



INTERNATIONAL CIVIL AVIATION ORGANISATION

**AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG)
METEOROLOGY SUB-GROUP TWELFTH MEETING (MET/SG/12)**

(Dakar, Senegal, 1 – 5 December 2014)

Agenda Item 5: Status of implementation of the work programmes of the MET Sub-group (MET/SG), AFI OPMET Management Task Force (AFI MTF) and ATM/MET/TF as assigned by APIRG
**STATUS OF IMPLEMENTATION OF THE WORK PROGRAMMES
OF THE MET/SG AND RELATED TASK FORCES (MTF AND ATM/MET/TF)**

(Presented by the Secretariat)

SUMMARY

In order to determine the status of implementation of the MET/SG work programme, this paper reviews:

- ✓ the status of implementation of the MTF work programme,
- ✓ the status of implementation of the tasks and TORs of the ATM/MET/TF;
- ✓ Summary of recent and forthcoming developments to the WAFS and SADIS
- ✓ air navigation deficiencies in the MET field;
- ✓ the status of implementation of APIRG/19 Decisions and Conclusions related to MET; and
- ✓ the status of implementation of the Meteorological Sub-Group (MET/SG) work programme.

The action by the Meeting is in paragraph 3.

References: Reports of the MTF/5, ATM/MET/1, MET/SG/11 and APIRG/19 meetings.

1. Introduction

1.1 The Meeting may recall that Decision 11/10 of the MET/SG/11 meeting endorsed the work programme of the AFI OPMET Management Task Force (MTF) as reflected in **Appendix A** to this paper. The MET/SG is further informed that the Terms of Reference (TORs) and work programme of the Air Traffic Management and Meteorology Task Force (ATM/MET/TF) as indicated in **Appendix B**, were revised through Decision 19/20 of the APIRG/19 meeting.

1.2 Based on the reviews of the above mentioned work programmes and the updated air navigation deficiencies in the MET field, this paper reviews the status of implementation, and updates the MET/SG work programme as given in **Appendix D** to this paper.

2. Discussions
2.1 *Review of the status of implementation of the MTF work programme*

2.1.1 The Sub-Group may recall that the AFI OPMET Management Task Force (MTF) was established by the APIRG/16 meeting through Decision 16/54 with the Terms of reference (TORs) as described in **Appendix A-1**) to this paper. The work programme of the MTF given in **Appendix A-3**) was updated by the MET/SG/11 meeting through Decision 11/10.

2.1.2 Based on the above mentioned updated work programme of the MTF, the Secretariat prepared a draft status of implementation of the said work programme in **Appendix A-4**). In this regard, the MET/SG may

wish to formulate the following Decision:

Decision 12/XX: Status of Implementation of the MTF Work Programme

That, the information given in Appendix A-4 to this paper, is endorsed as the Status of Implementation of the Work Programme of the AFI OPMET Management Task Force (MTF).

2.1.3 Status of Implementation of the MTF/5 Decisions

2.1.3.1 The meeting may recall that the MTF held its fifth meeting (MTF/5) in Nairobi from 4 to 5 July 2013 and formulated four decisions provided in the final report of the MTF/5 that was distributed by the Secretariat and available at the ICAO website at [http://www.icao.int/ESAF/Pages/APIRG-SG-AFI-OPMET-5th\(APIRG\).aspx](http://www.icao.int/ESAF/Pages/APIRG-SG-AFI-OPMET-5th(APIRG).aspx).

2.1.3.2 The meeting is invited to review and update the Status of implementation of the MTF/5 Decisions listed in **Appendix A-5**) to this paper.

2.2 Review of the status of implementation of the tasks and TORs of the ATM/MET/TF

2.2.1 The meeting may further recall that Conclusion 18/13 of APIRG/18 meeting established the AFI Air Traffic Management and Meteorology Task Force (AFI ATM/MET/TF) with initial TORs and work programme. The MET/SG is informed that the AFI ATM/MET/TF held its first meeting in Nairobi, Kenya, from 10 to 11 June 2013 and submitted an amendment of its TORs and work programme to the MET and ATM/AIM/SAR Sub-groups. The amendment proposal submitted by ATM/AIM/SAR SG to APIRG was endorsed by Conclusion 19/20 of APIRG/19 meeting.

