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AIC-A
05/2021
Publication date 23 SEP 2021

VOLCANIC ASH OPERATION PROCEDURE FOR THE AMSTERDAM FIR**1 INTRODUCTION**

The Minister of Infrastructure and Water Management and the Minister of Defence have decided to develop the following procedure concerning volcanic ash operations. This procedure, which was first issued in 2010, is based on EASA Safety Information Bulletin 2010-17R7 published and corrected on the 2nd of July 2015 and ICAO Volcanic Ash Contingency Plan EUR and NAT Regions (EUR Doc 019).

The purpose of this AIC is to provide operators and pilots with information and recommendations on operations when volcanic ash concentrations may be present in the Amsterdam FIR (i.e. all airspace from SFC to UNL, uncontrolled or controlled by LVNL, Ministry of Defence or Maastricht UAC).

It is emphasised that a volcanic ash encounter is potentially hazardous and areas of known contamination above a certain concentration (see paragraph 3 for details) must generally be avoided. Volcanic ash may extend for several hundreds of miles and the contaminated zone may not be visible. The decision to operate should be taken carefully.

Areas affected by volcanic ash above a certain concentration will be promulgated by SIGMET and associated information shall be published by NOTAM.

Attention:

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

2 BACKGROUND

During the 2010 Icelandic ash crisis, European airspace was badly affected. As a consequence, the European aviation regulatory community has continued to make great efforts to contribute to the improvement of international procedures should a further volcanic eruption of similar proportions take place. As a result of this process EASA issued a new Safety Information Bulletin which will be revised if needed.

On August 21 2014 Safety Information Bulletin 2010-17R6 was issued containing an update on the results from various rule making tasks and further clarification on the reporting of volcanic ash encounters.

On June 24 2015 Safety Information Bulletin 2010-17R7 was issued containing an update on the use and publication of volcanic ash safety risk assessment (VA SRA). This bulletin was corrected on the 2nd of July 2015.

EASA ED Decisions 2013/008/R and 2013/009/R (dated 16/04/2013), amending acceptable means of compliance and guidance material to EU Regulation No 965/2012, introduced GM3-ORA.GEN.200(a)(3) for approved training organisations and GM3-ORO.GEN.200(a)(3) for aircraft operators. This guidance material implements the VA SRA methodology in the requirements for safety management systems for operators of complex aircraft. It is a direct transposition of the methodology provided in ICAO Doc 9974 Flight Safety and Volcanic Ash: "Risk management of flight operations with known or forecast volcanic ash contamination".

3 AREAS OF CONTAMINATION

The following definitions and display methods of contamination, which correspond to those in the ICAO Volcanic Ash Contingency Plan EUR and NAT Regions (EUR Doc 019), are now valid.

3.1 Area of low contamination (to be displayed in cyan)

The area of low contamination is an airspace of defined dimensions where volcanic ash may be encountered at concentrations greater than 0.2×10^{-3} gram/M³, but less than or equal to 2×10^{-3} gram/M³.

3.2 Area of medium contamination (to be displayed in grey)

The area of medium contamination is an airspace of defined dimensions where volcanic ash may be encountered at concentrations greater than 2×10^{-3} gram/M³, but less than 4×10^{-3} gram/M³.

3.3 Area of high contamination (to be displayed in red)

The area of high contamination is an airspace of defined dimensions where volcanic ash may be encountered at concentrations equal to or greater than 4×10^{-3} gram/M³, where no ash concentration guidance is available.

Note: ash concentrations below the low contamination threshold (equal to or less than 0.2×10^{-3} gram/M³) are considered not relevant and will be displayed as an area without colour, whereas the maps will indicate "NZ" (normal zone).

