACISNEROS	GSOV	RS	EL AAIUN	GSAI			F
Zambia							
LIVINGSTONE	FLLI	RS	LUSAKA/INTL	FLLS			F
LUSAKA/INTL	FLLS	RS	LUSAKA/INTL	FLLS	Y	X	F
MFUWE	FLMF	AS	LUSAKA/INTL	FLLS			F
NDOLA	FLND	AS	LUSAKA/INTL	FLLS			F
Zimbabwe							
HARARE INTERNATIONAL	FVHA	RS	HARARE INTERNATIONAL	FVHA	Y	X	F
J.M. NKOMO	FVBU	RS	J.M. NKOMO	FVBU			F
VICTORIA FALLS	FVFA	RS	HARARE INTERNATIONAL	FVHA			F

MANAGEMENT OF OPMET EXCHANGE UNDER THE AMBEX SCHEME

1 OPMET Bulletins Update Procedure

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

1.2 The AMBEX centre planning the change, should send a notification by e-mail or fax to the ICAO 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.

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 States 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.

2 Quality Management of OPMET Exchange under the AMBEX Scheme

2.1 Objectives and Scope

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.

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

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

2.2 Quality Control – General Requirements

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.

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.

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.

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.

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.

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.

2.3 Quality Control Procedures

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

3 OPMET Monitoring

3.1 Monitoring of Scheduled OPMET Data

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) exchanged in the region. The PIs are described in detail in **Appendix K**.

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.

3.1.3 Methodology: Data is monitored with reference to the procedures defined in **Appendix K** based on the EUR BMG OPMET Data Monitoring Procedures as dopted by APIRG MET/SG.

3.2 Monitoring of Non-Scheduled OPMET data

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

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.

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.

4 AMBEX Focal Points

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 **Attachment A** to this Appendix.

ATTACHMENT A

AMBEX FOCAL POINTS (*update*)

STATE/ ADMINISTRATION	NAME/DESIGNATION AND ADDRESS	TEL/FAX AND E-MAIL
----------------------------------	-------------------------------------	---------------------------

OPMET Quality Control and Monitoring Procedures

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

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

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 FT FT
Issue Time YYGGggZ	If the field is included, it shall have a valid date and time of origin of forecast including 'Z'.	
Validity Y ₁ Y ₁ G ₁ G ₁ /Y ₂ Y ₂ G ₂ G 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
<p>TAF with issue time error (wrong date):</p> <p>FCID31 WIII 181630 TAF WIII 041630Z 0418/0503 00000KT 9000 FEW025 BECMG 0422/0424 16005KT=</p>	<p>FCID31 WIII 181630 TAF WIII 181630Z 0418/0503 00000KT 9000 FEW025 BECMG 0422/0424 16005KT=</p>
<p>TAF with mistyped Validity Period:</p> <p>FTPH31 RPLL 132200 TAF RPLC 132200Z 1400/1428 04006KT 9999 SCT036 BKN300 TEMPO 1400/1406 02010KT 5000 -SHRA FEW020 BKN270 TX32/1405Z TN22/1421Z=</p>	<p>FTPH31 RPLL 132200 TAF RPLC 132200Z 1400/1424 04006KT 9999 SCT036 BKN300 TEMPO 1400/1406 02010KT 5000 -SHRA FEW020 BKN270 TX32/1405Z TN22/1421Z=</p>
<p>TAF with Validity error (wrong date):</p> <p>FCMS33 WMKK 170748 TAF WMKK 170700Z 3009/3018 30005KT 9999 FEW017CB SCT140 BKN270=</p>	<p>FCMS33 WMKK 170748 TAF WMKK 170700Z 1709/1718 30005KT 9999 FEW017CB SCT140 BKN270=</p>
<p>TAF with 4-digit Validity period:</p> <p>FTXX31 WIDD 170121 TAF WIDD 0618 06010G20KT 9999 SCT018 BECMG 1712/1714 00000KT 7000=</p>	<p>FTXX31 WIDD 170121 TAF WIDD 1706/1718 06010G20KT 9999 SCT018 BECMG 1712/1714 00000KT 7000</p>

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 SIGMET for VA SIGMET for TC	WS WV WC
Validity Period DDHHMM/DDHHMM	Shall have a valid period of validity. Validity periods may be corrected if: <ul style="list-style-type: none"> • Missing VALID string • Incorrect SIGMET number format • Incorrectly formatted validity period 	
<p><i>Note: For SIGMET validation, please refer to the format described in the AFI (WACAF or ESAF) Regional SIGMET Guide</i></p>		

Examples	After QC check
<p>SIGMET without TTAAii:</p> <p>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=</p>	<p>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=</p>
<p>SIGMET with incorrect number format</p> <p>WCPH30 RPLL 210445 SIGMET NO 01 VALID 210000/210600 RPLL TC OBS N0830 E12900=</p>	<p>WCPH30 RPLL 210445 SIGMET 01 VALID 210000/210600 RPLL TC OBS N0830 E12900 ... =</p>
<p>SIGMET with incorrect formatted validity period:</p> <p>WSIN90 VIDP 181800 VIDP SIGMET 06 VALID 18/1600 TO 18/2000 UTC VIDPDELHI FIR ISOL TS ... =</p> <p>WSSD20 OEJD 220503 OEJD SIGMET 01 VALID 220500 TO 220900 OEJN- JEDDAH FIR=</p>	<p>WSIN90 VIDP 181800 VIDP SIGMET 06 VALID 181600/182000 VIDPDELHI FIR ISOL TS ... =</p> <p>WSSD20 OEJD 220503 OEJD SIGMET 01 VALID 220500/220900 OEJN-JEDDAH FIR</p>