2.2.2 Based on the updated work programme of the AFI ATM/MET/TF given in **Appendix B-2**), the Secretariat prepared a draft status of implementation of the said work programme in **Appendix B-4**). The MET/SG therefore, may wish to endorse the following Decision.

Decision 12/XX: Status of Implementation of the ATM/MET/TF Work Programme

That, the information given in Appendix B-4 to this paper, is endorsed as the Status of Implementation of the Work Programme of the AFI Air Traffic Management and Meteorology Task Force (AFI ATM/MET/TF).

2.2.3 Status of Implementation of the ATM/MET/TF Decisions

2.2.3.1 The MET/SG is informed that during its first meeting (June 2013, Nairobi) the ATM/MET/TF formulated four decisions provided in its final report that was distributed by the Secretariat and available at the ICAO website at [http://www.icao.int/WACAF/Pages/AFI-PLANNING-AND-IMPLEMENTATION-REGIONAL-GROUP-\(APIRG\).aspx](http://www.icao.int/WACAF/Pages/AFI-PLANNING-AND-IMPLEMENTATION-REGIONAL-GROUP-(APIRG).aspx).

2.2.3.2 The meeting is invited to review and update the Status of implementation of the ATM/MET/TF/1 Decisions listed in **Appendix B-5**) to this paper.

2.3 Summary of recent and forthcoming developments to the SADIS and WAFS

2.3.1 The summary of recent and forthcoming developments to the SADIS is provided in WP/10 to be presented by the SADIS Provider State (United Kingdom).

2.3.2 The summary of recent and forthcoming developments to the WAFS is provided in WP/11 to be presented by the WAFS London Provider State (United Kingdom).

2.3.3 The MET/SG is invited to decide on the *Suggested actions* proposed for the Sub-Group's consideration.

2.4 *Air navigation deficiencies in the MET field*

2.4.1 The meeting will recall that the list of deficiencies in the MET field was reviewed and updated based on the uniform methodology approved by Council for identification, assessing, tracking and reporting of deficiencies of air navigation systems. In analysing the updated list of deficiencies in the MET field, the Secretariat came to the following results:

- a) The deficiencies in the MET field, were identified in only 24 States visited;
- b) Lack of certified **QMS** in 23 States/24 (Angola, Burundi, Cape Verde, Chad, Cameroon, Congo, Djibouti, Gambia, Ghana, Guinea, Guinea Bissau, Lesotho, Liberia, Mauritania, Niger, DRC, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, Togo and Zambia);
- c) Lack of use of quality WAFS products (no **SADIS** station) in 5 States/24 (Djibouti, Liberia, Nigeria (Kano), Sao Tome and Principe and Sierra Leone);
- d) Lack of issuance of aerodrome forecasts (**TAF**) in 3 States/24 (Angola, Burundi and Sao Tomé and Principe);
- e) Lack of issuance of aerodrome warnings (**AD WRND**) in 4 States/24 (Djibouti (Djibouti), Guinea (Conakry), DRC (Kinshasa) and Sao Tome and Principe (Sao Tome));
- f) Lack of issuance of wind shear warnings and alerts (**WS WRND**) while experienced by aircrafts in 4 States/24 (Djibouti (Djibouti), Guinea (Conakry), DRC (Kinshasa) and Sao Tome and Principe (Sao Tome)).