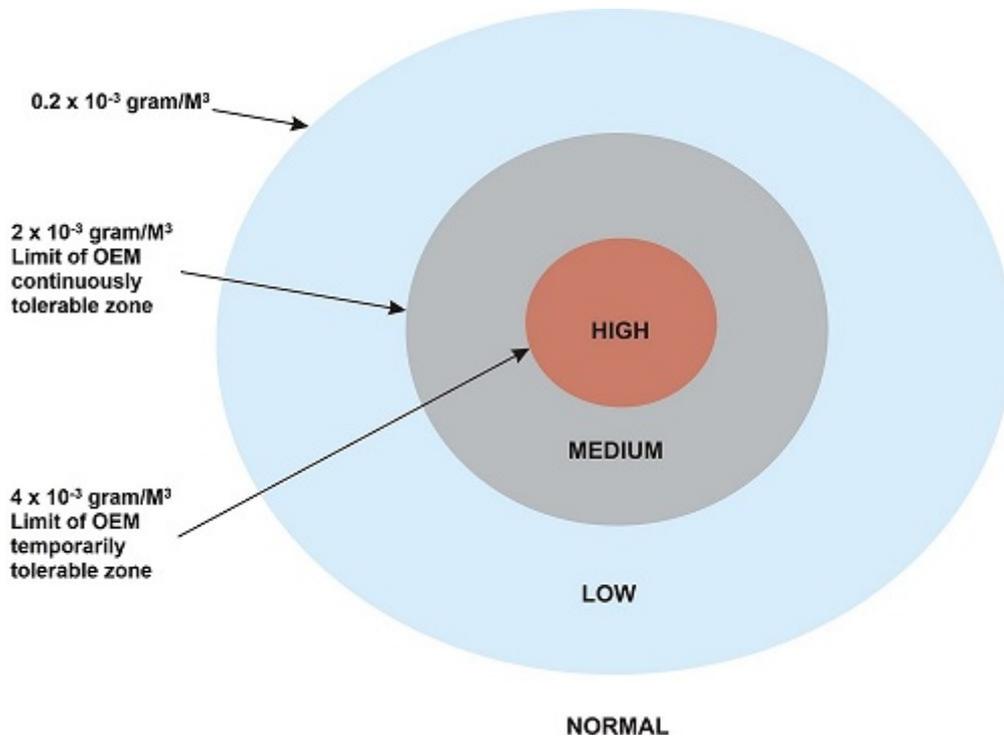


Figure 1. Areas of contamination

3.4 Provision of ATS

If flights are penetrating an area of high, medium or low contamination, the responsible ANSP will provide air traffic services as normal. The ANSP is not responsible for providing clearances to aircraft in order to avoid volcanic ash concentrations. Flying through an area of high, medium or low contamination will remain full responsibility of the aircraft operator and/or the pilot in command.

4 OPERATING IN CONTAMINATED AREAS

It is recommended to avoid operation in visible volcanic ash or, where visibility of the ash is impaired (e.g. during IMC, night), avoid operation in discernible volcanic ash. Discernible means that the location of volcanic ash can be determined in some way.

4.1 Operating in areas of low contamination

In this area a low concentration of volcanic ash is expected. This area is based on the area indicated in the volcanic ash (VA) advisory, issued by the relevant volcanic ash advisory centre (VAAC). Once these VAAC contaminated areas have been issued, the volcanic ash forecast chart (VAFC) will be issued as outlined in paragraph 6.

Aircraft operators and pilots shall decide how to operate based on aircraft operating manuals and additional input from aircraft manufacturers. Aircraft operating in this zone shall comply with the procedures as outlined in paragraph 7 of this AIC-A.

4.2 Operating in areas of medium and high contamination

In addition to the above:

- For European operators a safety risk assessment should be developed and agreed with the respective national aviation authority, in accordance with the guidance provided in GM3-ORO.GEN.200(a)(3) for aircraft operators or GM3-ORA.GEN.200(a)(3) for approved training organisations;
- Non-European operators should establish their VA SRA in accordance with ICAO Doc 9974 "Flight Safety and Volcanic Ash";
- General aviation and aerial work are strongly advised not to operate in areas of high or medium contamination of volcanic ash. NOTAM, SIGMET, and VAFC must be consulted. Operation at own discretion and under VFR only;
- Military flights must carry out a safety risk assessment in accordance with military procedures and regulations.

The Minister of Infrastructure and Water Management in conjunction with the Minister of Defence can impose restrictions on uncontrolled flights.

5 AIR TRAFFIC FLOW CAPACITY MANAGEMENT (ATFCM)

ANSPs shall decide if and how to apply ATFCM measures in order to cope with expected deviations from the route structure or given clearance and possible requested assistance. The Network Manager will be informed if ATFCM measures apply.

These general remarks are applicable to all areas of contamination:

- ATFCM measures for the Amsterdam FIR are based on LVNL's and MUAC's Area of Responsibility (AoR). Adjacent ATC centres (skeyes, DFS, NATS, and Naviair) may utilise ATFCM measures in their AoR;
- The Minister of Infrastructure and Water Management in conjunction with the Minister of Defence can impose restrictions on uncontrolled flights;

- The Minister of Infrastructure and Water Management in conjunction with the Minister of Defence can close areas of medium or high contamination.