1.2 Quality Control Methods

OPMET Data	Elements Defining	Control Methods
METAR METAR COR SPECI (SA,SP)	<ul style="list-style-type: none"> • AHL • Code name • Observation date/time 	Software verification Manual validate Periodic Quality Control & PI Monitoring
TAF TAF AMD TAF COR (FT)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • AHL • SIGMET Sequence No • Date/time groups indicating the period of validity Additional Checks (recommended): <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Type of message • Issue date and time Additional Checks (recommended): <ul style="list-style-type: none"> • Location indicator or name of the VAAC centre originating the message 	Software verification Manual validate Periodic VA Quality Control Monitoring
Tropical Cyclone Advisory FK	<ul style="list-style-type: none"> • Type of message • Issue date and time Additional Checks (recommended): <ul style="list-style-type: none"> • 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:

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

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:

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

(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:

$$\tau = \mu - \sigma$$

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:

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

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	RJTDMYX

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
.	.	.	.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

**APIRG
METEOROLOGY SUB-GROUP(MET/SG)**

AFI OPMET MANGEMENT TASK FORCE



AFI OPMET DATA BANKS

**INTERFACE CONTROL DOCUMENT
FOR**

AFI OPMET Database Access Procedures

First Edition – March 2009

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Appendices

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1 INTRODUCTION

- 1.1 This Interface Control Document (ICD) describes the standard interrogation procedures for access to the designated Regional OPMET Databanks (RODBs) in the AFI Region. By accessing these databanks, the user implicitly acknowledges the disclaimer in paragraph 6.
- 1.2 The ICD contains details of:
- locations and AFTN addresses of the RODBs;
 - request and reply AFTN message formats; and
 - standard available meteorological products.
- 1.3 The ICD is published and maintained up-to-date by the ICAO Regional Offices, Dakar and Nairobi. The RODBs should notify regularly the Regional Offices of any changes in the procedures or content of the respective data banks.

2 REGIONAL OPMET DATABANKS

2.1 Location

The designated RODBs in the AFI Region are located at Dakar, Senegal and Pretoria, South Africa.

2.2 AFTN Access Addresses

The AFTN addresses that should be used to access the RODBs are the following:

Dakar	GOOYYZYZ
Pretoria	FAPRYMYX

2.3 OPMET Data Types

- 2.3.1 The following meteorological data types, as defined by the WMO data designator indicator, are stored and available on request from the RODBs:

TT	Message Type
SA	METAR/SPECI(1)
FT	24/36 HR TAF
WS	SIGMET
WC	Tropical Cyclone SIGMET (3)
WV	Volcanic Ash SIGMET(3)
UA	Special AIREP (2)
FV	Volcanic Ash Advisory (VAA)
FK	Tropical Cyclone Advisory (TCA)

Note (1): A reply for a METAR request will consist of the latest METAR or SPECI reports available for the concerned station.

Note(2): Not yet available in the AFI OPMET Databases

Note(3): When a query for WS SIGMET is received, the reply will contain valid WS, WC and WV SIGMETs that are available for the FIR

- 2.3.2 Further data types may be added as new requirements emerge. Only data with valid WMO abbreviated headings as defined in the WMO publication No.386 should be processed.

3 REQUEST/REPLY MESSAGE FORMAT

3.1 Request messages

3.1.1 Request messages should follow the AFTN standard telecommunication procedures as defined in Annex 10, Volume II. The text part of the messages should be as defined in this document.

Note: The standard AFTN message start and end characters and alignment characters (SOH, STX and ETX for ITA-5 format or ZCZC and NNNN for ITA-2 format) have been omitted for clarity in the following examples.

3.1.2 Request messages should use the AFTN priority GG.

3.1.3 The general format of the request message is as follows:

```
GG xxxxxxxx
YYGGgg yyyyyyyy
RQM/TTCCCC,(report(s)).../TTAAii, (bulletin(s))...=
RQM/TTCCCC,(report(s)).../TTAAii, (bulletin(s))...=
....
```

The meaning of the groups and symbols in the request message is as follows:

3.1.3.1 In the AFTN heading:

GG	priority indicator
xxxxxxx	AFTN address of the databank
YYGGgg	date-time group specifying the filing time of the request message
yyyyyyy	AFTN address of the originator of the request

3.1.3.2 Each data request line is composed of the following elements:

RQM/	indicates the start of a data request line
TT	WMO data type identifier (as per paragraph 2.3)
CCCC	4-letter location indicator (as per ICAO Doc 7910)
or	
AAii	bulletin identifier (WMO Manual No. 386, table C1 for AA)
=	indicator of the end of a request line.

3.1.3.3 Delimiters can be used within a request line as follows:

, indicates more requests for reports or bulletins for the same data type or different data types for one location;
/ indicates a new data type request within the same data request line.

3.1.4 The length of the request line should not exceed 69 characters including 'RQM' and the '=' signal. Up to ten request lines can be included in one AFTN request message, unless otherwise specified by the RODB (see the Restrictions paragraph in the Appendices).

3.1.5 Examples of request types

3.1.5.1 *Request for one data type at one location*

The format of the request line to obtain one meteorological data type for one location is as follows:

RQM/TTCCCC=

Examples:

1. RQM/SAFBSK=
2. RQM/FCFAJS=

3.1.5.2 *Request for one data type at two or more locations*

The format of the request line to obtain one MET data type for two or more locations is as follows:

RQM/TTCCCC₁,CCCC₂,.....,CCCC_n=

Note: Up to ten locations can be included in a request line.

