



AIM/Aeronautical Information Management
Ellebjergervej 50
DK-2450 Copenhagen SV
Denmark
TEL: +45 36 18 60 00, FAX: +45 36 18 60 22
E-mail: ais@slv.dk, Internet: www.slv.dk

24 MAY 2011

AIC A 02/11. Flight in airspace with volcanic ash contamination – Copenhagen FIR - Non-Danish operators and pilots

(Erstatter AIC A 07/10)

Warning

This AIC must under no circumstances be considered to be a permit to conduct normal flight operations in volcanic ash conditions.

1. Introduction

The purpose of this AIC is to provide operators and pilots from other countries than Denmark, with information and recommendations when volcanic ash may be present, when operating within Copenhagen Flight Information Region.

It is emphasised that a volcanic ash encounter is potentially extremely hazardous and areas of known contamination shall generally be avoided. Volcanic ash may extend for several hundred miles and the contaminated zone may not be visible.

The decision to carry out a flight in airspace with volcanic ash contamination will be at the sole risk of the operator or pilot.

Areas affected by volcanic ash will be notified by SIGMET and the associated airspace restrictions/warnings by NOTAM.

2. Background

This AIC has been issued on the basis of procedures for use of European airspace in connection with volcanic activity.

With reference to ICAO EUR DOC 019 Volcanic Ash Contingency Plan - EUR Region it has been decided to differentiate between four (4) different volcanic ash contamination zones:

| Previous definition | Definition of contamination | Colour | Concentration |
|---------------------|-----------------------------|-----------|--------------------------------------|
| 1 | High | Red | $> 4 \times 10^{-3} \text{ g/m}^3$ |
| 1 | Medium | Grey | $2 - 4 \times 10^{-3} \text{ g/m}^3$ |
| 2 | Low | Blue/Cyan | $< 2 \times 10^{-3} \text{ g/m}^3$ |
| 3 | Clear | | 0 |

3. Notification of volcanic ash contamination

When there are actual or forecast indications of volcanic ash contamination a SIGMET for the relevant area will be issued. Airspace restrictions/warnings due to volcanic ash will be notified by NOTAM.

The notification of volcanic ash contamination can vary depending upon actual measurements, satellite observations, wind direction and speed at different levels, temperature and humidity. In some circumstances the status of a contamination zone can change from 'Clear' to 'High' without prior notification or warning.

Other airspace restrictions may apply, such as published Danger Areas, or Restricted Areas.

Charts containing forecast areas of volcanic ash contamination zones are advisory only and shall not be used as the sole means of navigational planning.

Note that these areas are/can be three dimensional and may in some cases be over-flown in accordance with the considerations stated below.

4. Areas of High contamination of volcanic ash (Red area)

Notified by NOTAM and SIGMET - Intentional flight in an area of high contamination is prohibited.

5. Areas of Medium contamination of volcanic ash (Grey area)

Notified by NOTAM and SIGMET - Intentional flight in an area of medium contamination is only permitted after approval from an operator's or pilot's Authority. This approval is a prerequisite Flight for any flight operations in an area of medium concentration within the Copenhagen FIR. Documentation for an Authority approval should be carried on board the aircraft.

6. Areas of Low contamination volcanic ash (Blue area)

Notified by SIGMET - Intentional flight in an area of low contamination is only permitted after approval from an operator's or pilot's Authority. This approval is a prerequisite Flight for any flight operations in an area of low concentration within the Copenhagen FIR.

Documentation for an Authority approval should be carried on board the aircraft.

7. Clear areas

No restrictions, apart from other NOTAMs or SIGMETs that are not related to volcanic ash.

8. Guidelines - Conduct of Flights

Airborne weather radar systems are not designed to detect volcanic ash clouds and extra precautions should be taken during flight, particularly during hours of darkness and in Instrument Meteorological Conditions (IMC) when volcanic ash may be present in the atmosphere. The following are signs that volcanic ash may be present during flight:

- Smoke or dust in the cockpit.
- An acrid or sulphurous odour.
- St Elmo's Fire and static discharges around the windshield.
- A bright white or orange glow in the engine inlets.
- Sharp, distinct beams from the landing lights.
- Any abnormal indications in airspeed and engine parameters.

Standard procedures for "Encountering volcanic ash" should be considered if any of these signs are observed.

If volcanic ash is encountered the procedures provided in the Operations Manual should be followed. General advice is to execute a 180-degree turn to leave the ash cloud. If possible, the engine thrust should be reduced to flight idle to minimise the build-up of deposits in the engines.

A precautionary landing should be made at the nearest suitable airport if it is suspected that the engines have been adversely affected or there is aircraft damage.

9. Operations in and around areas of volcanic ash contamination

- a. Operators and pilots can expect deviations to requested routes, aerodromes and landing sites.
- b. Selection of en-route and/or destination alternates and/or ETOPS requirements must be observed considering the special circumstances.
- c. Consideration to engine-out service ceiling must be given before flying over an area of high concentration

d. If volcanic ash activity is identified during a flight the following information shall be transmitted to the nearest ATS unit:

1. Call Sign
2. Position
3. Time
4. Flight Level
5. Position, bearing, distance to volcanic activity, level of contamination experienced
6. Vertical and lateral extent of ash cloud, rate, growth etc
7. Air temperature
8. Wind.

The report shall only be transmitted when the commander of the aircraft deems that it safe to do so.

10. Follow Up Inspection

When an aircraft has been operated in a , in an area of low concentration, an inspection in accordance with aircraft and engine manufacturer guidelines for inspection after flying in volcanic ash shall be performed. The inspection shall be carried out after landing at home-base, or any other base where approved maintenance facilities are available to carry out the inspection.

All observations which may indicate that the flight has encountered volcanic ash activity shall be reported to operator's or pilot's Authority as soon as possible, using the appropriate reporting procedures.

11. Further information

ICAO Document 9766 - 'Handbook on the International Airways Volcano Watch (IAVW): Operational Procedures and Contact List'

ICAO EUR Doc 019 - 'Volcanic Ash Contingency Plan – EUR Region'

<http://www.metoffice.gov.uk/aviation/vaac/>

<http://www.navair.dk/>

<http://www.dmi.dk/>

(TO)