6 AMSTERDAM FIR VOLCANIC ASH FORECAST CHART

Based on ATC operational sectors and TMA boundaries, the Amsterdam FIR has been divided into nine areas from SFC up to FL245 (see figure 2), including airspace without ATC control. On top of these nine areas Maastricht UAC has defined sub-sectors (see figure 3). These combined sectors are defined as the VAFC area.

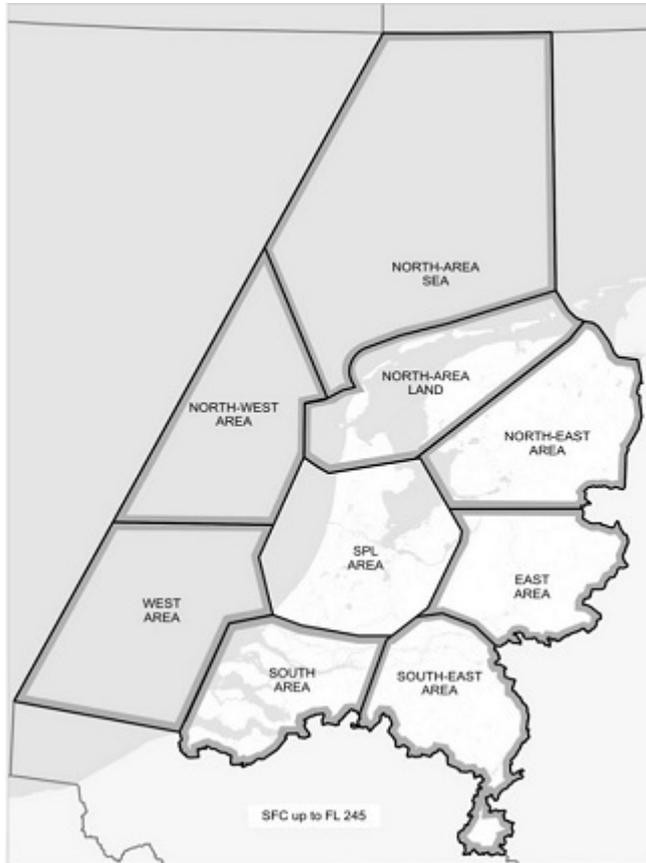


Figure 2: ATC operational areas, SFC up to FL 245

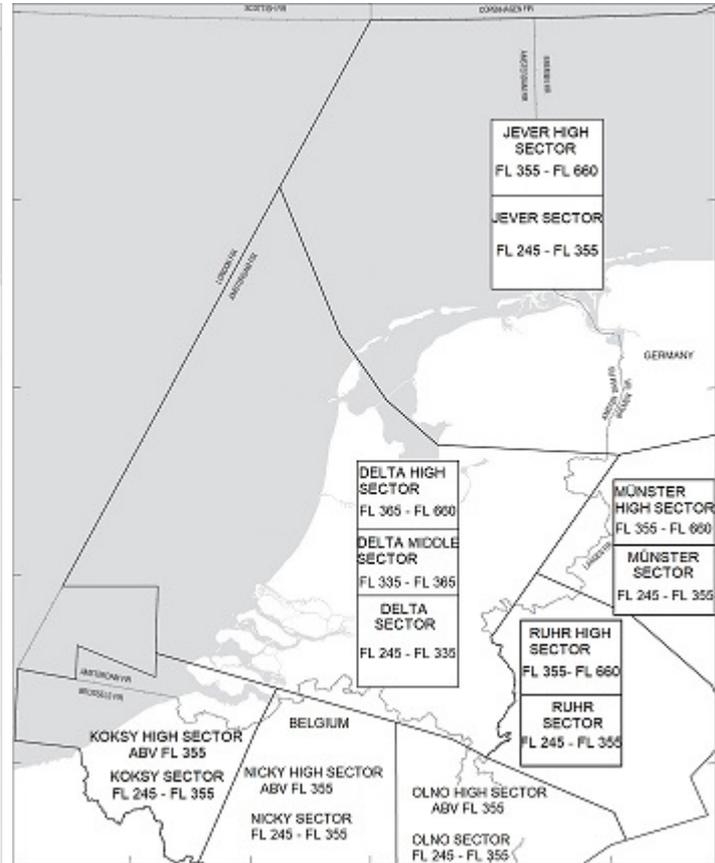


Figure 3: MUAC sub-sectors, FL 245 up to FL 660

Once the relevant VAAC (London or Toulouse) with +6, +12, +18 HR forecast of contaminated areas has been issued and volcanic ash is expected to enter the Amsterdam FIR, the VAFC shall be issued and an initial NOTAM shall be promulgated. This NOTAM may look like the following example:

REF AIC-A 05/2021 VOLCANIC ASH OPS PROCEDURES IN EFFECT FOR EHAA FIR DUE TO ERUPTION OF [...]. ATFCM-MEASURES AND/OR AIRSPACE RESTRICTIONS MAY BE EXPECTED. CHECK RELEVANT SIGMETS FOR ACTUAL STATUS OF ASH CONCENTRATION ZONES.

