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Workshop on the Provision of Volcanic Eruptions and Ash Clouds Information on

(Yaoundé, Cameroon, 16 – 20 June 2025)

Operational Guidance for Volcanic Ash Response Exercises

ICAO WACA Regional Office

Content

1. Background

2. Structure and Content of AFI VOLCEX Operational Instructions (AFI VOLCEX OPNIS)

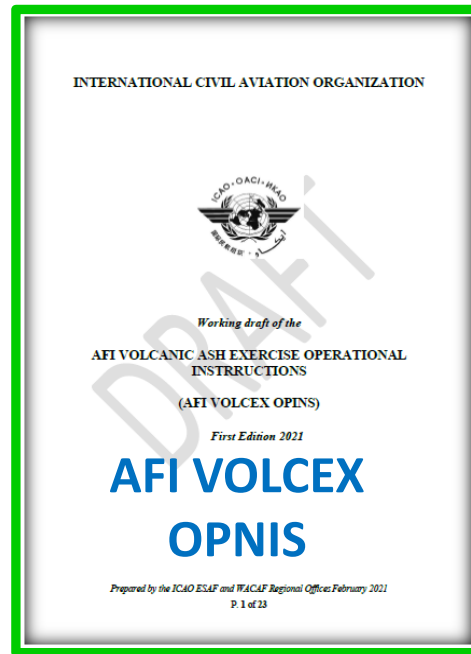


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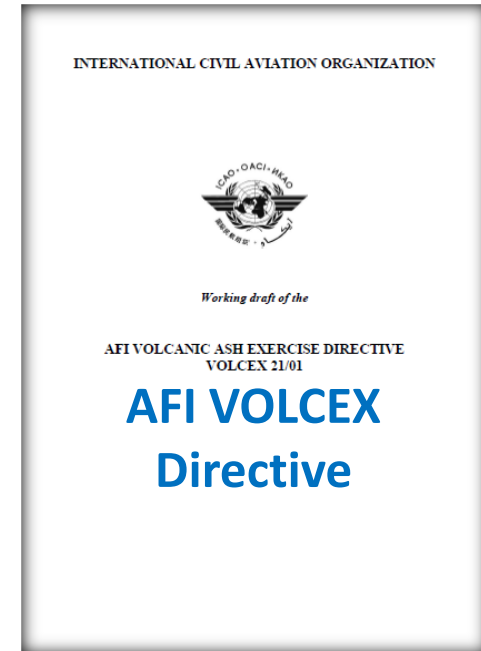
APIRG/24 Decision 24/07



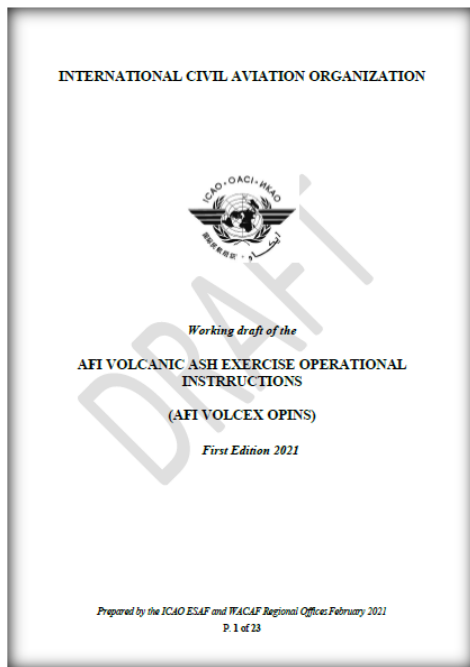
APIRG/24 Decision 24/27



APIRG/24 Decision 24/ 28



AFI VOLCEX OPNIS Structure



- Part I : General Guidelines for the VOLCEX Process
- Part II : Strategy for conducting volcanic ash exercises
- Part III : Appendices

I-1 Exercises Naming and Frequency



Naming convention : The OPINS provides guidance for naming and numbering the Volcanic Ash Exercises, using the formula VOLCEX {YY}/{NN}" {YY}.