2.4.2 MET deficiencies collected from other sources are as follows:

- a) Lack of issuance of **SIGMET**: 6 MWOs/28 have never issued any SIGMET during AFI SIGMET Tests: (Angola (Luanda), Ethiopia (Addis Ababa), Namibia (Windhoek), Tanzania (Dar Es Salaam), Zambia (Lusaka) and Zimbabwe (Harare) – *Source: 2013 SIGMET TEST report*);
- b) AFI Meteorological Bulletins Exchange (**AMBEX**) scheme not fully implemented (Availability of AFI METAR and TAF at Dakar RODB during 3ird quarter of 2014): TAF – 79,51% (ESAF – 76,13% and WACAF – 82,88%), METAR – 51,66% (ESAF -48,05% and WACAF – 55,27%); *source: DAKAR RODB OPMET monitoring on 30 September 2014*);
- c) **ATIS** not implemented: 0/17 (Angola, Cameroon, Congo, Côte d'Ivoire, Gabon, Ghana, Guinea, Kenya, Madagascar, Nigeria, Uganda, Senegal, Tanzania, Zambia and Zimbabwe); *Source: AFI ANP Table AOP/1*
- d) Lack of implementation of **HF VOLMET**: 0/2 (Congo and Madagascar). *Source: AFI ANP Table ATS/2*.

2.5 *Status of implementation of APIRG/19 Decisions and Conclusions related to MET*

2.5.1 The Sub-Group may recall that the updated work programme of the APIRG Meteorological Sub-Group (MET/SG) as described in **Appendix C** to this paper, was endorsed by the APIRG/19 meeting through Decision 19/46.

2.5.2 The meeting may further recall that the MET/SG/11 meeting held in Nairobi from 8 to 10 July 2013 formulated decisions which were provided in the final report distributed by the Secretariat and available at the ICAO website at [http://www.icao.int/WACAF/Pages/METEOROLOGY-SUB-GROUP-TENTH-MEETING-\(MET-SG-11\).aspx](http://www.icao.int/WACAF/Pages/METEOROLOGY-SUB-GROUP-TENTH-MEETING-(MET-SG-11).aspx) . The MET/SG is also informed that the AFI Planning and Implementation regional Group (APIRG) held its nineteenth meeting (APIRG/19) in Dakar, Senegal, from 28 to 31 October 2013 and formulated MET related four (4) Conclusions and two (2) Decisions.

2.5.3 The meeting is invited to review the Status of implementation of MET related APIRG/19 Conclusions and Decisions and the MTF/5, ATM/MET/TF/1 and MET/SG/11 Decisions listed in **Appendixes D-1), D-2), D-3) and D-4)** to this paper.

2.5.4 In reviewing Appendixes D-1), D-2), D-3) and D-4), the meeting may recall that APIRG/19 meeting agreed that the AFI transition plan for table-driven data representation (XML/GML) be developed after the MET Divisional meeting scheduled for July 2014 (APIRG/19 report, para. 3.6.19). The meeting is informed that the Meteorology Divisional Meeting held at ICAO HQ in Montreal, Canada from 7 to 18 July 2014 (MET/14), adopted Recommendation 3/2 which proposed the establishment of a transition plan for table-driven data representation (XML/GML) for METAR/SPECI, TAF and SIGMET as given in **Appendix E** to this paper. The meeting may further recall that Conclusion 19/44 of APIRG/19 called for the development of capabilities of handling OPMET information in digital format by inviting Dakar and Pretoria RODBs to:

- “a) start developing capability of handling OPMET data in digital format as soon as possible, after November 2013;*
- b) test the codes based on OPMET data in digital format (XML/GML) for METAR/SPECI, TAF and SIGMET with a view to fine tuning over the first year (2014); and*
- c) take a leading role over the transition aspect to XML/GML and provide technical assistance as required to other AFI States in implementing OPMET data in digital format.”*

2.5.5 In order to develop a transition plan for the table-driven data representation (XML/GML) in the AFI region, the meeting may wish to formulate the following draft Conclusion:

Draft Conclusion 12/XX: Transition Plan for handling OPMET Information in Digital Format in the AFI region

That, the information given in Appendix F to this paper, is endorsed as the Transition Plan for handling OPMET Information in Digital Format in the AFI region.

