International Civil Aviation Organization



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WORKING PAPER

INTERNATIONAL VOLCANIC ASH TASK FORCE (IVATF)

FIRST MEETING

Montréal, 27 to 30 July 2010

Agenda Item 4: Review of operational response to volcanic ash aircraft encounter and notification and warning for VA (ATM sub-group)

4.1: Assessment of current contingency procedures and reporting criteria to detect and mitigate risk

FEDERAL AVIATION ADMINISTRATION VOLCANIC ASH RESPONSE

(Presented by the United States)

SUMMARY

This paper presents information on the United States' Federal Aviation Administration (FAA) practices related to Volcanic Ash.

1. **INTRODUCTION**

1.1 Vast amounts of volcanic gas, aerosol droplets, and ash are injected into the troposphere and stratosphere during volcanic eruptions. Large volcanic eruptions inject water vapor (H2O), carbon dioxide (CO2), sulfur dioxide (SO2), hydrochloric acid (HCl), hydrofluoric acid (HF) and ash (pulverized rock and pumice) into the troposphere and stratosphere.

1.2 In particular, volcanic ash (VA) may travel thousands of miles from the eruption source, impacting numerous countries and continents isolated from the volcanic eruption. The presence of volcanic ash is a recognized hazard in aviation, and in the 1980s and 1990s, several incidents around the globe involved commercial jetliners that encountered volcanic ash and resulted in emergency responses due to volcanic ash exposure.

2. **DISCUSSION**

2.1 There are of nine Volcanic Ash Advisory Centers (VAAC) covering the majority of the globe. In the U.S., the Washington VAAC provides coverage for: the Continental United States; Pacific Ocean abutting Japan, Australia, and New Zealand; Central America, South America, and the Caribbean. The Anchorage VAAC provides coverage for the Alaska Region.

2.2 Similar to the Eyjafjallajokull eruption, Alaska area volcanic eruptions have sent plumes and drifting ash clouds airborne causing disruption to flight operations. These eruptions have allowed VAACs, aircraft operators and FAA air traffic facilities to gain familiarity with ash cloud impacts and develop contingency plans or operations plans.

2.3 In the United States the FAA participates with other federal agencies in a national plan on how to coordinate and disseminate information on VA. Under the auspices of the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM), the *National Volcanic Ash Operations Plan for Aviation*, describes FAA's and other agency's responsibility.

2.4 To mitigate the impacts for volcanic ash, the following agencies provide the following information. The U.S. Geological Survey (USGS) provides seismic monitoring for early detection, and passes early warnings when an eruption is imminent, or has occurred. National Oceanic and Atmospheric Administration (NOAA) uses satellite monitoring as a core element in detection, tracking, and monitoring eruptions, and the resultant ash plume. NOAA's National Weather Service (NWS) three Meteorological Watch Offices issue SIGMET information for Volcanic Ash Clouds. NOAA's two VAACs issue the Volcanic Ash Advisories (VAA). The FAA disseminates pilot reports (PIREPS), along with Notices to Airman (NOTAM) and SIGMET information. The Air Force Weather Agency (AFWA) is the Department of Defence (DoD) center for volcanic-ash advisories, and forecasts for U.S. Forces worldwide. The National Aeronautics and Space Administration (NASA) supports space-based observation and tracking of ash plumes and volcanic gases. The Smithsonian Institution maintains a database on eruption histories and characteristics of the world's volcanoes. All the above information is provided to operators to assist them in their decision making process to avoid ash.

2.5 The FAA's aim during volcanic ash episodes is to ensure the aviation community receives timely, consistent information about the ash cloud's position, altitude and projected trajectory and drift. The FAA also suggests flight operators avoid the area of known or forecast ash clouds, while recognizing that final responsibility for flight decisions rests with the pilot in command.

Two important aspects of FAA procedures are:

- a) establishing a temporary flight restriction area (TFR), usually between 3 to 10 nautical miles (NM) around the erupting volcanic plume, or based on other advice from experts, to ensure that pilots remain clear of the eruption source.
- b) passing all available information on areas which have suspected airborne ash contamination to airports, aircraft operators, and pilots so that they can make the decision to operate, or not operate in airspace outside the TFR.

2.6 FAA actions taken during volcanic ash episodes include soliciting and disseminating PIREPs, NOTAMs, SIGMETs and METARs. In the U.S., volcanic ash management is largely based on making pilots aware of areas where they might encounter volcanic ash and in relaying pilot reporting of real time conditions. The FAA model is that the decision to operate rests with the pilots and the aircraft operators.

3. CONCLUSION

3.1 Given the above information, that IVATF note that the FAA has two principle operating rules with respect to volcanic ash:

- a) establish TFR to keep aircraft clear of the immediate eruption source,
- b) pass on all available information on volcanic ash to operators in support of their decision making process.
- 3.2 The TF is invited to formulate the following action:

Action Agreed 1/... — Operational response by the ANSP to volcanic ash

That, ATM sub-group be invited to take into consideration the FAA's operating rules to only restrict the airspace around the immediate eruption and to otherwise provide all information to the operator for their decision making process.

4. **ACTION BY THE IVATE**

- 4.1 The IVATF is invited to:
 - a) note the information in this paper, and
 - b) decide on a draft action.

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