**WACAF workshop on the provision of information on volcanic eruptions and ash clouds**

**(Yaoundé, Cameroon, 16 – 20 June 2025)**

TEMPLATE

LETTER OF AGREEMENT BETWEEN THE AIR TRAFFIC SERVICES, METEOROLOGICAL AUTHORITIES AND VULCANOLOGICAL AUTHORITIES

*Directives for coordination between area control centres (ACCs)/flight information centres (FICs), meteorological watch offices (MWOs) and vulcanological observatories and responsibility for the provision/exchange of information relevant to volcanic ash*

1. **OBJECTIVE**
   1. The objective of this Letter of Agreement between the [Name of ATS authority] , the [Name of meteorological authority] and the [Name of vulcanological authority] is to establish the directives for the necessary coordination between ATS units, meteorological watch offices and vulcanological observatories to ensure the provision of specific information on pre-eruption volcanic activity, volcanic eruptions and volcanic ash cloud required for civil (international and national) air navigation, in accordance with international agreements (see 1.4) and [national air navigation regulatory documents].
   2. This Letter of Agreement provides guidelines on the responsibilities of ATS units, meteorological watch offices and vulcanological observatories in relation to the mutual exchange of information related to volcanic ash.
   3. This Letter of Agreement is in accordance with the Standards and Recommended Practices and Procedures of ICAO, contained in Annex 3 — Meteorological Service for International Air Navigation, Annex 11— Air Traffic Services, Annex 15 — Aeronautical Information Services, the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066) and the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444), as well as the provisions contained in the relevant regional air navigation plan publications and in the aeronautical information publication of [Name of State concerned] (AIP-[ Name of State concerned]). This Letter of Agreement is also based on the guidance material in the Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services (Doc 9377), the Aeronautical Information Services Manual (Doc 8126) and the Handbook on the International Airways Volcano Watch (IAVW) -Operational Procedures and Contact List (Doc 9766) and the PANS-MET (Doc 10517).
   4. This Letter of Agreement includes appendices, regarding detailed national directives and arrangements pertaining to the use of the volcano level of alert colour code for aviation, the ASHTAM format, abbreviations, list of contact points and means of communication, stations/offices and contact numbers, etc.
2. **REVISIONS**
   1. When, for special or unforeseen reasons, a significant change in the coordination between the three parties involved or the services mentioned in this Agreement becomes necessary, the respective officers-in-charge, through mutual agreement, may effect temporary changes or amendments, provided that these changes are not intended to last more than \_\_\_\_\_ days.
   2. Permanent revisions to the Letter of Agreement may be made by the authorities who approve and sign this Agreement. This Letter of Agreement is to be reviewed annually. A complete cancellation of this Letter of Agreement may be made, in writing, by the parties to the agreement within a notice period of \_\_\_\_\_ days.
3. **GENERAL**
   1. In order to contribute to the efficiency and safety of international air navigation in [Name of State concerned] the [Name of ATS authority], the [Name of meteorological authority] and the [Name of vulcanological authority] will collaborate to ensure fast and efficient coordination to minimize the impact of the presence of volcanic ash in the atmosphere.

* 1. The [Names of MWOs], [Name of ACCs/FICs], [Name of volcanic ash advisory centres] (VAACs) and selected volcano observatories] concerned shall make suitable arrangements in order to facilitate vulcanological briefings as well as inter-agency consultations and to establish reliable communications to undertake an effective coordination.

1. **RESPONSIBILITIES**
   1. **Responsibilities of the [**Name of meteorological authority**] and the meteorological watch offices**

**4.1.1 General**

4.1.1.1 Table MET 1-1 of the eANP identifies the selected State volcano observatories which are to notify the VAAC, MWOs and ACCs/FICs on volcanic pre-eruption, volcanic eruption and volcanic ash.