Examples:

1. RQM/SAYSSY,YBBN,YMML=
2. RQM/FTNZAA,NZCH=

3.1.5.3 *Request for two or more data types at one location*

The format of the request line to obtain two or more MET data types for one location is as follows:

RQM/TT₁CCCC,TT₂,.....,TT_n=

Examples:

1. RQM/SAFQMP,FC=
2. RQM/FTFADN,SA,WC=

3.1.5.4 *Request for different data types at different locations*

The format of the request line to obtain different MET data types for a number of locations is as follows:

RQM/TT₁CCCC,CCCC,.../TT₂CCCC,CCCC,.../...../TT_nCCCC,CCCC,....=

Examples:

1. RQM/SAFBSK/FCFQMP,FBMN/FTFBSK=

3.1.5.5 *Request for a meteorological bulletin*

The format of the request line to obtain a Meteorological Bulletin is as follows:

RQM/TTAAii=

Examples:

1. RQM/FTAE31=
2. RQM/SATH33=

Note: Only one bulletin can be requested in a RQM request line. Up to six bulletins can be included in a request message

3.1.5.6 **Other request options**

RODBs may apply other specific request formats and options, such as requesting a number of preceding messages of certain data type, which should be described in the “specific request formats” section in the Appendices for each RODB.

3.2 **Reply messages**

3.2.1 If the AFTN address of the originator of a request is authorised, the databank should automatically reply to the AFTN originator address given in the request message.

3.2.2 Valid requests for bulletins and/or messages should produce an answer, which should be returned in a standard WMO bulletin format embedded as text in a standard AFTN message. Each bulletin should be sent as a separate message.

3.2.3 Per valid requested bulletin or message(s) belonging to the same type and concerning valid stored messages, one or more reply bulletins should be generated. Non-valid requested groups should be replied by an appropriate *Information* or *Error* reply message.

3.2.4 In preparing the reply messages by the RODBs the following should apply[⊗] (See also notes at para.2.3.1).

3.2.4.1 A reply to a METAR request should consist of the latest METAR and/or SPECI reports available for the requested station.

3.2.4.2 When a request for SIGMET of any type (WS, WC or WV) is received, the reply should contain all valid WS, WV and WC SIGMETs that are available for the FIR concerned.

3.2.5 **Format of the reply message**

3.2.5.1 The WMO abbreviated heading of a reply message will be constructed as: **TTAAii CCCC YYGGgg** where:

- | | | |
|---------------|---|--|
| TT | = | is the requested data type (e.g., SA) |
| AA | = | XX : fixed geographical designator for database reply or as specified by the RODB |
| ii | = | 99 : fixed bulletin number for database reply or as specified by the RODB |
| CCCC | = | location indicator of the reply database (e.g. FACT, HKJK, etc.) |
| YYGGgg | = | date-time group (DTG) depending on the original DTG of the bulletin header |

Note: For the issuing time of TAF and the observation time of METAR the user should refer to the DTG in the reports, which might be different from the DTG in the header.

Example:

SAXX99 VTBB 031200
 METAR CCCC 031200Z ...
 METAR CCCC 031200Z
 ...

3.2.6 **Format of the *Information and Error* reply messages**

3.2.6.1 Currently the RODBs are using different formats of the “*Information and Error messages*”, which are sent to the originator of the request when the RODB is not in a position to send back valid OPMET data. The format of these messages is specified in the Appendices for each RODB.

4 DATABASE MISUSE AND ABUSE

4.1 The RODBs should on a continuous basis monitor all the requests received from AFTN-users. In order to determine possible abuse or misuse of the AFI Infrastructure (AFI RODBs and AMBEX scheme), a detailed investigation may be performed for all frequent users. A frequent user is a user performing 100 requests or more per day, on a regular basis.

4.2 These investigations might lead to the detection of:

4.2.1 **Misuse of the DB:** the DB is not used in the way it is intended to.

A typical example of misuse would be a user requesting on a regular basis (e.g. every hour) the same reports. In case of misuse of a RODB, the ICAO Regional Office should be notified and requested contact the database user, together with its Parent RODB or AMBEX centre (or equivalent for interregional users), in order to find an alternative way to receive the required data. If a suitable solution is found to receive the data using the regular OPMET exchange procedures, but this solution is not accepted by the databank user (i.e. the misuse continues), then the RODB could decide to limit *or block* the access to the AFI OPMET Database for this user.

4.2.2 **Abuse of the DB:** users are requesting data they are not entitled to receive or it is suspected that users use the data for commercial purposes.

In case of abuse of the RODB is suspected, the database user might be contacted by the ICAO Regional Office with a request for information on its databank use. After investigation, the RODB could decide to limit *or block* the access to the AFI OPMET Database for this user.

5 AFI OPMET DATABASE CATALOGUE

5.1 **Basic principles**

5.1.1 The AFI OPMET Database Catalogue consists of lists of OPMET products that are required to be available in the AFI Regional OPMET Databanks, based on the requirements stated in the AFI ANP and additional requirements by airlines, which

have been agreed with the provider States.

5.1.2 AMBEX scheme and the RODBs should ensure availability of the required OPMET information from all AFI aerodromes included in the AOP Table of the AFI Basic ANP (respectively, in the FASID Table MET 1A). In addition, requirements for non-AOP aerodromes have been stated by airlines to support the evolving operations, especially the long-haul and ETOP flights. These requirements are included in the SADIS User Guide, Annex 1. The AFI OPMET Database Catalogue should include also those non-AOP aerodromes, for which the States concerned have agreed to provide the required OPMET information.

