

**APPENDIX 4B – AFI VOLCANIC ASH EXERCISES OPERATING INSTRUCTIONS  
(VAEX/AFI OPI)**

**1. Introduction**

1.1 Exercise VAEX/AFI are exercise projects supported by air traffic control centres, meteorological watch offices, AIS NOTAM Offices, volcanic ash advisory centres, aircraft operators, etc, in the Africa and Indian Ocean (AFI) Region of ICAO.

1.2 Participating agencies are expected to adhere to the OPI contained herein. All costs of travel, meetings, communications and exercise conduct are carried by each individual party.

**2. Volcanic Ash Exercises Steering Group**

2.1 The AFI ATM/MET Task Force was established by APIRG/18 with the objective of improving the response to volcanic eruptions and volcanic ash clouds by the relevant service providers and airspace users in the AFI Region through organizing regular volcanic ash exercises, in order to validate and continually improve the regional volcanic ash contingency plans and procedures.

2.2 The AFI ATM/MET Task Force meets annually, coordinating with all participants a two-year schedule of volcanic ash exercises and their scenarios; continuous review of regional volcanic ash contingency plans and procedures, proposing improvements based on the lessons learned; and organizing volcanic ash awareness events concerning the hazardous effects of volcanic ash on aviation and the established contingency measures.

2.3 An example of the annual volcanic ash exercise activity schedule in the AFI Region is presented at the **Attachment A**.

2.4 Regular updates on the activities of the AFI ATM/MET TF are provided to APIRG ATM/AIM/SAR SG and MET/SG, amongst others, by the Secretary of the AFI ATM/MET TF.

2.5 The AFI ATM/MET TF determines the appropriate Exercise Leader for each exercise based on the expected volcanic ash scenario. The Exercise Leader is typically a member of the AFI ATM/MET TF.

**3. Exercise Leader**

3.1 Having been determined by the AFI ATM/MET TF, the Exercise Leader takes care of administrative matters relating to the Exercise VAEX/AFI, in coordination with the Secretary of the AFI ATM/MET TF, such as the production of the Exercise Directive and Final Exercise Report. The Exercise Leader is also the supervisor of the Directing Staff.

**4. Directing Staff**

4.1 A group of experts representing each of the specialist areas of the exercises, such as meteorological watch offices, volcanic ash advisory centres, NOTAM offices, etc. The Directing Staff negotiate and design an exercise scenario, supervise the conduct of the exercise, debrief the exercise and write the Initial Exercise Report. Guideline Directing Staff Instructions are presented at **Attachment B**.

## **5. Exercise planning**

5.1 A Planning Meeting is held at least 3 months prior to an exercise, allowing participating agencies to negotiate the exercise objectives, determine the impact area, and, if necessary, design the volcanic and meteorological activity messages to serve the objectives. Guideline principles concerning the Planning Meetings are presented at **Attachment C**.

## **6. Exercise directive**

6.1 Immediately following the Planning Meeting, the Exercise Leader will start to prepare an Exercise Directive, with input from Directing Staff as appropriate. The Exercise Directive will clearly state the exercise scenario, date(s) and time(s), participating agencies and Exercise Leader, aims and objectives, communications, Directing Staff, and any special instructions.

6.2 The Exercise Directive is to be finalized by the Exercise Leader at least two weeks prior to the exercise. The Exercise Leader, in coordination with the Secretary of the AFI ATM/MET TF, is to ensure that the Exercise Directive is circulated to all Directive Staff and posted on the ICAO AFI website. The Exercise Directive template is presented at **Attachment D**.

## **7. Exercise conduct**

7.1 The exercise is conducted in accordance with the Exercise Directive. Participants (or “players”) are expected to issue exercise scenario messages such as volcanic ash advisories, SIGMET and NOTAM or ASHTAM in accordance with the examples provided in the Exercise Directive.

7.2 There must be no operational impact since the exercises are simulations. All communications pertaining to the exercise (text based, graphics based and/or voice communication) must adopt the guidelines presented in **Attachment E**.

## **8. Initial exercise report**

8.1 Based on experience during the exercise, participating agencies (principally Directing Staff) are expected to complete an Initial Exercise Report.

8.2 The Initial Exercise Report focuses attention on the major lessons learnt, recommendations and conclusions. It may be necessary for the participating agencies to conduct immediate internal (local or national) debriefings in order to compile the Initial Exercise Report. Suggested reporting requirements are presented at **Attachment F**.

8.3 Based on local debriefing, the Initial Exercise Report is to be submitted to the Exercise Leader within two weeks of the end of the exercise. The Initial Exercise Report template is presented at **Attachment G**.

