INTERNATIONAL CIVIL AVIATION ORGANIZATION

WESTERN AND CENTRAL AFRICA OFFICE (WACAF)
ICAO Regional Seminar on ATS/MET/Pilots Coordination
(Yaoundé, Cameroon, 23 – 25 August 2010)

Agenda item 7 : Volcanic Ash Contingency Plan in the AFI Region

DEVELOPMENT OF A VOLCANIC ASH CONTINGENCY PLAN FOR THE AFI REGION

(Presented by the Secretariat)

Summary

This paper proposes that, in order to avoid unexpected disruptions to commercial air traffic in the AFI region caused by volcanic eruption, APIRG MET/SG next meeting develops a volcanic ash contingency plan for the AFI region.

Réf. : *Eur Doc 019 : Volcanic Ash Contingency Plan EUR Region*

1. Introduction

1.1 In response to the unprecedented disruptions to commercial air traffic in Europe caused by the eruption of Iceland's Eyjafjallajökull volcano on 14 April, ICAO has established an International Volcanic Ash Task Force (IVATF) and take a number of decisions to drive the development of a global safety risk management framework that will make it possible to routinely determine the safe levels of operation in airspace contaminated by volcanic ash.

1.2 One of these outcomes is to improve existing contingency plan and to develop new consolidated regional contingency plans where any plan has not been developed so far.

1.3 This paper suggests a discussion on ways to introduce a volcanic ash contingency plan for the AFI region. A draft structure of the AFI volcanic ash contingency plan is given in Appendix A for review and submission to the MET/SG for decision.

2. Discussion

2.1 Active or recently active Volcanoes are observed in the following Eight AFI States: Cameroon, Cape Verde, Comoros, Democratic Republic of the Congo, Eritrea, Ethiopia, Île de la Réunion (France) and Kenya three of these Sates are located in the WACAF region (Cameroon, Cape Verde and Democratic Republic of the Congo).

2.2 The plan suggested in Appendix A sets out guidelines for the alerting of aircraft when eruptions occur, and procedures to be followed by the Meteorological Watch Offices (MWO) and area control centres (ACCs) when planning routings around the ash cloud.

2.3 Considering that a commercial aircraft will travel about 150 km (80 NM) in 10 minutes and that volcanic ash can rise to flight levels commonly used by turbine-engine aeroplanes in half that time, timely response to reports of volcanic ash is essential.

2.4 The response to a volcanic event is divided into three distinct phases described briefly below.

ALERTING PHASE The initial emergency response, –raising the alert information will be provided with SIGMET and to affected aircraft in flight by the most expeditious means. A temporary danger zone of 120 nm radius will be declared by graphical SIGMET around the volcanic source. No clearances will be issued through the danger zone.

REACTIVE PHASE The Reactive Phase commences at the outbreak of volcanic eruption and entrance of volcanic ash into the atmosphere. A –Start of eruption SIGMET will be issued and a temporary danger zone of 120 NM radius centered on the volcanic source, or centered 60 NM downwind will be declared by SIGMET, No clearances will be issued through the danger zone. Once the VAA with +6, +12, +18 hrs forecasts of contaminated areas has been issued, SIGMETs and NOTAMs based on the VAA will be issued.

PROACTIVE PHASE The Proactive phase commences with the issuance of the first VAA after completion of reactive responses. The +6 hrs forecast of the contaminated area is to be issued as SIGMET. The +12 and +18 hrs forecasts of contaminated areas are to be issued as NOTAM. Significant changes revert to a temporary Reactive Phase situation and unscheduled issuance of VAA, SIGMET and NOTAM.

3. Conclusion

3.1 In view of the above, the meeting may wish to agree that the proposed draft of the Volcanic Ash Contingency Plan in Appendix A, be submitted to the APIRG MET/SG and ATM/SG next meetings for further review and a development of a consolidated of AFI Volcanic Ash Contingency Plan.

3.2 The meeting is invited to:

i) Note the information in this paper; and

ii) Adopt the above proposal.

APPENDIX A

STRUCTURE OF A DRAFT VOLCANIC ASH CONTINGENCY PLAN FOR THE AFI REGION

(To be developed by the MET/SG)

1. Introduction

1.1 The African and Indian Ocean region includes areas of volcanic activities; this contingency plan considers, in particular, volcanic activities in Cameroon, Cape Verde, Comoros, Democratic Republic of the Congo, Eritrea, Ethiopia, Île de la Réunion (France) and Kenya. The plan sets out standardized guidelines for the alerting of aircraft when eruptions occur, and procedures to be followed by the Meteorological Watch Offices (MWO) and area control centres (ACCs) when planning routings around the ash cloud.

1.2 Considering that a commercial aircraft will travel about 150 km (80 NM) in 10 minutes and that volcanic ash can rise to flight levels commonly used by turbine-engine aeroplanes in half that time, timely response to reports of volcanic ash is essential.