5.1.3 The AFI OPMET Database Catalogue is provided in three sections as follows:

a) Message types METAR/SPECI, FT TAF and TAF: (section 1)
The list of required reports is based on the CCCC list contained in the ANP/FASID (Facilities and Services Implementation Document), adopted by ICAO. The names of the CCCC locations and States are those listed in AFI FASID Tables MET 1A and 2A.

b) SIGMET: (section 2)
SIGMETs for all FIRs are required. The SIGMET list is based upon the list from ICAO AFI FASID Table MET 1B.

c) Bulletins: (section 3)
 Bulletin requests are shortcuts for requests of lists of reports. The reply to a bulletin request consists of one or more messages containing the latest valid (not NIL) reports of the requested stations. The bulletin list is based on the AFI bulletin tables. The bulletins selected for this catalogue:

- belong to the AFI area (European “AA” in the header)
 - have an “ii” < 50
 - contain at least one station of the AFI OPMET DB station catalogue
- Some further manual selection was done, in case of duplicate TTAAii in the headers.

6. AVAILABILITY OF DATABASE CATALOGUES ON INTERNET SERVERS AND CONTACT ADDRESSES

DB Agent	Catalogue on internet server	Contact address
DAKAR	DAKAR Catalogue: http://brdo.asecna.org AFI OPMET Database catalogue+ To be filled	Représentation de l'ASECNA au Sénégal BP 8132 Aéroport Léopold Sédar Senghor, Dakar/Yoff, Sénégal Fax : +221 33 820 06 00 AFTN : GOOYYMYX
PRETORIA	To be filled	South African Weather Service HQ <u>Postal Address</u> Private Bag X097 Pretoria 0001 South Africa <u>Physical Address</u> 442 Rigel Avenue South Erasmusrand Pretoria 0181 South Africa <u>Telephone numbers</u> Tel: +27 (0) 12 367 6000 Fax: +27 (0) 12 367 6300 (Reception) AFTN: FAPRYMYX

†: The AFI OPMET Database Catalogue is the combined catalogue for the two AFI OPMET DBs (Dakar and Pretoria), defining their minimum common contents. The file structure and its contents are identical on all two FTP servers.

7. DISCLAIMER

7.1 Usage of the AFI RODBs implies that the user has taken notice of the disclaimer below, and accepts the associated consequences.

7.1.1 The lists of bulletins and stations in the AFI OPMET Database Catalogue only consist of lists of required data. It does not mean that these data are presently received in the AFI OPMET Database, or have been yet received.

7.1.2 The fact that there is no data found for one location and one type of message in the AFI OPMET Database does not mean that a message has not been generated for such

a location, but only means that no valid message concerning such a location and such a type of message has been received or stored by the AFI OPMET Database.

7.1.3 The user assumes the entire risk related to its use of data.

MTF Future Work Programme for 2009 – 2013 (5 years: Current and next triennium)

	Task	Source	Recent Progress Next milestone and its deadline	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	<ul style="list-style-type: none"> The related Chapter of the AMBEX Handbook reviewed (October 2009) Develop back up procedures for the AFI RODBs (2012) 	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	<ul style="list-style-type: none"> The AMBEX scheme reviewed by MTF/1 (October 2009) Continuous review 	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	<ul style="list-style-type: none"> The related Chapter of the AMBEX Handbook developed (October 2009) SADISOPSG/14 Concl. Reviewed (October 2009) Continuous review of the procedures SADISOPSG/15 Concl. Review (2010): yearly 	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	<ul style="list-style-type: none"> The related Chapter of the AMBEX Handbook developed (October 2009) Continuous review 	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 management of OPMET data by the AMBEX centres and the RODBs; and	APIRG/16 Décision. 16/54	<ul style="list-style-type: none"> Procedures for monitoring and management of the OPMET exchange developed (October 2009) 2 SIGMET Test conducted (November 2009 and June 2010) One SIGMET Test a year One OPMET monitoring by the RODBs every three months: end of March, June, September Assessment of the RODBs during yearly meetings 	SIGMET exchange and management of other OPMET, 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	<ul style="list-style-type: none"> Final decision on future OPMET XML coded format awaited (2010) Regional Plan to be prepared before the new binary coded OPMET (2011) 	A regional OPMET format transition plan established

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 and **any other State willing to provide Experts** are invited to participate in the work of the Task Force.

Operational Shortcomings and Deficiencies Identified During the SIGMET Tests

	Operational Shortcomings and Deficiencies	VAAC, TCAC, RODBs or MWOs	
1	VA SIGMET tests format not in compliance with Annex 3 provisions	FBSK, DNKN	
2	The VA SIGMET issued does not reflect the MET contain VAA test message provided the VAAC	FTTJ, GMMC, DRRN, GOOY, DTTA	
3	No line change after the hyphen separating the preamble from the text	GMMC, FAJS	
4	The priority indicator GG instead of FF, was used to issue the Advisories (VAA or TCA) or the SIGMET messages	TCAC, DRRN, DNKN, DTTA, FAJS	
5	An Aerodrome MET Office issued a SIGMET while it is not a MWO.	DNMM	
6	A MWO issued a TC SIGMET while it is not allowed to do it	DTTA	
7	Used SIGMET type indicator WC instead of FK in the header	FAJS	
8	A real VAA message from VAAC Darwin reported as a VAA test message from Toulouse VAAC	Dakar RODB	
9	A none MET content TCA test message was issued instead of a MET content TCA	TCAC	
10	Some of the MWOs are not able to issue any SIGMET due to lack of telecommunication facilities or organizational issues (No SIGMET received during 21 days monitoring at the RODBs: Appendix 7)	8 MWOs suspected: FNLU, HBBA, HRYR, HCMM, HUEN, HTDA, FZAA, GLRB,	
11	No SIGMET received at the RODBs during both tests	24 MWOs	ESAF - 19: FNLU, HBBA, HECA, HAAB, HHAS, HKJK, HLLT, FWKI, FIMP, FQMA, FYWH, HRYR, FSIA, HCMM, HSSS, HUEN, HTDA, FLLS, FVHA. WACAF – 5: DAAG, GCLP, GVAC, FZAA, GLRB.

