VOLCANIC ASHFALL

Advice for

AIRPORT OPERATORS

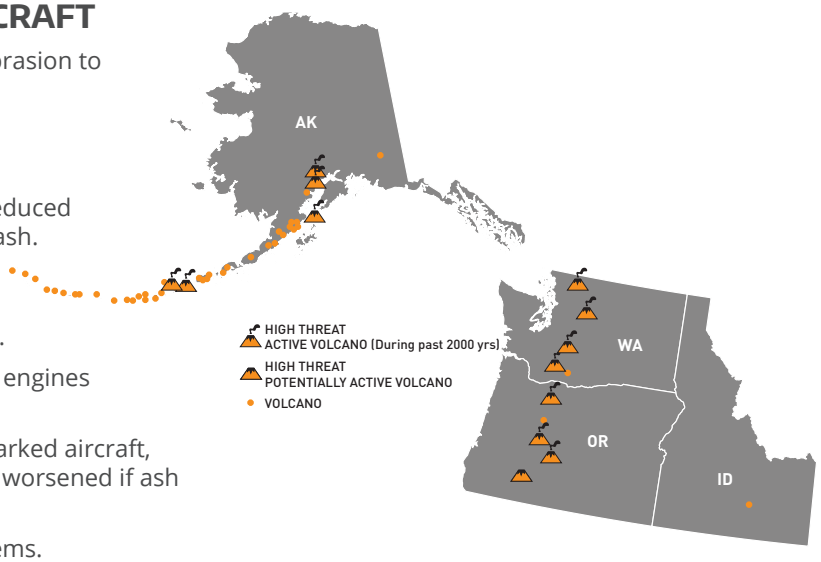
Volcanic ash is hard, highly abrasive, mildly corrosive, and conductive when wet

ASH IS HAZARDOUS TO AIRCRAFT

It can cause engine failure and severe abrasion to exposed surfaces.

CLOSURE OF AIRPORTS

- Difficult landing conditions due to reduced runway friction, especially with wet ash.
- Loss of local visibility when ash on the ground is disturbed by engine exhausts during takeoff and landing.
- Ingestion of remobilized ash into jet engines during taxi-ing, takeoff and landing.
- Deposition of ash on hangars and parked aircraft, with structural loading considerably worsened if ash becomes wet.
- Contaminated ground-support systems.



Ash accumulations of less than 1mm may be sufficient to temporarily close airports. Cleaning up airports after an ashfall is a time-consuming, costly and resource intensive operation. The complexity and immensity of this task should not be underestimated.

Ash in airspace in the vicinity of airports may also cause disruptions to airports, even if it doesn't accumulate on the ground.

AVIATION COLOR-CODE NOTIFICATIONS

GREEN ALERT	YELLOW ALERT	ORANGE ALERT	RED ALERT
Volcano is in normal, non-eruptive state. Or, after a change from a higher alert level: Volcanic activity has ceased and volcano returned to its normal, non-eruptive state.	Volcano is experiencing signs of elevated unrest. Or, after a change from a higher alert level: Volcanic activity has decreased significantly, but continues to be monitored for possible renewed increase.	Volcano is exhibiting heightened unrest with increased likelihood of eruption. Or, volcanic eruption is underway with no or minor ash emission (ash-plume height may be specified).	Eruption is forecasted to be imminent with significant emission of ash into the atmosphere likely. Or, eruption is underway with significant emission of ash into the atmosphere (ash-plume height specified).

WHERE TO FIND WARNING INFORMATIONC (ASH CLOUD FORECAST)

The Volcano Ash Advisory Centre (VAAC) or the USGS Volcano Observatories will issue volcanic advisories and graphics forecasts on ash in the atmosphere affecting aviation.

Current Volcanic Ash Advisories – Washington VAAC http://www.ssd.noaa.gov/VAAC/messages.html

Current Volcanic Ash Advisories – Alaska VAAC http://vaac.arh.noaa.gov

Current Alerts for U.S. Volcanoes - USGS https://volcanoes.usgs.gov/vhp/updates.html

FEMA
Institute for Hazard Mitigation Planning and Research
Resilient and Safe Communities
URBAN DESIGN & PLANNING
COLLEGE OF BUILT ENVIRONMENTS | UNIVERSITY of WASHINGTON

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U.S. INTERAGENCY PLAN FOR VOLCANIC ASH EVENTS

This plan coordinates the operations of the Alaska Volcano Observatory, the Federal Aviation Administration (FAA), and the National Weather Service (NWS), among others.

The NWS includes the Alaska Aviation Weather Unit (AAWU), which is both a Volcanic Ash Advisory Center (VAAC) and a Meteorological Watch Office (MWO). The AAWU, as an international MWO, issues volcanic eruption and volcanic ash meteorological information.

In this plan, the AAWU, acting as the Anchorage VAAC, issues a Volcanic Ash Advisory during an ash event, which provides guidance to the aviation community. The FAA disseminates pilot reports (PIREPs), Notices to Airmen (NOTAM) and current conditions information to the air traffic controllers and Center Weather Service Unit (CWSU) personnel.

The AAWU runs forecast models to predict where the discernible ash cloud will be. The forecasts are calibrated against satellite imagery, PIREPs, ground observation, and spotter aircraft. This approach to providing advisory information to operators is similar to how other significant meteorological events are handled, such as hurricanes.

The collaborative interagency approach worked very effectively during the 2009 Mt. Redoubt eruption. For example, it helped one major airline operating in the area avoid any significant inflight volcanic ash encounters. (This is not to say, however, that the airline did not have numerous schedule disruptions as a result of the Mt. Redoubt volcanic ash cloud.)

HOW TO PREPARE

At-risk airports should develop comprehensive operational plans for ashfall events. These plans should, where possible, be integrated with airline plans.

A more comprehensive summary of ashfall consequences to airports and detailed planning guidelines are available from ICAO at www.paris.icao.int/news/pdf/9691.pdf

The ICAO resource provides guidance on:

- standing arrangements prior to volcanic eruptions;
- responses during an eruption
- post-eruption cleanup and re-opening of the airport.

Field crews should use safe operating procedures when operating in an 'ashy' environment.

- Protective clothing (full-length clothing, face masks and goggles) should be worn and care must be taken on ash-covered surfaces, particularly roofs.
- See www.IVHHN .org for further advice on protecting people from ash hazards.

ADDITIONAL INFORMATION

- https://volcanoes.usgs.gov/volcanic_ash/aviation.html
- http://www.ivhhn.org
- U.S. National Volcanic Ash Operations Plan for Aviation, 2007, http://www.ofcm.gov/p35-nvaopa/fcm-p35.htm=
- International Civil Aviation Organization, 2015, Manual on volcanic ash, radioactive material and toxic chemical clouds. Document 9691-AN/954, 2015, third edition.
- http://www.caa.govt.nz/

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