1.3 The response to a volcanic event has been divided into three distinct phases described briefly below:

ALERTING PHASE The initial emergency response, –raising the alert‖. Alerting information will be provided with SIGMET, NOTAM and to affected aircraft in flight by the most expeditious means, The NOTAM will be addressed to meteorological/volcanological agencies.

A temporary danger zone of 120 nm radius will be declared by NOTAM around the volcanic source. No clearances will be issued through the danger zone.

REACTIVE PHASE The Reactive Phase commences at the outbreak of volcanic eruption and entrance of volcanic ash into the atmosphere. A –Start of eruption SIGMET‖ will be issued and a temporary danger zone of 120 NM radius centred on the volcanic source, or centred 60 NM downwind will be declared by NOTAM, No clearances will be issued through the danger zone.

Once the VAA with +6, +12, +18 hrs forecasts of contaminated areas has been issued, SIGMETs and NOTAMs based on the VAA will be issued.

PROACTIVE PHASE The Proactive phase commences with the issuance of the first VAA after completion of reactive responses. The +6 hrs forecast of the contaminated area is to be issued as SIGMET. The +12 and +18 hrs forecasts of contaminated areas are to be issued as NOTAM. Significant changes revert to a temporary Reactive Phase situation and unscheduled issuance of VAA, SIGMET and NOTAM.

1.4 In order to ensure the smooth implementation of the contingency plan in case of an actual volcanic eruption, annual VOLCEX-AFI exercises should be conducted.

STRUCTURE OF THE PLAN

To be developed by the MET/SG Meeting

1. ALERTING PHASE

- **Originating ACC Actions** (Eruption In Its Own Flight Information Region)
- **Adjacent ACC Actions**
- **Low Management Units' Action**

2. **REACTIVE PHASE**

- **Originating ACC Actions (Eruption in its own FIR)**
- **Adjacent ACC Actions**

3. PROACTIVE PHASE

4. ATFM PROCEDURES

5. AIR TRAFFIC CONTROL PROCEDURES[1]

- **Air Traffic Control Procedures for ACCS**

6. GENERAL GUIDANCE FOR THE DEVELOPMENT OF ATS CONTINGENCY PLANS FOR VOLCANIC ASH CLOUDS[2]

ATTACHMENTS
(Template from EUR Region)

ATTACHMENT A

ANTICIPATED PILOT ISSUES WHEN ENCOUNTERING VOLCANIC ASH CLOUDS

1. Air Traffic Controllers should be aware that flight crews will be immediately dealing with some or all of the following issues when they encounter volcanic ash:

a) smoke or dust appearing in the cockpit which may prompt the flight crew to don oxygen masks (could interfere with the clarity of voice communications);

b) acrid odor similar to electrical smoke;

c) multiple engine malfunctions, such as stalls, increasing Exhaust Gas Temperature (EGT), torching, flameout, and thrust loss causing an immediate departure from assigned altitude;

d) on engine restart attempts, engines may accelerate to idle very slowly, especially at high altitudes (could result in inability to maintain altitude or Mach number);

e) at night, St. Elmo's fire/static discharges may be observed around the windshield, accompanied by a bright orange glow in the engine inlet(s);

f) possible loss of visibility due to cockpit windows becoming cracked or discoloured, due to the sandblast effect of the ash;

g) cockpit windows could be rendered completely opaque; and/or

h) sharp distinct shadows cast by landing lights as compared to the diffused shadows observed in clouds (this affects visual perception of objects outside the aircraft).

2. Simultaneously, ATC can expect pilots to be executing contingency procedures. This may include a possible course reversal and/or an emergency descent.

APPENDIX B

ACTION TAKEN BY METEOROLOGICAL WATCH OFFICES IN THE EVENT OF A VOLCANIC ERUPTION[3]

1. On receipt of information of a volcanic eruption and/or the existence of a volcanic ash cloud, the MWO will:

a) notify the VAAC designated to provide advice on volcanic ash trajectories for the FIR for which the ACC is responsible that a volcanic eruption and/or ash cloud has been reported, provide available relevant details and request advisory information on the extent and trajectory of volcanic ash;

b) as soon as practicable, advise the ACC whether or not the volcanic ash cloud is identifiable from weather radar images or satellite images/data and, if possible, provide regular information based on advice received from the VAAC on the horizontal and vertical extent of the cloud and the trajectory of the cloud; and

c) issue a SIGMET message warning of volcanic ash for a validity period of 6 hours, Include in the SIGMET address all VAACs, the London World Area Forecast Centre (WAFC), the International Operational Meteorological (OPMET) data bank and regional OPMET data bank. Maintain continuous coordination with the ACC to ensure consistency in the issuance and content of SIGMETs and NOTAMs.

2. In the event that the MWO becomes aware of the occurrence of pre-eruption activity, a volcanic eruption or ash cloud from any other source, the information will be passed immediately to the ACC. The procedure above will then be followed.

3. In the event that any other meteorological office becomes aware of the occurrence of pre-eruption activity, a volcanic eruption or ash cloud from any source, the information will be passed immediately to the MWO for onward transmission to the ACC and appropriate VAAC.