Deficiencies in the Meteorology Field
(REF. Air Navigation Plan - Africa-Indian Ocean region (Doc 7474))
Part IV - Meteorology (MET)

STATE	Identification		Deficiencies				Corrective action		
	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
ANGOLA	Requirement to provide aerodrome forecasts (AFI FASID Table MET 1A)	Angola/Luanda 4 de Fevereiro Associated MET Office	TAF of Luanda not regularly available	2003	Advice given by correspondence	Improve reliability of telecomm	INAMET and ENANA	As soon as possible	A
BURUNDI	Requirement to provide automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure at Sal aerodrome with a runway intended for Category II instrument approach and landing operations in accordance with ICAO Annex 3, Chap 4, para. 4.1.5 and 4.6.3.1	Burundi/Busumbura International Airport	MET station located very far from the runway and among buildings	2006	Data observed not representative of weather conditions along the runway. Unreliable exchange of data to users	Install an automatic weather observing system with sensors appropriately located. Install a MET message distribution system.	Meteorological Services Department	2007	U

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
COMOROS	Requirement to provide automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure at Sal aerodrome with a runway intended for Category II instrument approach and landing operations in accordance with ICAO Annex 3, Chap 4, para. 4.1.5 and 4.6.3.1	Comoros/ Prince Said Ibrahim International Airport of Moroni	Moroni International Airport equipped with a category II approach and landing operations instrument, is not using a proper automated equipment for measuring, assessing, monitoring and remote indicating of MET parameters	09/2009	Advice given during the mission	Install an automated aerodrome weather observing system with sensors and display located at required places for the provision of operational MET information	ASECNA	December 2010	U
COMOROS	Requirement to provide runway visual range (RVR) assessments at the touchdown zone and the mid-point of the runway of Prince Said Ibrahim International Airport of Moroni, intended for Category II instrument approach and landing operations in accordance with Annex 3, Chap. 4, para. 4.6.3.4 b)	Comoros/ Prince Said Ibrahim International Airport of Moroni	Runway visual range (RVR) assessments are not representative of the touchdown zone and the mid-point of the runway intended for Category II instrument approach and landing operations	09/2009	Advice given during the mission	1° Introduce manual assessment of RVR in accordance with ICAO Doc. 9328. Install RVR sensor at the touchdown zone and the mid-point of the runway	ASECNA	December 2010	U

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
COMOROS	Requirement to provide aerodrome forecasts (TAF) in accordance with AFI FASID MET Table 1A	Comoros/ Prince Said Ibrahim International Airport of Moroni	Only three TAF are issued every day, the TAF expected at 16:00 is not issued	09/ 2009	Advice given during the mission	Issue four TAF every day	ASECNA	December 2010	U
CONGO	Requirement to provide runway visual range (RVR) assessments at the touchdown zone and the mid-point of the runway of Brazzaville International Airport, intended for Category II instrument approach and landing operations in accordance with Annex 3, Chap. 4, para. 4.6.3.4 b)	Congo, Brazzaville International Airport	Runway visual range (RVR) is not assessed at the mid-point of the runway of Brazzaville International Airport, intended for Category II instrument approach and landing operations	08/2008	Advice given during the mission	Install RVR sensor at the mid-point of the runway.	ASECNA	2009	U
Congo	Requirement to provide VOLMET broadcast at Brazzaville International Airport (VOLMET), in accordance with ICAO Doc 7474 Volume II, Part V, Table ATS 2A..	Congo, Brazzaville International Airport	The VOLMET broadcast service is not operational	08/2008	Deficiency identify during ICAO WACAF mission	Re-establish the VOLMET broadcast service in the Brazzaville FIR	ASECNA	2009	U

STATE	Identification		Deficiencies			Corrective action			
	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
CONGO	Requirement to collect, process and relay air reports in accordance with Annex 3 Chapter 5, para 5.1, 5.2, 5.3.2, 5.4.1, 5.5, 5.7, 5.8 and 5.9	Congo, Brazzaville International Airport	Aircraft observation and reports are not collected, processed and relayed	08/2008	Advice given during the mission	Necessary arrangements between the MET authority and the appropriate ATS authority be made.	ANAC, ASECNA, Airlines	2009	U
	Requirement to provide Automatic Terminal Information Service (ATIS) in accordance with ICAO Doc 7474 Volume II, FASID AFI, Part III - Tableau AOP 1.	Congo, Brazzaville International Airport	The ATIS service is not implemented at Brazzaville International Airport	08/2008	Deficiency identified during ICAO WACAF mission	Install and implement an operational ATIS system	ASECNA	2009	B

	Identification		Deficiencies			Corrective action			
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
DJIBOUTI	Requirement to provide automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure at Sal aerodrome with a runway intended for Category II instrument approach and landing operations in accordance with ICAO Annex 3, Chap 4, para. 4.1.5 and 4.6.3.1	Djibouti/ Djibouti International Airport	Djibouti International Airport equipped with a category II approach and landing operations instrument, is not using an automated equipment for measuring, assessing, monitoring and remote indicating of MET parameters	09/ 2009	Advice given during the mission	Install an automated aerodrome weather observing system with sensors and display located at required places for the provision of operational MET information	AID-DPW	December 2010	U