2.5.6 For a better understanding and involvement of AFI States in the implementation of the transition plan, AFI States will need to develop capability of handling OPMET data in digital format. In this regard, it would be desirable to conduct much more training for the personnel of the AMBEX units in the region, thus the meeting may wish to formulate the following draft conclusion:

Draft Conclusion 12/XX: Training Seminars to develop capability of handling OPMET data in digital format in the AFI region

That ICAO Dakar and Nairobi Regional Offices conduct regional seminars to develop capability of handling OPMET data in digital format in the AFI region in view of:

- a) Increasing the awareness of users of the AFI Meteorological Bulletin Exchange (AMBEX) units in the AFI region, in the exchange of OPMET data in digital format; and**
- b) Expediting the implementation of the Transition Plan for handling OPMET Information in Digital Format in the AFI region.**

2.5.7 The meeting will recall that Decisions 11/04 and 11/06 of the MET/SG/11 meeting, called for the updating of the AFI regional SIGMET Guide and AMBEX Handbook, respectively by the Secretariat. The meeting is informed that based on a template of regional SIGMET Guide provided by the former MET Section at ICAO HQ, the Secretariat has prepared a new edition of the AFI regional SIGMET Guide given in **Appendix G** to this paper. The AMBEX Handbook was also amended as called by Decision 11/06 of MET/SG/11 meeting. During the AMBEX implementation training workshop conducted in Dakar, from 18 to 20 March 2014, the meeting suggested to add the communications main flow chart and the AFI routing Tables to the AMBEX Handbook. **The WP/09** presented by ASECNA is suggesting including OPMET bulletins exchange programs of the National OPMET Centres (NOC) in the AMBEX Handbook.

2.5.8 In this regard, the Secretariat has amended the AMBEX Handbook accordingly. Therefore, the draft amendments of the AFI SIGMET Guide and the AMBEX Handbook are proposed for review by the meeting. In this regard, the meeting may wish to formulate the following draft decision:

Draft Decision 12/XX: Updating the AFI regional SIGMET Guide and AMBEX Handbook

That, the documents given at:

- a) **Appendix G to this paper, be endorsed as the 10th edition of the AFI regional SIGMET Guide; and**
- b) **Appendix H to this paper, be endorsed as the updated AMBEX Handbook, 7th Edition – Amendment 4**

2.6 *Status of implementation of the MET/SG work programme*

2.6.1 Based on the above mentioned updated air navigation deficiencies in the MET field, the summary of recent and forthcoming developments to the WAFS and SADIS, the status of implementation of the Decisions/Conclusions and work programmes of the MET/SG, MTF and ATM/MET/TF, the Secretariat prepared a draft status of implementation of the work programme of the MET/SG given in **Appendix D** to this paper. In this regard, the MET/SG may wish to formulate the following draft Decision:

Draft Decision 12/XX: Status of Implementation of the MET/SG Work Programme

That, the information given in Appendix D to this paper, is endorsed as the Status of Implementation of the Work Programme of the AFI Meteorological Sub-Group (MET/SG).

3 Action by the Meeting

3.1 The MET/SG is invited to:

- a) Note the information provided in this paper ; and
- b) decide on the draft Decisions and draft Conclusions proposed for the Sub-Group's consideration.

APPENDIXES

- ✓ **Appendix A-** work programme of the AFI OPMET Management Task Force (MTF)
- ✓ **Appendix B-** work programme of the ATM/MET Task Force
- ✓ **Appendix C-** work Programme of the MET/SG
- ✓ **Appendix D-** Status of implementation of the MET/SG work Programme
- ✓ **Appendix E -** Transition Plan for Digital OPMET
- ✓ **Appendix F –** AFI Transition Plan for Digital OPMET
- ✓ **Appendix G –** Updating the AFI regional SIGMET Guide
- ✓ **Appendix H –** AMBEX Handbook, 7th Edition, Amendment 4

**APPENDIX E – GLOBAL TRANSITION PLAN FOR DIGITAL OPMET (2014 MET
DIV Rec 3/2)**

1. TRANSITION

The main principles and considerations for the evolution of MET information exchange provisions explained in paragraphs 2.2 and 2.3 are expressed in a foreseen end-state of this evolution by 2025. Intermediate steps are defined in line with the regular amendment cycle of Annex 3 to support the transition towards this full migration by 2025*

