



INTERNATIONAL CIVIL AVIATION ORGANIZATION

Fourth Meeting of the APIRG Infrastructure and Information Management Sub-Group (IIM/SG4)

(Virtual, 31st August – 3rd September 2021)

Agenda Item 4.3: Update on the Regional Project Implementation

4.3A: Title of the working paper: Aeronautical Meteorology (MET) Project 1

Implementation of information concerning en-route weather phenomena which may affect the safety of aircraft operations (SIGMET), Quality Management System for aeronautical meteorology (QMS/MET) service and Digital OPMET data Exchange (DOPMET), in the AFI region

(Presented by South Africa)

SUMMARY
<p>This working paper outlines progress report on the status of implementation of APIRG Projects under APC IIM SG Meteorology Project 1, and highlights the challenges encountered by the team for consideration by the meeting.</p> <p>Action by the meeting are as presented in paragraph No.3</p>
<p>REFERENCE(S):</p> <ul style="list-style-type: none">▪ ICAO State Letter reference T17/6.11 (C) -0320 dated 20 July 2021 and T17/6.11(C) -0357 dated 3rd August 2021▪ APIRG 23rd meeting Report, Con 23/20,21,22, and 27 & Decision 23/38▪ Doc 9750, Global Air Navigation Plan▪ Electronic Air Navigation Plan— Africa-Indian Ocean Region (eANP- AFI)▪ APIRG Procedural Handbook
<p>This working document relates to ICAO Strategic Objectives:</p> <p>A – Aviation Safety, B – Air Navigation Capacity and Efficiency,</p> <p>KPIS and concerned ASBU B0 Modules:</p> <p>B0/1-AMET PFF – 1, ASEP, FRTO, CDO and CCO</p>

1. INTRODUCTION

1.1. Aeronautical meteorological service provision is integral to the realization of a safer and more efficient globally interoperable air transport system. In this regard, Aeronautical Meteorology (MET) is required to provide information to satisfy the needs of the future ATM system. As the future ATM system evolves, the demands on MET will require improved or new systems, information, and products to support it.

In line with the latest edition of the Global Air Navigation Plan (GANP) approved by ICAO Council and the associated Aviation System Block Upgrades (ASBU) methodology, the overarching outcome of MET/14 is that the future development of MET services shall be fully aligned and integrated into the future System Wide Information Management (SWIM) system.

APIRG Infrastructure and Information Management Sub – Group, Meteorology Project one (APIRG IIM/SG MET Project 1) was established in 2017, during the first meeting of APIRG IIM/SG meeting held in Nairobi, Kenya from 27 to 30 June 2017. The main objective for its establishment have been to assist AFI states with the implementation of:

- a) SIGMET and standards and recommended practices of Annex 3 and Part V – MET of the AFI Air Navigation Plan (ANP), Volumes I, II, III concerning the issuance and distribution of en-route weather phenomena including volcanic ash clouds (WV), tropical cyclones (WC) and other phenomena (WS - thunderstorms if the thunderstorm is obscured or obscured with hail, embedded or embedded with hail, frequent or frequent with hail, squall line or squall with hail, severe turbulence, severe icing or severe icing due to freezing rain, severe mountain wave, heavy dust storm and heavy sandstorm), likely to affect the safety of aircraft operations, and the evolution of such phenomena in time and space (SIGMET WV, WC and WS);
- b) QMS/MET and certification where applicable, by developing a regional QMS/MET guide to assist States in the production of MET documentation under ISO 9001, enhancing the training of MET personnel in States that have not implemented QMS, encouraging States to institute cost recovery mechanism to support QMS maintenance in accordance with ICAO Annex 3 and Part V – MET of the AFI ANP, and conducting audit trials;
- c) An action plan to assist concerned States in their effort to remove air navigation deficiencies in the MET field listed in the APIRG report; and
- d) The transition plan from current aeronautical meteorological information to the future SWIM-enabled environment in the AFI region by encouraging AFI States to progressively develop capability of handling OPMET data in digital format (XML/GML) and to start using XML/GML codes in operational environment by the timelines stipulated in Annex 3.