	Identification		Deficiencies			Corrective action			
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
DJIBOUTI	Requirement to provide runway visual range (RVR) assessments at the touchdown zone and the mid-point of the runway of Djibouti International Airport of Moroni, intended for Category II instrument approach and landing operations in accordance with Annex 3, Chap. 4, para. 4.6.3.4 b)	Djibouti/ Djibouti International Airport	Runway visual range (RVR) assessments are not representative of the touchdown zone and the mid-point of the runway intended for Category II instrument approach and landing operations	09/ 2009	Advice given during the mission	1°) Introduce manual assessment of RVR in accordance with ICAO Doc. 9328. Install RVR sensor at the touchdown zone and the mid-point of the runway	AID-DPW	December 2010	U
DJIBOUTI	Requirement to issue local routine and special reports in accordance with Annex 3, chap. 4, para. 4.3.1, 4.3.2 a) et 4.4.2 a)	Djibouti/ Djibouti International Airport	Local routine and special reports (MET REPORT) and SPECIAL) are not issued	09/ 2009	Advice given during the mission	Issue local routine and special reports (MET REPORT) and SPECIAL)	AID-DPW	June 2010	U

STATE	Identification		Deficiencies			Corrective action			
	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
DJIBOUTI	Requirement to issue aerodrome and wind shear warnings and wind shear alert in accordance with Annex 3, chap. 7, para. 7.3 et 7.4 et App. 6 Table A6-2 et A6-3	Djibouti/ Djibouti International Airport	Aerodrome and wind shear warnings (AD WRNG, WS WRNG) and wind shearn alert are not issued at Djibouti International Airport	07/ 2009	Advice given during the mission	<ol style="list-style-type: none"> 1. sensitize forecasters and observers in the issuance and dissemination of messages and WS WRNG AD WRNG 2. issue and disseminate WS WRNG and AD WRNG information and wind shear alert; 3. develop and enforce a letter of service agreement between the MET and ATS (TWR, CCR, Office of the runway, ..) in order inter alia to promote the regular routing of aircraft reports on wind shear at landing or take off, to assess RVR, etc. .. 4. consider the possibility of installing, after a survey with users, at Djibouti Airport, a wind shear detecting system 	<ol style="list-style-type: none"> 1. AID-DPW 2. AID-DPW 3. DACM et AID-DPW 4. DACM et AID-DPW 	<ol style="list-style-type: none"> 1. June 2010 2. June 2010 3. June 2010 End 2010 	<ol style="list-style-type: none"> U U U A

STATE	Identification		Deficiencies			Corrective action			
	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
DJIBOUTI	Requirement to provide flight documentation in accordance with AFI FASID Table MET 7 (Doc 7474 Volume II, FASID AFI)	Djibouti/ Djibouti International Airport	Flight documentation is provided from a public non-secured website ADDS	07/2009	Advice given during the mission	<p>In the short term, a SADIS FTP service shall be accessed from the WAFC London to extract required data for the provision of flight documentation. Access procedures are described on the following Website http://www.icao.int/anb/sadisopsg/sadis%20ftp%20service%20v4.0.pdf</p> <p>In the medium term, install a SADIS VSAT station with the required SADIS workstation software:</p>	AID-DPW	- SADIS FTP : avant fin juin 2010 -Station VSAT SADIS 2G : fin 2010	A

STATE	Identification		Deficiencies				Corrective action		
	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	
	1	2	3	4	5	6	7	8	
EQUATORIAL GUINEA	Requirement to provide aerodrome forecasts (AFI FASID Table MET 1A)	Equatorial Guinea/Malabo Aeronautical MET centre	TAF of Malabo issued by the Douala MET Office not by MET Office of Malabo	2000	Advice given through correspondence and mission	Installation of reliable telecomm. link and provision of sufficient number of forecasters	Civil Aviation Authority, Equatorial Guinea	As soon as possible	A
THE GAMBIA	Requirement to measure and report surface wind (Annex 3, Chapter 4, para 4.6.1)	The Gambia/Banjul - Yundum Intl./Aeronautical MET station	Wind measurement unreliable	12/1994 & 2/1999	Advice given through correspondence	Installation of reliable wind equipment	Civil Aviation Authority and MET, The Gambia	As soon as possible	U
GUINEA BISSAU	Requirement to issue trend type landing forecast (Annex 3, chapter 6, para. 6.3.2)	Guinea Bissau/Bissau Osvaldo V. Intl. Aeronautical station	Trend type landing forecasts not issued	1995	Advice given through correspondence	Forecast unit to issue Trend type landing forecasts	Civil Aviation and MET of Guinea Bissau	-	U
LESOTHO	Implementation of MET facilities and services	Lesotho/Maseru/Moshoe	Anemometer on RWY 04 has been	2003	Advice given	Install a new sensor with displays at	Lesotho	As soon as possible but	A

STATE	Identification		Deficiencies				Corrective action		
	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	
	1	2	3	4	5	6	7	8	
	AFI/7 Rec. 14/10	shoe	unserviceable for many months		through mission	appropriate ATC and MET positions		not later than 2007	
LIBERIA	Requirement to provide meteorological reports to the ATS units (Annex 3, Chapter 10, para. 10.1.1)	Liberia/ Roberts Intl. Associated MET Office	Provision of MET data to ATS units deficient	5/2000	Advice given to authorities through correspondence	Better display system of MET data to ATS	Liberia Civil Aviation Authority and MET	As soon as possible	A
NAMIBIA	Requirement for a continuous watch over meteorological conditions (Annex 3, para. 3.4.2(a)) and requirements for SIGMETS information (Annex 3 para. 3.4.2 b, c, d and para. 7.1.1)	Namibia/Windhoek Hosea Kutako Meteorological Watch Office	The MWO operational hours do not cover same period as ATS Non-issuance of trend forecast in METAR reports. Non-issuance of SIGMETS information	2004	Advice given during mission	MWO operational hours to coincide with those of ATS. Forecast office to issue Trend type landing forecasts for METARS and SIGMETS	CAA/MET Division	2007	U