- 1) Amendment 77 to Annex 3 (with intended applicability in November 2016)
 - ✓ Introduction of an updated IWXXM (logical level) to reflect additional aeronautical meteorological information elements currently contained in the defined Annex 3/Technical Regulations [C.3.1] products or templates (evolution of IWXXM version 2013)
 - ✓ Introduction of recommended practice for XML/GML-based exchange format for METAR, SPECI, TREND, TAF and SIGMET (upgrade of IWXXM version 2013)
- 2) Amendment 78 to Annex 3 (with intended applicability in November 2019)
 - ✓ Introduction of an updated IWXXM (logical level) to reflect all aeronautical meteorological information elements contained in the products, templates and services that Annex 3/Technical Regulations [C.3.1] supports
 - ✓ Introduction of a separate chapter on information exchange services including:
 - the general principles and in some cases recommended practices to provide all gridded data products currently part of Annex 3/Technical Regulations [C.3.1] as an information exchange service in a recommended exchange format;
 - recommended practices to provide all gridded data products as an information exchange service in a recommended exchange format; and
 - introduce newly defined and agreed services.
- 3) Amendment 79 to Annex 3 (with intended applicability in November 2022)
 - ✓ Restructuring to reflect that Annex 3/Technical Regulations [C.3.1] described core aeronautical meteorological information elements and aeronautical meteorological information exchange services at the logical level to support international air navigation, including:
 - an updated IWXXM (logical level) to reflect all meteorological information elements and services contained in Annex 3/Technical Regulations [C.3.1]; and
 - recommended practices for the physical exchange formats of these services
- 4) Amendment 80 to Annex 3 (with intended applicability in November 2025)
 - Modifications required by emerging services needs; and
 - Removal of product requirements.

2. EXPERT GROUP TO SUPPORT DEVELOPMENT

2.1 Considering the complexity and multidisciplinary aspects of the proposed transition, it is proposed to set up an expert group to support the development of provisions for aeronautical meteorological information exchange as integral component of SWIM.

2.2 This expert group should:

- a) identify aeronautical meteorological information services to include in subsequent versions of IWXXM;
- b) support the development of subsequent versions of the IWXXM logical data model;

- c) support the development of the physical data models and exchange formats to support the information services defined in the IWXXM logical data model;
- d) identify implementation considerations for States for implementing aeronautical meteorological information services, for providers and users, and
- e) identify potential training needs for the users of aeronautical meteorological information services by SWIM-enabled applications.

— END —

APPENDIX F – AFI TRANSITION PLAN FOR DIGITAL OPMET

| | |
|-----------------------------------|---|
| November 2013 - June 2015: | Dakar and Pretoria RODBs to continue to develop capability of handling OPMET data in digital format using IWXXM version 2013; |
| June – December 2015: | Dakar and Pretoria RODBs to continue to test the codes based on OPMET data in digital format (XML/GML) for METAR/SPECI, TAF and SIGMET with a view to fine tuning; |
| January – June 2016: | Dakar and Pretoria RODBs to continue to take a leading role over the transition aspect to XML/GML and provide technical assistance as required to other AFI States in implementing OPMET data in digital format |
| June – November 2016: | ICAO regional Offices Dakar/Nairobi and AFI RODBs Dakar/Pretoria Provider States start assisting AFI States in developing capability of handling OPMET data in digital format |
| December 2016 – November 2019: | AFI States start progressive implementation of XML/GML-based exchange format for METAR, SPECI, TREND, TAF and SIGMET (upgrade of IWXXM version 2013) in accordance with Amendment 77 to ICAO Annex 3 |
| November 2019 – November 2022 | AFI States continue implementation of updated XML/GML-based exchange format for METAR, SPECI, TREND, TAF and SIGMET in accordance with Amendment 78 to ICAO Annex 3, and mandatory use of XML/GML |
| November 2022 – November 2025 | AFI States continue implementation of improved XML/GML-based exchange format for METAR, SPECI, TREND, TAF and SIGMET in accordance with Amendment 79 to ICAO Annex 3, and mandatory use of XML/GML. |
| From November 2025 – | AFI States continue implementation of enhanced XML/GML-based exchange format for METAR, SPECI, TREND, TAF and SIGMET in accordance with Amendment 80 to ICAO Annex 3, and mandatory use of XML/GML. |