Safety Regulation Group

20 April 2010

Policy Statement

OVERFLIGHT OF ICELANDIC VOLCANIC ASH CLOUD

1. Introduction

1.1 In order to facilitate domestic and international flights, arrangement for the overflight of the Icelandic Volcanic Ash Cloud (IVAC) has been developed for UK airspace.

2. Scope

2.1 The purpose of this policy statement is to provide direction to aircraft operators in regard to the conduct of flights over the IVAC in UK airspace.

3. Policy

3.1 The following supporting information is to be considered:

a. Mandatory Occurrence Report data on volcanic encounters is limited, however it is clear that extensive damage may be caused if the level of airborne contamination is high, potentially leading to engine shutdown.

b. It has been postulated that the volcanic ash cloud maybe treated as a 'solid object' for the purposes of flight planning. The most analogous situation being a mountain range.

c. A review has been conducted by CAA SRG Flight Operations of the 51 emergency descents taken in the last 3 years in UK airspace, during which over 4.5 million flight hours were flown.

d. The opinion of SRG Flight Operations is that, providing an operator can plan a flight such that in the event of any emergency, they can continue to remain clear of the air mass containing volcanic particles, there is nothing in these reports that would prevent a safe operation being planned for overflight. The operator would need to meet flight over mountainous planning criteria and in effect treat the air mass as a mountainous region with no available diversion airfields.

3.2 Issues that operators would need to consider are as follows:

a. The mountainous region requirements and the capability of aircraft are varied and complex. The following would be a typical Operation Manual entry:

(1) The following must be taken into consideration for en route obstacle clearance over mountainous areas:

(a) Engine failure that forces a descent to a lower cruise level

(b) Depressurisation which, due to the passenger oxygen system, requires a descent to 10000 feet before supplementary oxygen is exhausted.

(2) If the standard strategy does not allow the aircraft to clear obstacles, the pilot must use a drift down procedure. If an engine failure occurs at any point on the route, the net flight path must clear the obstacles on the drift down part by 2000 feet.

(3) If the aircraft cannot clear the en route obstacles a point of no return (PNR) must be determined.

(4) If an engine failure occurs after the PNR, the aircraft must drift down on course. If the failure occurs before the PNR, the aircraft must turn back.

(5) For en route net flight paths, refer to the Aircraft Flight Manual.

b. In case of depressurization, the passengers receive oxygen through individual modules and an emergency descent in accordance with a certain profile, depending on passenger oxygen equipment installed, has to be performed.

c. A detailed study of each route over the area indicated as exceeding 10 times the standard threshold, plus a 60nm planning buffer area, must show that one engine out net flight path and passenger oxygen system performance allow the aircraft to clear the obstacles (IVAC) by 1000 feet in climb and by 2000 feet in cruise or descent.

d. If the aircraft in these circumstances cannot clear the obstacles (IVAC) on the route, a PNR must be determined and diversion procedures must be established.

4. Risks

4.1 Accuracy of modelling – position and vertical extent of ash is not known to great accuracy. Density will also vary.

4.2 Volcanic ash is continually moving depending on weather patterns.

5. Conclusions

5.1 Procedures normally used for the planning of routes over mountainous terrain could be used to plan for flight over the volcanic ash cloud. Additional considerations, such as the known vertical and horizontal extent of the cloud, and the cloud's movement need to be taken into account alongside aircraft performance and aircraft emergency system performance.

6. SRG Point of Contact

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