

Requirements for acceptance of operations in Volcanic Ash Zone 2

Applicability

- All Icelandic operators with EU-OPS AOC with turbine powered aeroplanes and JAR-OPS 3 AOC with turbine powered helicopters.
- All Icelandic registered turbine powered aeroplanes and helicopters.
- This procedure is not applicable for Icelandic Coast Guard when operating in accordance with “Lög um Landhelgisgæslu Íslands nr. 52/2006”.

Effective date

From 24. April 2010 when Volcanic Ash Zone 2 has been specified in NOTAM.

General

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 airspace may not be visible.

Operations in a Volcanic Ash Zone 2 requires an acceptance by the Icelandic Civil Aviation Administration.

The decision to carry out a flight in a Zone 2 area will be at the sole risk of the operator.

Background

EUROCONTROL has proposed new procedures for use in European airspace in connection with volcanic activity. The Icelandic CAA will adapt these procedures within Icelandic Domestic Sector.

With reference to ICAO Volcanic Ash Contingency Plan – NAT Region and in cooperation with ISAVIA and the Icelandic MET office it has been decided to differentiate between three (3) different volcanic ash contamination zones:

Zone 1 Limited No-Fly Zone is an Area with a High Density Volcanic Ash Contamination.

A “No fly zone” - which includes the main area/core of the volcanic fallout, with an additional buffer zone. The area is established on the basis of meteorological conditions where wind direction, humidity etc. will result in a high intensity of particles. Associated airspace restrictions/closures will be notified by NOTAM.

Zone 2: Potential Contamination Zone is an Area with a Low Density Volcanic Ash Contamination.

An area outside Zone 1 where flying can be conducted when actual conditions, risk assessment and test(s) can establish, that flights can be conducted at an acceptable level of safety and requires prior permission from the operators Authority. Areas affected by volcanic ash will be notified by SIGMET. Prerequisites and requirements for flying in this area are given below.

Zone 3: Non-Contaminated Airspace is an Area Free of Volcanic Ash Contamination.

An area - free of contamination - where flights can be conducted without restrictions or special prerequisites.

Zone 1 is established based on information from the London Volcanic Ash Advisory Centre (VAAC) and UK MET office and administrated by ISAVIA, the Air Navigation Service Provider.

Zone 2 is established as a contaminated zone by the VAAC and forms the basis of the current restrictions, not including Zone 1.

The Zone 1 and 2 may be over-flown in accordance with the considerations stated below.

After the VAAC has issued the +6, +12, +18 hrs forecasts of contaminated areas, SIGMETs and NOTAMs based on the VAAC forecast will be issued.

Application for flights in Volcanic Ash Zone 2

In order to commence the acceptances process a request by an operator must contain all the required documentation.

Operators requesting acceptance to operate in areas in Volcanic Ash Zone 2 shall provide the following documentation.

- 1) A "No technical Objection" (NTO) or equivalent must be obtained from the relevant aircraft and engine Type Certificate (TC) holder and all requirements related to the NTO, must be complied with.

Note: In the absence of aircraft and engine TC holder recommendations and until those instructions have been made available to operators and owners see EASA SIB No: 2010-17

- All conditions stated in the NTO shall be complied with.
- The NTO shall cover airframe and engines as a minimum.
- NTO conditions shall be implemented in the current approved Maintenance program.
- Any operational requirements shall be complied with.

- 2) A Risk assessment based on the NTO above (or equivalent) including any operational and maintenance restrictions required by the relevant aircraft and engine Type Certificate (TC) holder. The risk assessment shall include procedures to assess current and forecast areas of volcanic ash contamination zones and the associated risk involved in carrying out flights within a Zone 2 area and subsequent actions by crew members if an area of volcanic ash is entered unintentionally. Guidance for considerations for flights inside the Enhanced Procedures Zones and/or to/from Aerodromes Contaminated by Volcanic Ash and an example of hazard log as part of risk assessment required can be found in Appendix 1 & 2 to this document.

- OPS procedures - Normal/Malfunction/Emergency/ETOPS/ RVSM/MNPS, etc.
- Maintenance procedures (C of A/Extra requirements/Supplementary procedures).
- Use of Volcanic Ash Encounter Procedures if available from Aircraft Manufacturer
- Rules and requirements for operations outside Icelandic airspace shall be taken into account.

3) An operator shall establish and maintain a system for technical follow-up after flight operation in Zone 2.

- Procedures for compliance with this paragraph shall be established and documented (Follow-up inspection report).
- The operator shall establish and maintain a system for registration and monitoring of flight hours in Zone 2.

Flight operation in Volcanic Ash Zones

Preparation and planning of flight

Operators can expect deviations to requested routes.

Selection of en-route and/or destination alternates and/or ETOPS requirements must be observed considering the special circumstances.

Consideration to engine-out service ceiling must be given before flying over Zone 1.