## **9. Exercise debrief**

9.1 A Debrief Meeting is held within 3 months (ideally 1 month) after the exercise has been conducted, often conjoined with the Planning Meeting of the next exercise.

9.2 The Debrief Meeting allows the participant agencies (Directing Staff) to present their experience of the exercise, identifying common themes, lessons learned and recommendations, in order for the Exercise Leader to prepare a Final Exercise Report. Guideline principles concerning the Debrief Meetings are presented at **Attachment H**.

**10. Final exercise report**

10.1 The Exercise Leader is to consolidate the Initial Exercise Reports from the Directing Staff, as well as Debrief Meeting presentations and discussions, in order to prepare a Final Exercise Report.

10.2 The Final Exercise Report is to be available no later than one month after the Debrief Meeting. The Final Exercise Report is to be circulated to all exercise participants (Directing Staff), and posted on the ICAO AFI website in coordination with the Secretary of the AFI ATM/MET TF. The Final Exercise Report template is presented at **Attachment I**.

**11. Follow up of lessons learnt, recommendations and conclusions**

11.1 Each participant agency is expected to undertake the necessary follow-up of internal issues to arise from the exercise. The Secretary of the AFI ATM/MET TF, with input from the VAEX, is expected to address those issues arising of regional or international significance that may warrant the attention of the APIRG ATM/AIM/SAR SG and MET/SG Secretaries in the first instance.

**Attachment A: ANNUAL VOLCANIC ASH EXERCISE ACTIVITY SCHEDULE**

<i>Month</i>	<i>Activity</i>	<i>Action by</i>

*Note 1: All entries are indicative and subject to change.*

*Note 2: {YY} is the year of the exercise and {NN} is the sequence number of the exercise. For example, "EXERCISE VOLCEX10/01" is the first exercise of 2010, whilst Exercise VOLCEX10/02 is the second exercise of 2010.*

**ATTACHMENT B: DIRECTING STAFF INSTRUCTIONS**

- 1) The Directing Staff is the controlling work group for Exercise VOLCEX and carries out the following functions:
  - a) Represent the organizations of the exercise which collaborate in conducting a certain exercise (e.g. VAAC, MET, ATM, AIS, AO, etc);
  - b) Negotiate the specific objectives of each exercise (during Planning Meeting);
  - c) Assists in the design of the exercise scenario which serves the objectives;
  - d) Prepares the content of messages which are the result of the exercise scenario;
  - e) Provides input to the Exercise Directive;
  - f) Initiates and oversees the exercise operation;
  - g) Submits Initial Exercise Report to Exercise Leader; and
  - h) Provides input during the Debrief Meeting.
  
- 2) The Directing Staff have the following post exercise duties:
  - a) Present the exercise lessons learnt and follow-up recommendations within their own particular specialist area; and
  - b) Advises and instructs exercise participants (players) and new Directing Staff members, and facilitates appropriate renewal of Directing Staff.

**ATTACHMENT C: EXERCISE PLANNING MEETING**

- 1) Planning Meetings are held at least 3 months prior to a planned exercise in the AFI Region, and are chaired by the Exercise Leader (as determined by the AFI ATM/MET TF)
- 2) The main aims are to:
  - a) Determine the specific date(s) and time(s) of the exercise;
  - b) Negotiate the aims and objectives of the exercise;
  - c) Design a scenario to meet the objectives of the exercise;
  - d) Identify agencies and personnel with Directing Staff responsibility; and
  - e) Exchange information of interest for the exercise community.
- 3) The Planning Meeting should normally be hosted by one of the participating agencies. Delegates should include key personnel able to make decisions on behalf of their own organization or specialist area.
- 4) 4. As chair, the Exercise Leader, in co-ordination with the host agency, should prepare the Planning Meeting agenda, and provide necessary travel/accommodation and meeting facilities information. Any delegate may suggest an agenda item, which should be forwarded to the Exercise Leader at least four weeks prior to the Planning Meeting.
- 5) The delegates attending the Planning Meeting shall be prepared to:
  - a) Present ideas for new exercise and develop a complete scenario for the exercise;
  - b) Decide date for the next exercise;
  - c) Identify Directing Staff.
- 6) The Exercise Leader may elect to prepare minutes which are to be circulated to the appropriate organizations not more than four weeks after the Planning Meeting.