1.2. The tasks of APIRG IIM SG Met Project 1 were developed to be undertaken by experts in the field of aeronautical meteorology as nominated by AFI States. South Africa is the Project-Team Coordinator (PTC) and the Project Facilitators are the Regional Officers (ROs/MET-ENV) from ICAO Dakar and Nairobi Offices.

1.3. In addition to the above nominated APIRG IIM SG Met Project 1 team members, further formal appointments of new members were approved by the ICAO IIM/SG held Virtually from the 10th to the 12th August 2020.

1.4. Activities of APIRG IIM SG MET Project 1 officially started in March 2018 and the revision of its Deliverables and project description were approved by APIRG through APIRG conclusion 23/27 in November 2020.

2. DISCUSSIONS

Outcomes of MET Project I meetings and activities

2.1 The meeting may recall that Conclusions 20,21,22 & 27 of the APIRG 23 formulated several intervention areas to improve the coordination mechanisms of the IIM Projects. In this regard, APIRG IIM SG Met Project 1 has undertaken several activities as part of the implementation of its tasks and the status of which is reported below.

The IIMSG Met Project 1 team has made progress as reported in the table below:

NO	TASK	RESPONSIBLE PERSON	PLANNED DATE	COMMENTS / STATUS
1	PTC and experts appointment finalisation	States / Organizations	Immediately (2018)	Completed
2	Project Team Activities	PTC	2018 and Updated in August 2020	completed
3	Project Terms of Reference (ToR) and Description	PTC and Team Members	2018 and revised in March 2020	Completed
4	Project link finalisation	PTC	August 2018 and going through amendment process	Completed, however the linkages with AAO has not been finalised
5	Project Questionnaires	PTC and Team Members	2020, January 2021, third Questionnaire on hold	The following questionnaires were distributed and analysed: 1. QMS Implementation Status 2. IWXXM -status of readiness of the RODBs and the States
6	Project Costing	PTC	2021	Completed
7	Project Deliverables	Workstream leaders	Jan 2020 – December 2022	SIGMET : SIGMET Guide and SIGMET Trial Procedure reviewed QMS : Questionnaire distributed and outcome analysed MET Deficiencies : on hold D OPMET Exchange : States are encouraged to enter into bilateral agreement

IIM SG Met Project 1 questionnaires

2.1 The Met Project 1 team developed three questionnaires in the area of QMS, IWXXM and AAND in Aeronautical Meteorology. With the assistance of ICAO AFI regional Office, the team managed to have two of the questionnaires distributed to the AFI States, whilst the third one is still on hold due to the pending process of defining the minimum reporting requirements for Air Navigation Deficiencies within the AFI region. Outcomes of the two questionnaires related to the readiness of AFI States to exchange Met information in ICAO Meteorological Information Exchange Model (IWXXM) and the implementation of Quality Management System have been analysed.

IWXXM Training seminars/workshops

2.2 In accordance with APIRG 20 Resolution 20/45, training/seminars in the AFI Regional were required in order to (a) develop capacity building for handling OPMET data in digital format; and (b) to increase awareness to users of exchange of OPMET in digital format and expedite transition for handling OPMET in digital form. In this regard, virtual workshop on the implementation of IWXXM have been planned to take place later this year.

2.3 Workshop on IWXXM have been planned to take place on the 25th August 2021, and the questionnaire to assess the implementation level in the current year has also been distributed through State Letter ES AN 8/4-0239. States are encouraged to enter into bi-/multi-Lateral TAC to IWXXM agreement with states who have already developed the capacity to do so. Distributed questionnaire sort to establish how far AFI States have progressed in the process of developing capabilities to handle OPMET data in IWXXM.

From the previous year (2020) survey, 50% of states who responded to the questionnaire have indicated that they developed infrastructure capability, 14% were willing to enter into bilateral/multilateral agreement and average implementation rate of 30% was measured. The participation rate was not satisfactory.