4.1.1.2 The [Name of meteorological authority], through the [Name of MWO] included in Table MET II-1 of the eANP, is responsible for issuing SIGMET(s) on volcanic ash, i.e. providing up-to-date information on existing and forecast volcanic ash clouds, and forecast trajectories at different flight levels based on the latest information received from vulcanological observatories or from the corresponding VAAC to those ACCs/FICs that need it in order to carry out their functions. The provision of any information related to volcanic activity and the presence of volcanic ash clouds in the atmosphere should be in accordance with the guidelines provided in the attachment to this Letter of Agreement

* 1. **Responsibilities of the [**Name of ATS authority**] and area control centres (ACCs))/flight information centres (FICs)**
     1. The [Name of ATS authority], through the [Name of ACC/FIC] included in Table MET II-1 of the eANP, is responsible to provide up-to-date information on existing volcanic ash clouds and trajectory forecasts at different flight levels to pilots and airline operation centers. This information should be based on the latest information received from:

a) vulcanological observatories;

b) the associated VAAC; or

c) the associated MWO; and passed immediately to aircraft in flight that could be affected by the volcanic ash, and to the adjacent ACCs/FICs.

* + 1. The ACC/FIC should also issue an ASHTAM or NOTAM through the State International NOTAM Office (NOF) in accordance with the PANS-AIM (Doc 10066), giving details of the pre-eruption activity, volcanic eruption and ash cloud, including the name and geographical coordinates of the volcano, date and time of eruption, flight levels and routes affected and, if necessary, routes to be closed to air traffic. The provision of any information related to volcanic activity and the presence of volcanic ash clouds in the atmosphere should be in accordance with the guidelines provided in the attachment to this Letter of Agreement.
  1. **Responsibility of the [**Name of vulcanological authority**]**
     1. The [Name of vulcanological authority] included in Table MET 1-1 of the eANP is responsible for the provision of up-to-date information on existing and forecast volcanic activity and volcanic ash clouds based on the latest information received from direct or remote observation sources to the [Name of the ACC], the [Name of MWO] and the [Name of VAAC]. The necessary vulcanological information will be supplied in accordance with the guidelines stipulated in the attachment to this Letter of Agreement.
     2. The vulcanological information provided will, as far as possible, be in the format described in step 1 of the attachment in order to facilitate easy interpretation by ATS personnel.

1. **ATS UNITS, MWOs AND VULCANOLOGICAL OBSERVATORIES COORDINATION MEETINGS**

Regular and/or ad hoc coordination meetings between the chiefs of the ATS units, chiefs of meteorological watch offices and chiefs of vulcanological observatories, and other interested parties, aimed at improving the services provided to aircraft, will be convened as deemed necessary to ensure the safety of air navigation in accordance with the provisions as identified in 1.3.

1. **COURSES FOR METEOROLOGISTS, AIR TRAFFIC CONTROLLERS AND VULCANOLOGISTS**
   1. Courses or on-the-job training for ATS and meteorological personnel, and vulcanologists, will be organized periodically with the objective of familiarizing personnel with the activities performed by the other services.
   2. Periods and dates for these courses will be agreed by the [Name of ATS authority], the [Name of meteorological authority] and the [Name of vulcanological authority] taking into account the availability of personnel and the necessary equipment.

**ATTACHMENT- GUIDELINES FOR HANDLING VOLCANIC ACTIVITY RELATIVE TO AERONAUTICAL INFORMATION DISSEMINATION**

**STEP 1**

**1.1 Action to be taken by the vulcanological observatory**

**1.1.1 The vulcanological observatory shall immediately provide information on significant pre-eruption volcanic activity, volcanic eruptions or the presence of volcanic ash clouds to the relevant ACCs/FICs [list the centres], [VAAC] and the associated MWOs [list the offices]. The information provided should be in accordance with the format of the volcano observatory notice for aviation (VONA) format given in Appendix E of Doc 9766.**

**STEP 2**

**2.1 Action to be taken by the ACC/FIC**

2.1.1 The ACC/FIC concerned shall immediately pass the reported information to the aircraft in flight that could be affected by the volcanic ash cloud and to the relevant ACCs/FICs in the adjacent flight information regions (FIRs).

2.1.2 On the reception of special air-reports for volcanic ash by an ACC/FIC, the following action should be taken: a) the information should be transmitted immediately to all aircraft concerned; and b) the information should be forwarded to the associated MWO. The special air-reports for volcanic ash should be disseminated to aircraft for a period of 60 minutes after their issuance or until the issuance of a SIGMET from the associated MWO. The ACC/FIC shall verify that a SIGMET has been issued before discontinuing the transmission of the special air-report.

