International Civil Aviation Organization

FIFTEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND METEOROLOGY SUB-GROUP (CNS/MET SG/15) OF APANPIRG

Bangkok, Thailand, 25 – 29 July 2011

Agenda Item 11: Implementation of SIGMET & Warnings

COPY OF WORKING PAPER 14 PRESENTED TO IVATF/2

(Presented by IATA)

SUMMARY

For reference of attendees to CNS/MET/SG/15 this IP presents a copy of WP14 to the recent IVATF/2 meeting in Montreal.

"PROPOSAL TO CONSIDER VOLCANIC ASH AS ANY OTHER METEROLOGICAL HAZARD"

This paper relates to –

Strategic Objectives:
A: **Safety** – Enhance global civil aviation safety
C: **Environmental Protection and Sustainable Development of Air Transport**

Global Plan Initiatives:
GPI-7 Dynamic and flexible ATS route management
GPI-9 Situational awareness
GPI-16 Decision support systems and alerting systems
GPI-19 Meteorological Systems
GPI-22 Communication infrastructure

1. INTRODUCTION

1.1 This Information paper presents a copy of IVATF/2 WP 14 presented by IATA for reference to attendees of CNS/MET/SG/15

"PROPOSAL TO CONSIDER VOLCANIC ASH AS ANY OTHER METEROLOGICAL HAZARD"

1.2 Summary:
Safety data shows that, in spite of recent volcanic events, there has not been one fatal commercial aircraft accident related to operations in or near volcanic ash. In contrast, many fatalities have been attributed to accidents involving other meteorological (MET) hazards, such as thunderstorms, wind shear, turbulence, and icing.

IATA proposes that operations in or near volcanic ash be treated no differently to any other MET hazard. The operational decision making process of an airline, whether through the Safety Management system processes or as defined by Standard Operating Procedures as approved by the respective Regulator, is an essential part of safe operations.

1.3 To complete a proper risk assessment and make safe decisions, accurate and timely information must be available to Operators. These are key components in the development of processes that enable an Operator to correctly assess risk.

1.4 Since the first meeting of the International Volcanic Ask Task Force (IVATF/1 held 27 to 30 July 2010), the Airworthiness Sub-Group has been following-up IVATF task TF-AIR-04 and has produced a draft document titled 'Management of flight operations with know or forecast volcanic cloud contamination' focusing on European procedures which evolved from the volcanic crisis of April 2010. Working paper WP/16 of the meeting refers.

1.5 Early versions of this draft document referred to prescriptive ash concentration levels which had been adopted in the aftermath of the Eyjafjallajökull volcanic eruption in Iceland in April 2010. These levels were developed as a means to permit operations to resume in areas forecast by the Meteorological Office co-located with Volcanic Ash Advisory Centre (VAAC) London to be contaminated with volcanic ash.

1.6 Version 3.1 of the draft document was made available by the ICAO EUR/NAT Office on their website as a clearly marked preliminary draft in December 2010 to promote comment and feedback from concerned stakeholders within the Region. In time, as the draft document reaches maturity it may be envisaged that the document would be endorsed (through appropriate ICAO bodies) for operational application. Such material would likely complement the regional ATM contingency plans – such as the Volcanic Ash Contingency Plan of the EUR/NAT Region (ICAO EUR Doc 019 / NAT Doc 006 Part II).

1.7 The validity and relevance, or otherwise, of prescriptive levels of ash concentration has been a source of debate between and amongst the four IVATF Sub-Groups.

1.8 Irrespective of the viability and use of thresholds to define ash-cloud boundaries, all segments of the industry are in total agreement that flight in visible ash is unacceptable.

1.9 Since April 2010, there have been a number of other volcanic eruptions around the world. During these incidents, the volcanic ash advisories and accompanying graphics (VAA and VAG) output from non-European volcanic ash advisory centres (VAAC) has not supported these prescriptive numerical boundaries, but other sources of information, e.g. satellite imagery, have been used to define the likely area of the volcanic ash cloud. These predictions have shown an element of consistency in their output enabling Operators to safely assess whether flight operations may or may not be conducted safely.

2. DISCUSSION

2.1 Within the framework of the ICAO International Airways Volcano Watch (IAVW), there are currently nine VAACs worldwide. Each produces VAAs and/or VAGs, but their output is not harmonized.

2.2 Currently, the prescriptive ash concentration levels of 2 to 4 mg/m3 are not supported by science as a means for defining visible ash, thereby adding no value to the operational hazard assessment process for Operators but creating the potential for confusion.

2.3 Historically, Operators have had much success in avoiding hazardous MET conditions such as thunderstorms etc. Since the 1980's, the risks posed to flight operations by a volcanic ash cloud have become better understood, particularly outside of the European region due mainly to the greater number of events in these regions. The application of these same MET avoidance principles has been significantly successful.

2.4 Regions outside of Europe have not closed their airspace when it has become affected by a volcanic ash cloud.

2.5 Traditional methods of risk avoidance employed by Operators have limited inherent risks and maximized safe and economically advantageous operations.

2.6 MET information in the form of text and graphics that is produced today highlights the various hazards by location. The intensity and severity of the hazard has been successfully depicted in ways that are beneficial to Operators engaging in the risk assessment process.

2.7 Regulators permit Operators to assess the threat of a specific hazard and take appropriate action based on Standard Operating Procedures. A similar approach to volcanic eruptions and the resulting ash cloud should be acceptable to Regulators.

3. CONCLUSIONS

3.1 The link between visible ash and ash concentration levels will ultimately facilitate the avoidance of this phenomenon. Risk avoidance will be greatly enhanced if a practical method to determine and define this figure can be achieved.

3.2 There still remains the outside possibility of an ash encounter from a volcano which has not been under full observation; this scenario probably poses the highest potential risk to aviation from any volcanic event. It is recommended that means to mitigate this type of encounter should be a priority of any work from the IVATF.

3.3 Evidence could be gathered from earlier eruptions, many of which have been studied in some detail and around most of which airlines managed to find safe flight paths. Taken together, a combination of VAAC after casts, and historic flight track data, both of those flights that encountered ash and, just as importantly, those that did not, could help establish safe operating contamination levels without exposing test aircraft to the hazard.

4. ACTION BY THE IVATF

4.1 The IVATF is invited to:

a) note the contents of this paper;

b) recommend that ICAO modify the EUR/NAT Volcanic Ash Contingency Plan (EUR Doc 019/NAT Doc 006 Part II) in light of updated information produced by the IVATF Sub-Groups, until such time that science can support the ash concentration values quoted;

c) promote and accelerate methods to ensure a harmonized output from all nine VAACs;

d) encourage industry to provide a means to detect and/or alert aircraft in flight of significant levels of volcanic ash; and

e) recommend that ICAO, when establishing procedures and guidance for volcanic ash avoidance, develop those procedures in line with other meteorological hazards.

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