Quality Management System

2.4 Guided by METP/4 Decision 8/1 which called for the discontinuation of the Manual on the Quality Management System for the Provision of Meteorological Service for International Air Navigation (ICAO Doc 9873. Met Project 1 noted that ICAO Doc 9873 would be replaced by WMO-No. 1100 (Guide to the Implementation of Quality Management Systems for National Meteorological and Hydrological Services and other Relevant Service Providers) and that this document would service as an official guide for QMS Implementation. This proposal was in line with Amendment 79 to the International Standards and Recommended Practices, Meteorological Service for International Air Navigation (Annex 3 to the International Convention on International Civil Aviation) and also received recognition through APIRG conclusion 23/27. National Meteorological and Hydrological Services were informed through State Letter No. AN 10/1.1-20/16 issued by the ICAO Office. This was followed by State Letter No. T10/27 – 0127 informing States about the Virtual workshop on the implementation of quality management system for Aeronautical Meteorological Service providers.

The link to the QMS questionnaire was distributed to States through State Letter ES AN 1/6 – 0018 on the 4th March 2021. The questionnaire was meant to establish the implementation level of QMS within the AFI region. Analysis of the outcome of the questionnaire shows that :

- 2.4.1. Participation was not satisfactory (50% participation rate was recorded)
- 2.4.2. 24 States responded to the survey and 20 of which are ISO 9001 :2015 certified, with four (4) on the advanced implementation stage.
- 2.4.3. Based on the participation rate ; the implementation level is at 98% whilst the certification level at 83,3%.

Annual AFI SIGMET Tests

2.5 The annual AFI SIGMET Test was conducted on the 2nd , 3rd , and 4th November 2020. Based on the results of the AFI SIGMET Trials, IIM SG Met Project 1 team noted the increase on the participation rate by the Meteorological Watch Offices from :

- 2.5.1. 20% to 80% on the SIGMET Test for WC
- 2.5.2. 13.79% to 31.03% on the SIGMET Test for WV
- 2.5.3. 27.58% to 51.72% on the SIGMET Test for WS

There have been an improvement in terms of the participation rate, however, there is still a need to urge AFI States to participate in future Annual SIGMET tests while those with identified deficiencies should be encouraged to endeavor to address them.

2.6 Furthermore, the project team have noted that several reasons could have contributed to the lack of participation in the SIGMET tests by AFI States including:

- 2.6.1. The need to review the AFI SIGMET Guide, and
- 2.6.2. The AFI SIGMET trial procédures, attached as Appendix A to this paper.

2.7 The meeting is also invited to note that the 2021 Annual AFI SIGMET Tests will be conducted from the 1st to 3rd December 2021. Details on the coming Annual SIGMET Tests will be shared through a State Letter.

IIM SG Met Project 1 costing

2.8 The calculated project costing is attached (**Appendix B**) for consideration by the meeting. IIMSG Met project one (1) has agreed on meeting once in every two month to discuss and provide progress report on the allocated tasks. This project team also got four main deliverables which are (a) the Implementation of QMS/Competency (b) SIGMET (c) Air navigation Deficiency in the area of Met (d) Digital OPMET Data.

The cost of on-site mission/workshop/Training has calculated to be approximately \$ **84 349,84**, whilst the online mission/workshop/training has been calculated to be \$ **58 730,64**.

Challenges and Way forward

2.9 The IIM SG Met Project 1 encountered few challenges during the implementation of its activities:

- (a) Low rate of response to questionnaires by AFI states delays the work of the project team;
- (b) Lack of participation to the annual SIGMET tests by AFI MET Watch Offices (MWOs);

Way forward

The secretariat encourage States to :

- a) respond to project teams' questionnaires,
- b) to participate in the annual AFI SIGMET Tests planned to take place on the 1st, 2nd and 3rd December 2021 and
- c) Enter into bi-/multi-lateral TAC to IWXXM agreement with states who have developed the capacity to do so (to improve implementation level within the region).

3. ACTION BY THE MEETING

3.1. The meeting is invited to :

- a) take note of the information presented in this paper
- b) Consider and approve the following Conclusions and Decisions.

Draft Conclusion 4/xx: AFI SIGMET Guide, SIGMET Trial Procedure and the project costing of IIMSG MET Project 1

That; MET Project 1 reviews the AFI SIGMET Guide and the AFI SIGMET Trial procedure. and submit it to the next APIRG Meeting (APIRG/24)

Draft Decision: Project Costing for MET Project 1

That, the IIM/SG/4 endorse the project costing for the MET Project 1 as contained in Appendix A

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