The operator shall establish and maintain a system for registration of flight hours in Zone 2.

The operator shall establish and maintain a system for technical follow-up after flight operations in Zone 2.

Conduct of Flight

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.

ISAVIA will ensure, in terms of flight operations within Zone 2, that air traffic controllers are informed that it can be expected that aircraft may need, without delay, to revert to one or all of the following:

- Execute 180 degree turn
- Descent
- Reduce thrust
- Disconnect autothrottle

Reporting of Volcanic Ash activity during flight

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 be transmitted when the commander of the aircraft deems that it is safe to do so.

Follow Up Inspection

Flight in Potential Contamination Zone (Zone 2) may be planned and operated for a maximum time of three (3) accumulated flight hours.

When an aircraft has been operated for a maximum time of three (3) accumulated flight hours in “Low density Ash” (Zone 2), 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. The inspection shall as a minimum include the following:

- Wing leading edges.
- Stabilizer
- All extruding structure
- Pitot tubes & Static ports
- Windows
- Engine inlet and nacelles
- Boroscope inspection of Compressors and Turbines (or as per manufacturer recommendation)
- Engine oil filters
- Inspection report shall be accomplished at the end of inspection.

After take-off, a flight which experiences any delay which may cause the flight to exceed three (3) accumulated flight hours may continue to the planned destination. All observations which may indicate that the flight has encountered volcanic ash activity shall be reported to the Icelandic CAA as soon as possible, using the Mandatory Occurrence Reporting system.

Appendix 1

Considerations	Guidance
Operator Procedures	
Type Certificate Holder Guidance	Operators must obtain advice from the Type Certificate Holder and engine manufacturer concerning both operations in potentially contaminated airspace and/or to/from aerodromes contaminated by volcanic ash, including subsequent maintenance action.
Guidance for Company Personnel	Publish procedures for flight planning, operations and maintenance. Review of flight crew procedures for detection of volcanic ash and associated escape manoeuvres. Type Certificate Holder advice on operations to/from aerodromes contaminated by volcanic ash including performance.
Flight Planning	These considerations will be applicable to all flights that penetrate the <i>Enhanced Procedures Zone</i> and/or are to/from aerodromes contaminated by volcanic ash.
NOTAMs	The operator must closely monitor NOTAMs to ensure that the latest information concerning volcanic ash is available to crews.
SIGMETs	The operator must closely monitor SIGMETs to ensure that the latest information concerning volcanic ash is available to crews.
Departure, Destination and any Alternates	Degree of contamination, additional performance, procedures and maintenance consideration.
Routing Policy	Shortest period in and over contaminated area.
Diversion Policy	Maximum allowed distance from a suitable alternate. Availability of alternates outside contaminated area. Diversion policy after an ash encounter.

Considerations	Guidance
Operator Procedures	
Minimum Equipment List / Dispatch Deviation Guide	<p>Consider additional restrictions for dispatching aircraft:</p> <ul style="list-style-type: none"> • air conditioning packs; • engine bleeds; • air data computers; • standby instruments; • navigation systems; • Auxiliary Power Unit (APU); • Airborne Collision Avoidance System (ACAS); • Terrain Awareness Warning System (TAWS); • provision of crew oxygen; and • supplemental oxygen for passengers. <p>(This list is not necessarily exhaustive.)</p>
Provision of Enhanced Flight Watch	Timely information to and from crew of latest information.
Fuel Policy	Consideration to the carriage of extra fuel.

Considerations	Guidance
Crew Procedures	These considerations will be applicable to all Enhanced Procedures Zone and/or are to/from aerodromes contaminated by volcanic ash.
Pilot Reports	<p>Requirements for reporting in the event of an airborne encounter.</p> <p>Post-flight reporting.</p>
Mandatory Occurrence Reports	Reminder regarding the necessity for filing MORs following an encounter.
Standard Operating Procedures	<p>Review changes to normal and abnormal operating procedures:</p> <ul style="list-style-type: none"> • pre-flight planning; • operations to/from aerodromes contaminated with volcanic ash; • supplemental oxygen; • engine-out procedures; and • escape routes. <p>(This list is not necessarily exhaustive.)</p>

Considerations	Guidance
Crew Procedures	These considerations will be applicable to all Enhanced Procedures Zone and/or are to/from aerodromes contaminated by volcanic ash.
Technical Log	Any actual or suspected volcanic ash encounter will require a tech log entry and appropriate maintenance action prior to subsequent flight. Penetration (detail and duration) of the <i>Enhanced Procedures Zone</i> and/or operations to/from aerodromes contaminated with volcanic ash will require a tech log entry.

Considerations	Guidance
Maintenance procedures	Additional maintenance inspections may be required

Note: The above list is not necessarily exhaustive and operators must make their own assessments of the hazards on the specific routes they fly