	Identification		Deficiencies			Corrective action			
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
SÉNÉGAL	Requirement to provide runway visual range (RVR) assessments at the touchdown zone and the mid-point of the runway of Dakar International Airport, intended for Category II instrument approach and landing operations in accordance with Annex 3, Chap. 4, para. 4.6.3.4 b)	Senegal/ Leopold Sedar Senghor International Airport or Dakar	Runway visual range (RVR) assessments are not representative of the touchdown zone and the mid-point of the runway intended for Category II instrument approach and landing operations	02/ 2009	Deficiency identify during ICAO WACAF visit	Install RVR sensor at the mid-point of the runway	AID-DPW	December 2010	U

	Identification		Deficiencies			Corrective action			
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
SÉNÉGAL	Requirement to collect, process and relay air reports in accordance with Annex 3 Chapter 5, para 5.1, 5.2, 5.3.2, 5.4.1, 5.5, 5.7, 5.8 and 5.9	Senegal/ Leopold Sedar Senghor International Airport or Dakar	Aircraft observation and reports are not collected, processed and relayed	02/2009	Deficiency identify during ICAO WACAF visit	Necessary arrangements between the MET authority and the appropriate ATS authority be made.	ANACS and ASECNA	December 2009	B
SÉNÉGAL	Requirement to report visibility along the runway in local routine and special reports in accordance with Annex 3, Appendix 3 para; 4.2.4.2	Senegal/ Leopold Sedar Senghor International Airport or Dakar	Many obstacles (2 control towers, airlines hangars, etc ...) around the visibility estimation platform of the aeronautical meteorological station (SMA), does not allow to estimate the visibility along the runway .	02/2009	Deficiency identify during ICAO WACAF visit	Install visibility sensors along the runway Or Relocate the SMA at a location enabling the observer to estimate the visibility along the entire length of the runway.	ASECNA	June 2010	A

STATE	Identification		Deficiencies			Corrective action			
	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
SÉNÉGAL	Requirement to provide Automatic Terminal Information Service (ATIS) in accordance with ICAO Doc 7474 Volume II, FASID AFI, Part III - Tableau AOP 1.	Senegal/ Leopold Sedar Senghor International Airport or Dakar	The ATIS service is not implemented at Brazzaville International Airport	02/2009	Deficiency identify during ICAO WACAF visit	Install and implement an operational ATIS system	ASECNA	June 2010	A
SIERRA LEONE	Requirement to measure and report surface wind (Annex 3, Chapter 4, para. 4.6.1.1)	Sierra Leone/ Lungi Airport, Associated MET Office	Wind measurement unreliable	May 1994	Advice given through correspondence	Installation of reliable MET basic equipment	Civil Aviation Authority and MET, Sierra Leone	As soon as possible	U
SOMALIA	Situation unknown	FIR Mogadishu							
SWAZILAND	Requirement to provide MET reports to ATS Units (Annex 3, Chapter 10, para 10.1.1)	Swaziland/Manzini Matsapha Airport Associated MET Office	Provision of MET reports to ATS units deficient. No wind displays in	2004	Advice was given on mission	Install a display system for MET data and information at ATS units	DCA and MET Department	As soon as possible	U

STATE	Identification		Deficiencies			Corrective action			
	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
			control tower						
ZAMBIA	1)Implementation of MET facilities and services (Annex 3, para 4.1.6)	Zambia/Lusaka International Airport	Inadequate level of equipment maintenance	2002 and missions of 2004 and 2007	Equipment remain unserviceable for a long time due to lack of spare parts	Provide financial resources including use of air navigation charges which currently is not fully available to the MET Department.	Zambia MET Department and NACL	As soon as possible	U
	2)Requirement to provide MET reports to ATS Units (Annex 3, Chapter 10, para 10.1.1)	Zambia/Lusaka Meteorological Office	Provision of MET reports to ATS Units deficient	2002 and missions of 2004 and 2007	Advice given during mission by correspondence	Install display system of MET data to ATS units	MET Department	As soon as possible	U
	3)Requirement to provide meteorological data and forecasts in form of flight documentation (Annex 3, Chapter 3, para 3.3.2).	Zambia/Lusaka Meteorological Office	Provision of MET reports to ATS Units deficient	2002 and missions of 2004 and 2007	Advice given during mission and by correspondence	Install appropriate telecomms equipment to receive OPMET information and appoint adequate trained personnel	MET Department	As soon as possible	U

	Identification		Deficiencies			Corrective action			
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	4) Requirements for SIGMET information (Annex 3 para 3.4.2 b, c, d and add para. 7.1.1	Zambia/Lusaka Meteorological watch office (MWO)	SIGMET not issued	2007	Advice given on mission	Immediately provide training and issue SIGMET	MET Department	As soon as possible	U

EXPLANATORY NOTES FOR APPENDICES ON DEFICIENCIES

1. Requirement identified at a given meeting through a recommendation; name of the meeting and the related recommendation number
2. Name of the State or States involved and/or the name of the facilities such as name of airport, FIR, ACC, TWR, etc.
 1. Brief description of the deficiency :
 2. Date deficiency was first reported :
 3. Comments.
 4. Brief description of the corrective actions to be undertaken.
 5. Identification of the executing body.
 6. Target date for completion of the corrective action.
 7. Priority and classification.
8. Target date for implementation.
9. Priority for Action.

‘U’ priority = **Urgent** requirements having a **direct** impact on **safety** and requiring **immediate** corrective actions.