**ATTACHMENT D: EXERCISE DIRECTIVE TEMPLATE**

**Title:** EXERCISE DIRECTIVE FOR EXERCISE VAEX/AFI{YY}/{NN}

**1. INTRODUCTION**

Exercise date and time (UTC):

Exercise Leader:

Debrief Meeting:

Debrief host and chairman:

**2. PARTICIPATING AGENCIES**

A list of the agencies that have agreed to participate in the exercise, listed according to area of responsibility (i.e. VAAC, MET Watch Office, ACC, AO, etc).

**3. AIMS AND OBJECTIVES**

The negotiated objectives of the exercise.

**4. EXERCISE DURATION**

The period which the exercise will be conducted.

**5. EXERCISE VOLCANO**

Name, number and position of the exercise volcano.

**6. EXERCISE SCENARIO**

A short description of the events of volcanic and meteorological activity.

**7. EXERCISE SCHEDULE**

A chronological list of the actions to be undertaken before and during the exercise by participating agencies.

<i>Date/Time (UTC)</i>	<i>Player</i>	<i>Event/Action</i>
...	...	...

**8. EXERCISE SCENARIO MESSAGES**

Scenario messages related the exercise, including at least one example for each of the following: VONA, AIM, VAA, VAG, SIGMET ASHTAM or VA NOTAM.

**9. COMMUNICATIONS**

Instructions regarding message handling and other communications.

**10. DIRECTING STAFF**

Contact list of persons responsible for the preparation and conduct of the exercise and who have the duty be available at exercise workstation(s) during the exercise.

<i>Organization</i>	<i>State</i>	<i>Contact name</i>	<i>Contact position</i>	<i>Primary telephone number</i>	<i>Secondary telephone number</i>	<i>Fax number</i>	<i>Email address</i>

**11. SPECIAL INSTRUCTIONS**

Any other special instructions of relevance to the conducting of the exercise.

**12. LIST OF ABBREVIATIONS**

A list of abbreviations used in the Exercise Directive, including but not limited to, the following:

<i>Abbreviation</i>	<i>Decode</i>
ACC	Area Control Centre
AIM	ATFCM Information Message
ANM	ATFCM Notification Message
AIS	Aeronautical Information Service
AO	Aircraft Operator
AOC	Airline Operations Centre
ANSP	Air Navigation Service provider
ATFCM	Air Traffic Flow and Capacity Management
ASHTAM	Special series NOTAM notifying, by means of a specific format, change in activity of a volcano, a volcanic eruption and/or volcanic ash cloud that is of significance to aircraft operations
ATM	Air Traffic Management
ATS	Air Traffic Services
CFMU	Central Flow Management Unit
CTR	Control zone
FMP	Flow Management Position
IFPS	Integrated Initial Flight Plan Processing System
IFPZ	IFPS Zone
MWO	Meteorological Watch Office
NOF	International NOTAM Office
NOTAM	A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations
SIGMET	Information concerning en-route weather phenomena which may affect the safety of aircraft operations
VA	Volcanic Ash

VAA	Volcanic Ash Advisory
VAAC	Volcanic Ash Advisory Centre (/L = London, /T = Toulouse)
VAG	Volcanic Ash Graphic
VONA	Volcano Observatory Notice for Aviation

**ATTACHMENT E : COMMUNICATIONS INSTRUCTIONS MESSAGE TRAFFIC**

Exercise messages such as VONA, VAA, VAG, SIGMET, NOTAM and AIM are to be distributed to normal subscribers.

The free-text part of all messages shall commence with or include clear reference to “EXERCISE VAEX/AFI {YY}/{NN}”.

The free-text part of all messages shall terminate with the suffix “EXERCISE EXERCISE EXERCISE”.

Example SIGMET and NOTAM:

WVUK02 EGRR 131200  
EGGX SIGMET 2 VALID 131200/131800 EGRR-EGGX SHANWICK OCEANIC FIR EXERCISE  
VAEX/AFI 11/01 [...]  
EXERCISE EXERCISE EXERCISE=

(A0778/10 NOTAMR A0777/10  
Q) BIRD/QWWXX/IV/NBO/W/000/999/6337N01901WXXX  
A) BIRD  
B) 1104130900 C) 1104131200  
E) EXERCISE VAEX/AFI11/01 [...] EXERCISE EXERCISE EXERCISE  
F) GND G) UNL)

Any voice communications via telephone or radio shall commence with the prefix “EXERCISE VAEX/AFI {YY}/{NN}”.