- For example, Exercise **VOLCEX 20/01** is the first exercise of 2020, Exercise **VOLCEX 20/02** is the second exercise of 2020, etc.

Frequency of exercises :

- According to ICAO Doc 9766, the **frequency** of volcanic ash (VA) exercises depends on the **density of volcanoes** in the region, and may be scheduled **annually**, every two years, or every three years.
- Frequency of VA Exercise **may be adapted** to the context
- AFI Region, the VOLCEX is conducted **every two years**



I-2 VOLCEX Objectives

AFI VOLCEX is designed to test :

- **volcanic activity alerting ;**
- **aeronautical information service (AIS) and meteorological (MET) messages routing;**
- **volcanic ash information;**
- **air traffic control procedures ;**
- **air traffic flow and capacity management ;**
- **aircraft operator response** and the **collaborative decision making (CDM)** between the various actors in accordance with regional and global procedures;

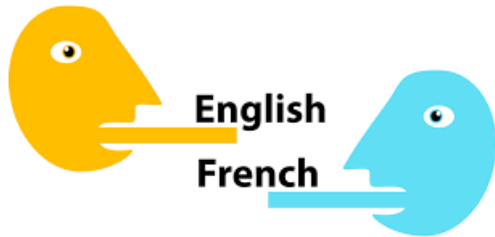
And to :

- **Recommend, where appropriate, amendments to reference documents based on lessons learned from the volcanic ash exercises.**

I-3 Concepts

- Focus on the responsibilities for VAAC **to simulate the volcanic ash scenarios**, based on the **agreed objectives** of the exercise.
- As volcanic ash exercises may have different objectives, scenarios may be designed to address any or all the following:
 - **AFTN, e-mail addresses**, message routing and voice communications;
 - **Alerting and volcanic ash dispersion** forecasts and advice;
 - **ATS response**;
 - **ATC and aircraft operator** response;
 - **ATM** response;
 - **AIS** response; and/or
 - **MET** response.
- In the AFI Region, VAAC Toulouse will assist with the simulation of ash clouds regarding the planned exercises.

I-4 Language



- **Working language** : English and French.
- The exercises, and any associated meetings and documentation, **will be in both English and French languages.**



I-4 References

- **ICAO Annex 3** – Meteorological Service for International Air Navigation
- **ICAO Annex 11** – Air Traffic Services
- **ICAO Annex 15** – Aeronautical Information Services
- **ICAO Doc 4444** – Procedures for Air Navigation Services
- **ICAO Doc 9691** – Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds
- **ICAO Doc 9766** – Handbook on the International Airways Volcano Watch
- **AFI ATM Volcanic Ash Contingency Plan**

Volcanic Ash Exercises Stakeholders



Steering Group



Exercise Leader



Directing Staff



Planning Meeting



Exercise Directive

**DESIGNING OF SCENARIO AND
EXERCISE CONDUCT**

Conduct Exercise



Initial Report
(Directing Staff)



Debriefing Meeting



Final report
(Exercise Leader)



Follow-up
activities

II-1 Volcanic Ash Exercises Steering Group

- **Coordinate** the organization of the volcanic ash exercise in the region;
- **Report** on the outcomes of volcanic ash exercises conducted in the region to the IIM Subgroup.
- Propose **improvements/update** of the Volcanic Ash related procedures, including the **regional volcanic ash contingency plan**.



Steering Group

II-2 Exercise Leader

- The Exercise Leader (EL) is responsible for **coordinating the schedule and the conduct** of a specific volcanic ash exercise.
- He is the **supervisor of the technical Team** (Directing Staff) established for the Exercise.
- The EL coordinate the development of the **Exercise Scenario**, the **preparation and publication** of the **exercise directive**.
- **Report on the results of volcanic ash exercises** including **lessons learned**, as well as **recommended actions**.
- Responsible for taking the **GO/NO decision** during the volcanic ash exercise.



Exercise Leader

II-3 Directing Staff

- A group of experts representing each of the **specialized areas involved in the exercises**, such as MWOs, Volcanic ash advisory centres, NOTAM offices, ATS, etc.
- The Directing Staff **coordinate** with VAAC Toulouse **to negotiate and design** the exercise scenario, **conduct** the exercise, **lead the debriefing meetings**, and **draft the Initial Exercise Report**.