In case these areas of high, medium or low contamination will affect the Amsterdam FIR, the meteorological office (KNMI) will issue a SIGMET for volcanic ash. This SIGMET will be the primary information for airspace users and contains the boundaries of the contaminated areas indicated by LAT LONG coordinates, and if known, the vertical extend of the contamination indicated by flight level.

The VAFC shows the actual and +6, +12, and +18 HR forecast of relevant ash contamination areas projected over the VAFC areas from SFC up to FL 550 (above FL 550, no contamination information is published). The VAFC will be produced and published at least every six hours as long VAAC charts are produced and volcanic ash is expected to reach the Amsterdam FIR

The cross-border nature of volcanic ash makes international consistent use of data important. Therefore the areas of high, medium and low contamination as published by the VAAC are leading for construction of the respective areas on the VAFC for the Amsterdam FIR. In addition, between subsequent (six hourly) VAAC publications, actual observational data on local volcanic ash contamination may become available. If this data (e.g. information gathered during surveillance flights, pilot reports, eyeball interpretation of satellite data, etc.) is not yet, or will not be processed by the VAAC, local fine tuning or amendment of the VAFC contamination charts may be necessary. If these modifications will lead to significant differences in contamination value and/or volcanic ash location between VAAC and VAFC charts, all VAFC users will be notified about the differences by email.

Note: the VAFC can be found on the website www.aviationweather.nl.

7 AIR REPORTS AND PILOT REPORTS (PIREP)

7.1 Special aircraft observations

ICAO Annex 3 (paragraph 5.5 sub g) stipulates that special aircraft observations shall be made by all aircraft whenever volcanic ash clouds are encountered or observed. The observation shall be reported by air-ground data link, or if this option is unavailable, by means of voice communication. The report shall be made in flight as an air report at the time of observation or as soon as possible/practicable thereafter.

Based on this ICAO standard, the following applies within the Amsterdam FIR:

- When flying in an area of low or medium contamination, an air report shall be made by all aircraft whenever volcanic ash concentrations are encountered or observed;
- If an area of high contamination is penetrated, flights shall also - after the flight - file a PIREP at all times;
- If volcanic ash or the effect of volcanic ash on the aircraft is discovered after the flight, a PIREP shall be filed at all times.

7.2 Pilot reports

The PIREP shall be filed, either using the own air operator procedures, or when no such procedure exist, via the form on the website of the NLR (<https://www.nlr.org/safety-institute/volcanic-ash-pilot-report/>).

The PIREP form will give possibilities to report about all kinds of effects and circumstances of volcanic ash, like:

- St. Elmo's fire and (electro) static discharges;
- a bright white or orange glow in the engine inlets;
- reduced visibility through windshield and windows;
- typical smell (an acid or sulfurous odour) in the aircraft;
- smoke or dust in the aircraft;
- engine troubles;
- Incorrect flight indications (speed, altitude);
- residue on usual ice build up spots;
- visibility conditions;
- other observation matters (in free text);
- location (position, height) and movement;
- time of observation.

7.3 Feedback on reports

The reports may assist relevant bodies to assess more accurately the presence, movement and altitude of volcanic ash and any effect on flight. PIREPs will be used by KNMI to issue special air reports VA and new VAFCs.

8 ADDITIONAL DOCUMENTATION

8.1 EASA Safety Information Bulletin 2010/17R7

Special attention should be given to this EASA Safety Information Bulletin about flights in airspace with a certain concentration of volcanic ash. In this bulletin important recommendations are made by EASA.

8.2 ICAO Doc 9974 Flight Safety and Volcanic Ash

The International Volcanic Ash Task Force of ICAO has developed a globally applicable process to facilitate the management of flight operations into, or near, areas of known or forecast volcanic ash cloud through the provision of appropriate information to assist in minimising safety risk in such operations. Doc 9974 Flight Safety and Volcanic Ash: "Risk management of flight operations with known or forecast volcanic ash contamination" has been issued and may be used as guidance in flight operations management.

9 FURTHER INFORMATION

For questions and remarks please contact:

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10 DOCUMENT CONTROL

This AIC replaces AIC-A 06/2014 dated 30 OCT 2014.

ISSN: 1386-6605