*Note: Where {YY} is the year of the exercise and {NN} is the sequence number of the exercise. For example, “EXERCISE VAEX/AFI11/01” is the first exercise of 2011.*

## ATTACHMENT F: REPORTING REQUIREMENTS

### 1. Immediate local Debriefing.

Directing Staff members should give an initial debriefing, within their organization, immediately after the termination of the exercise. The Initial Debrief should be short and enable the players to:

- ✓ Obtain an immediate assessment of their performance.
- ✓ Profit from their strength and weaknesses revealed by the exercise.

### 2. National Debrief.

If considered appropriate, an inter-agency debrief meeting is recommended on a national level prior to the Debrief Meeting.

### 3. Debrief Meeting.

The Exercise Debrief should be attended by all agencies participating in the exercise and should be detailed to enable players as well as Directive Staff members to:

- ✓ Discuss the lessons learned;
- ✓ Identify strength and weaknesses of the operation;
- ✓ Contribute to the Final Exercise Report;
- ✓ Identify major lessons learnt; and
- ✓ Identify and discuss recommendations and conclusions.

### 4. Reporting.

The aim of reporting is to focus on major lessons learnt, recommendations and conclusions of the exercise operation and to distribute those to the participating organizations and to the appropriate international organizations. The following reporting chain should be followed:

- a) Initial Exercise Reports. An initial draft report by each participating organization should be forwarded to the Exercise Leader within one month of the end of the exercise. The Exercise Leader will collate the reports in time for the Debrief Meeting in order then prepare the Final Exercise Report.
- b) Final Exercise Report. The Exercise Leader should prepare the Final Exercise Report within two months of the Debrief Meeting and publish through the AFI ATM/MET Secretary to all the exercise participants.

**ATTACHMENT G: INITIAL EXERCISE REPORT TEMPLATE**

**Title: INITIAL EXERCISE REPORT FOR EXERCISE VOLCEX{YY}/{NN}**

Name of reporting organization: {Enter}

**1. Introduction**

Include date of the exercise, synopsis of how the exercise ran and notes if the exercise operation ran in some ways opposed to the way it was planned in the Exercise Directive.

**2. Co-operating Organizations**

List the VAACs, Meteorological Watch Offices, ACC, FMP, aircraft operators, etc, cooperating with the reporting organization during the exercise.

**3. Communications**

Assess communications operations, i.e. message handling and distribution as well as the other information exchange.

**4. Log of exercise operation**

A recapitulation of the exercise operation log, as it was actually played on the exercise day.

**5. Lessons learned**

List the major or most significant lessons learned during the exercise. Approximately 3 items.

**6. Recommendations**

List recommendations, if appropriate, within the organization, nationally and/or internationally. Approximately 3 items.

**7. Conclusions**

Provide any final concluding remarks relating to the exercise

**ATTACHMENT H: EXERCISE DEBRIEF MEETING**

1. Debrief Meetings are held within 3 months (ideally 1 month) after an exercise in the AFI Region, and chaired by the Exercise Leader (as determined by the AFI ATM/MET TF).
2. The main aims are to:
  - a) Discuss the conduct of the exercise;
  - b) Identify lessons learned and recommendations;
  - c) Contribute to the Final Exercise Report; and
  - d) Exchange items of interest for the exercise community.
3. The Debrief Meetings should normally be hosted by one of the participating agencies. Directing Staff members should attend the Debrief Meeting, where possible.
4. As chairman, the Exercise Leader, in co-ordination with the host agency, should prepare the Debrief Meeting agenda, and provide the necessary travel/accommodation and meeting facilities information. Any delegate may suggest an agenda item, which should be forwarded to the Exercise Leader at least four weeks prior to the Debrief Meeting.

ATTACHMENT I: FINAL EXERCISE REPORT TEMPLATE

**Title: FINAL EXERCISE REPORT FOR EXERCISE VOLCEX{YY}/{NN}**

**1. Introduction**

Include date of the exercise, the Exercise Leader and Directing Staff. Synopsis of how the exercise ran and notes if the exercise operation ran in some ways opposed to the way it was planned in the Exercise Directives.

**2. Co-operating organizations.**

List all the VAACs, Meteorological Watch Offices, ACC, aircraft operators, etc, participating in the whole exercise.

**3. Log of exercise operation**

A recapitulation of the exercise operation log as it was actually played on the exercise day.

**4. Communications**

Assess communications operations, i.e. message handling and distribution as well as the other information exchange.

**5. Lessons learned**

List major or most significant lessons learned during the exercise. Approximately 3 items.

**6. Recommendations**

List recommendations if appropriate, and note specially it recommendations which apply to international practices and documents. Approximately 3 items.

**7. Conclusions**

Provide any final concluding remarks relating to the exercise.

- END -