

Applicability: All General Aviation Pilots

VOLCANIC ASH – ADVICE FOR GENERAL AVIATION PILOTS

1 Introduction

- 1.1 The decision as to whether and where to fly on a private flight rests with the aircraft commander. The purpose of this FODCOM is to provide advice to assist commanders in making this decision when volcanic ash may be present.
- 1.2 It is emphasised that a volcanic ash encounter is potentially extremely hazardous and areas of known contamination must be avoided. Volcanic ash may extend for several hundred miles and the contaminated zone may not be visible. The decision to operate should be taken carefully.
- 1.3 Areas affected by volcanic ash will be notified by SIGMET and the associated airspace restrictions/closures by NOTAM. However, concentrations can be expected to vary considerably within these notified areas.

2 Encountering Volcanic Ash

- 2.1 If any ash damage becomes apparent in flight, possibly by windscreen or leading edge impact, pilots should attempt to leave the area either horizontally or vertically or both.
- 2.2 Flights in or close to cloud should be avoided. Cloud, especially cumuliform cloud, forms around particles in the atmosphere and volcanic ash particles provide ideal cloud (and ice) nuclei.
- 2.3 Engine damage is particularly concerning for turbine-engined aircraft, but probably less so for other internal combustion engines, where the combustion air can be filtered. Unlike turbine operators, piston operators can mitigate this risk by restricting the need to use carburettor hot air in flight, which bypasses the filter. Cloud, drizzle, mist and any known or probable areas of high humidity should be avoided and, where possible, the carburettor should be pre-heated in clear air. However, the risk of ash ingestion must be balanced against the risk of intake ice.
- 2.4 Increased haze may indicate a high concentration of ash. Below the top of the haze layer, dust concentration levels are usually high and discrimination between normal dust and ash will be extremely difficult. Above any haze tops, variations in the normally good visibility may be apparent. However, in an anticyclonic situation air at medium to upper levels, which have been affected by the recent eruption in Iceland, is slowly descending. Air from the surface rises with convection during the day and descends very slowly during the night, so the highest concentration of ash may well end up at the top of the anticyclonic haze layer. Climbs and descents through the levels around the haze tops should be flown at the maximum rate possible, as should those through likely high humidity areas if carburettor hot air may be needed.
- 2.5 Airframe, propeller, rotor and intake damage depends on dust impacting surfaces. The extent of the damage depends on dust concentration and energy of impact, which is proportional to the square of impact speed. Operating airspeeds should therefore be chosen carefully, taking into account the rate at which any possible damage is likely to accumulate. However, aeroplanes should not be flown so slowly that they cannot be manoeuvred in an emergency.
- 2.6 It may be prudent to avoid flight over areas where the choice of landing areas in the event of engine failure is limited, even in twin-engined aircraft.
- 2.7 Ash may also find its way into pitot/static systems, or affect the lubrication of moving parts such as rotor heads, gearboxes and other bearings.

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2.8 Any airborne encounter with volcanic ash should be reported to Air Traffic Control immediately.

3 Pre-Flight and Post-Flight

3.1 Aircraft parked in areas that may be contaminated by volcanic ash should be suitably protected in accordance with the aircraft Type Certificate Holder's advice and covered where possible.

3.2 Clouds, especially cumuliform clouds, may produce precipitation, which may be dirty if ash is present. Any volcanic residues must be removed prior to operations and following manufacturer's recommendations.

3.3 Even if no volcanic ash damage is apparent, it is advisable for all possibly affected areas to be checked (if necessary by a qualified engineer) more frequently than called for in most maintenance schedules. Pilots should consider checking filters after every flight in suspected ash conditions.

3.4 Engine and airframe Type Certificate Holders may offer recommendations on the subject, which should be followed. Insurance policies may also contain relevant clauses.

3.5 If any ash is encountered, whether or not damage occurs, it should be reported to the CAA on an occurrence report form [SRG1601](#). Engineering action will be required prior to subsequent flight. The Aircraft Maintenance Manual should be consulted and advice sought from the aircraft Type Certificate Holder where necessary.

4 Further Information

4.1 [FODCOM 10/2010](#) contains further information on volcanic ash, and has links to other sources of information.

5 Recommendation

5.1 **General Aviation pilots should consider the advice in this FODCOM before flying in areas where volcanic ash may be present.**

6 Queries

6.1 Any queries as a result of this Flight Operations Communication should be addressed to the Head of Flight Operations Policy at the following e-mail address: FOP.Admin@caa.co.uk.

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