Urgent requirements consisting of any physical, configuration, material, performance, personnel or procedures specifications, the application of which is urgently required for air navigation safety.

‘A’ priority = **Top priority** requirements **necessary** for air navigation **safety**.

Top priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation safety.

‘B’ priority = **Intermediate** requirements **necessary** for air navigation **regularity**.

Intermediate priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation regularity and efficiency.

**Terms of Reference, Work programme and composition
of the Meteorology Sub-Group (MET/SG)**

1. Terms of Reference

- a. To keep under review, the adequacy of meteorological facilities and services to meet new technological developments in the air navigation field and make proposals as appropriate for implementation by States to APIRG.
- b. To identify, State by State, those specific deficiencies and shortcomings that constitute major obstacle to the provision of efficient and reliable meteorological facilities and services to meet the requirements of air navigation in the AFI Region and recommend specific measures to eliminate them.

2. Future Work Programme

	Task	Source	Recent Progress Next milestone and its deadline	Final Result (completion)
1	Establish and maintain detailed lists, State by State of the specific deficiencies of facilities for the provision of atmospheric measurements pertaining to surface wind, pressure, visibility/runway visual range, cloud base, temperature and dew point temperature considered critical for flight safety.	APIRG/13 Con. 13/96	<ul style="list-style-type: none"> State by state MET deficiencies have been established and included in APIRG/15 Report Surveys are in progress 	Deficiencies on MET parameters measurements established and compiled
2	Monitor the exchange of OPMET information through the AMBEX scheme in the AFI Region and between the AFI and ASIA/PACIFIC and EUR Regions	APIRG/8 Con. 8/43 c)	<ul style="list-style-type: none"> Continuing task Next monitoring with two events in 2010 	Exchange of OPMET information through AMBEX and SADIS, improved
3	Plan for the introduction of efficient inter-regional OPMET exchanges in coordination with the CNS Sub-group as required	AFI/7	Implementation of AMBEX Scheme	Efficient inter-regional OPMET exchanges
4	Monitor the degree of implementation of very small aperture terminals (VSATs) for the reception of WAFS products	AFI/7 Rec. 14/12	<ul style="list-style-type: none"> A large number of AFI States have implemented SADIS2G VSATs with others using the SADIS FTP Service 	Information on the implementation of SADIS VSAT and FTP established and compiled
5	Monitor the quality of WAFS high and medium level significant weather charts in the AFI Region, provide feed back to W AFC, London as appropriate	APIRG/12 Con. 12/34	<ul style="list-style-type: none"> Continuing task Survey is in progress 	Improvement of the quality of WAFS high and low level significant weather charts in the AFI Region
6	Monitor the implementation of regional procedures for the issuance of volcanic ash and tropical cyclone advisories	AFI/7 Rec. 7/3 and 7/4	<ul style="list-style-type: none"> Continuing task Survey is in progress 	Regional procedures for the issuance of volcanic ash and tropical cyclone advisories Implemented

	Task	Source	Recent Progress Next milestone and its deadline	Final Result (completion)
7	Review on a continuing basis the contents of Tables MET 1A and 1B and Tables MET 2A to ensure their validity in light of operational requirements and develop proposals to update them if necessary.	AFI/7	<ul style="list-style-type: none"> • Continuing task • Survey is in progress 	The validity of contents of Tables MET 1A, 1B and and Table MET 2A. are to ensured
8	Review the meteorological procedures in the introductory text to Part VI B Meteorology of the Basic AFI Regional Plan/FASID, as well as Meteorological related issues in other sections of the Plan and relevant regional supplementary Meteorology procedures (SUPPs) in the Doc 7030, in the light of procedures employed in other regions and develop amendment proposals as appropriate, coordinating where necessary with other APIRG Sub-Groups.	APIRG/12	<ul style="list-style-type: none"> • Amendments made since APIRG/16 in the plan 	Maintain up to date procedures to improve safety and efficiency of air navigation.
9	Monitor developments in the CNS/ATM Systems with regard to meteorological requirements in the AFI Region and in coordination with AFI ATM Sub-Group.	APIRG/14 Con. 14/43	<ul style="list-style-type: none"> • The need to take in account how the developments in the FAA NextGen and Eurocol SESAR programmes will impact the AFI Region 	Consistent provision of meteorological information as an integrated function of the ATM system with improved accuracy and timeliness and increased availability. Performance management will be an important part of the quality assurance of meteorological information.
10	Develop guidelines for the use of GRIB and BUFR codes in the AFI Region.	APIRG/15 Con. 15/81		
11	Monitor the implementation in the AFI region of quality assurance/performance relating to the MET field	APIRG/14 Con. 14/40	<ul style="list-style-type: none"> • Two seminars in French and English for trainers of trainers in Quality Management System for aeronautical meteorological services in 2010 	AFI region quality assurance/performance relating to the MET field, implemented

	Task	Source	Recent Progress Next milestone and its deadline	Final Result (completion)
12	Monitor training and qualification of aeronautical MET personnel	APIRG/15 Dec. 15/94	<ul style="list-style-type: none"> Undertake a survey during the triennium for purposes of establishing a database on the status of availability, level of training and competence of aeronautical meteorological services personnel, 	Information on training and qualification of aeronautical MET personnel established and compiled

3. Composition

Algeria, Burkina Faso, Cameroon, Congo, Côte D'Ivoire, Egypt, Eritrea, Ethiopia, France, Gabon, The Gambia, Ghana, Guinea, Kenya, Madagascar, Malawi, Morocco, Niger, Nigeria, Senegal, South Africa, Spain, Tunisia, United Kingdom, United Republic of Tanzania, Zambia, ASECNA, IATA and WMO.