Directing Staff

II-4 Exercise Planning Meeting

- A **Planning Meeting** is held at least 3 months prior to an exercise, enabling participating agencies to :
 - negotiate the exercise objectives;
 - determine the impacted area; and
 - if necessary, design the volcanic and meteorological activity messages to serve the objectives.



Planning Meeting

II-5 Exercise directive

- Immediately **after the Planning Meeting**, the **Exercise Leader** shall start drafting the Exercise Directive, incorporating inputs from the **Directing Staff** as appropriate.
- The Exercise Directive shall specify the following:
 - **Exercise scenario, date(s), and time(s)**
 - **Participating agencies and Exercise Leader**
 - **Aims and objectives**
 - **Detailed actions to be carried out as part of the exercise**
 - **Communication arrangements**
 - **List of Directing Staff**
 - **Any special instructions**
- The Exercise Leader shall finalize the Exercise Directive **no later than two weeks before** the exercise and **ensure it is distributed to all Directing Staff** and **published** on the ICAO ESAF and WACAF Offices websites

II-6 Exercise conduct

- The exercise is conducted **as scheduled in the Exercise Directive**.
- The **Players** are expected to issue **exercise scenario messages** such as **volcanic ash advisories, SIGMET and NOTAM** based on the Samples provided in the Exercise Directive.
- There must be **no operational impact** since the exercises are simulations. **Otherwise**, the Exercise Leader **shall take appropriate decision**.
- **All communications pertaining to the exercise** (text based, graphics based and/or voice communication) **must adopt the agreed guidelines**

**DESIGNING OF SCENARIO AND
EXERCISE CONDUCT**

Conduct Exercise

II-7 Initial exercise report

- Following a VA exercise, it is essential **to capture and consolidate key observations and insights** from the **participating agencies**, particularly the Directing Staff.
- Each participating agency is expected to prepare an **Initial Exercise Report** based on its involvement and observations during the exercise. The report should focus on:
 - **Major lessons learned**
 - **Actionable recommendations**
 - **Relevant conclusions**
- Agencies are to submit their **Initial Exercise Report** to the **Exercise Leader** within **two weeks** of the conclusion of the exercise.



II-8 Exercise debrief

- A **Debrief Meeting** is held **within three months**—ideally **within one month**—after the exercise, often **back-to-back with** the Planning Meeting for the next exercise.
- The **Exercise Debrief** should be attended by **all agencies having participated** in the exercise and should be detailed to enable players to:
 - Discuss the **lessons learned**;
 - Identify **strength and weaknesses** of the operation;
 - Contribute to the **Final Exercise Report**; and
 - discuss **recommendations and conclusions**



Debriefing Meeting

II-9 Final exercise report

- The Exercise Leader is responsible for **consolidating the Initial Exercise Reports** and **Debrief Meeting outcomes** into the **Final Exercise Report**.
- The Final Report should be completed **within one month** of the Debrief Meeting and **submitted to the ICAO ESAF and WACAF Offices**.
- The Final Report is presented at the **IIM SG meeting** for submission to the **APIRG** for **endorsement and further guidance**.



II-10 Lessons learned, Rec. and Conclusions

- The **extent of lessons learned**, and **areas of improvements** depends on the exercise objectives and its scenario. The following is indicative and not exhaustive.
 - Need for **Timely and Accurate** Information Sharing
 - **Clarification of Roles and Responsibilities**
 - **Importance** of Standardized Procedures
 - **Effectiveness** of Cross-Border Coordination
 - **Need for Robust** Communication Systems
 - VOLCEX is a **process**, **not a one-off** action



III-1 Appendices

- Table 1 Volcano Observatories States for AFI Region
- Table 2 Volcanic Ash Exercise Schedule Template
- Directing Staff Instructions
- Exercise Planning Meeting
- Exercise Directive Template
- Communications Instructions
- Reporting Requirements



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