2.1.3 The ACC/FIC concerned shall ensure that the content of the ASHTAM is consistent with any SIGMET issued for their FIR. Further, the ACC/FIC shall ensure that any ASHTAM or NOTAM issued follows the guidance in the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066).

2.1.4 The ACC/FIC concerned shall activate contingency arrangements, including implementation of alternative routes.

2.1.5 Transmit special air-reports for volcanic ash received by voice communications and those received by data link communication to the associated MWO, and World Area Forecast Centres (WAFCs) London and Washington.

**2.2 Action to be taken by the MWO**

2.2.1 The MWO shall immediately forward special air-reports for volcanic ash received to its associated VAAC, WAFCs London and Washington and to the Washington and Brazilia International OPMET data banks.

2.2.2 The MWO shall ensure the reception of information from its associated VAAC on the extent and trajectory of volcanic ash. 2.2.3 The MWO shall immediately inform the ACC whether or not the volcanic ash cloud is identifiable from satellite images based on advice received from the VAAC. 2.2.4 The MWO shall issue SIGMETs in accordance with Annex 3 based on information received from the VAAC and/or vulcanological observatory and/or ACC. However, during critical conditions where an initial volcanic eruption already poses a danger to aviation, the MWO shall immediately provide to the ACC a trajectory forecast of volcanic ash based, inter alia, on the forecasts of numerical models used by the aeronautical meteorological service.

**STEP 3**

**3.1 Action to be taken by the ACC**

3.1.1 The ACC shall submit a request for the promulgation of an ASHTAM/NOTAM for volcanic ash to its associated NOTAM Office (NOF)/Aeronautical Information Service (AIS). The request shall contain the following:

a) date and time of volcanic activity or eruption, or presence of ash clouds;

b) name and number of the volcano (Smithsonian Tables);

c) coordinates (latitude/longitude expressed in whole degrees) of the volcano and/or the radial and distance of the volcano from a navigational aid (NAVAID);

d) volcano level of alert colour code for avation indicating volcanic activity, if available (Doc 9766, Table 4-4 refers);

e) horizontal and vertical extent of volcanic ash cloud initially based on the special air-report and subsequently based on the MWO, aeronautical meteorological service or VAAC report;

f) forecast direction of movement of the ash cloud at selected levels based on the advice from the MWO, the aeronautical meteorological service or the VAAC report;

g) air routes or portions of air routes and flight levels affected or expected to become affected; \

h) closure of airspace, air routes or portions of air routes, and availability of alternate routes;

i) source of information (air-report and or vulcanological observatory and/or MWO, aeronautical meteorological service and/or VAAC) indicating whether an eruption has actually occurred or ash cloud reported, or not; and

j) additional information.

*Note.— Initially items a), b), c), and d) shall be disseminated immediately pending receipt of additional information from units concerned.*

**3.2 Action to be taken by the NOF/AIS**

3.2.1 The NOF shall promulgate an ASHTAM/NOTAM for volcanic activity based on information provided by the ACC and in accordance with the PANS-AIM (Doc 10066), Appendices 3 and 5, and transmit to other NOFs for which the information is of direct operational significance.

3.2.2 The NOF shall compile a separate message to be transmitted, via AFTN, to the [associated VAAC] which shall be encapsulated within a dummy WMO abbreviated heading (Doc 9766, Table 4-1 refers). This enables the receiving AFTN or meteorological switching centre to forward the ASHTAM/NOTAM for volcanic activity to the VAAC concerned on internal meteorological communications circuits.

*Note.— Significant changes in the activity of the volcano shall be reported accordingly.*

3.3 The ACC concerned shall, upon receipt of significant information relating to volcanic activity, request the NOF to revise or cancel the ASHTAM.

**APPENDIX 1- USE OF THE VOLCANO LEVEL OF ALERT COLOUR CODE FOR AVIATION**

**XXXX**

**APPENDIX 2- ASHTAM FORMAT**

**XXXX**

**APPENDIX 3- ABBREVIATIONS**

**XXXX**

**APPENDIX 4- LIST OF CONTACT POINTS AND MEANS OF COMMUNICATION**

**XXXX**

**APPENDIX 5- STATIONS/OFFICES AND CONTACT NUMBERS**

**XXXX**