



## INTERNATIONAL VOLCANIC ASH TASK FORCE (IVATF)

### THIRD MEETING

Montréal, 15 to 17 February 2012

**Agenda Item 4: Progress report of the air traffic management sub-group (ATM SG)**  
**4.6: Aeronautical information overload**

#### ATTACHMENT ATM06 TO IVATF/3 PPT/04

(Presented by the Project Manager of the IVATF ATM Sub-Group)

#### SUMMARY

This attachment is associated with deliverable IVATF task TF-ATM06 (Review of the current processes regarding issuance of NOTAM, ASHTAM, VAA/VAG and SIGMET) and in particular addressing aeronautical information overload concerns during an eruptive event.

This attachment points out that the prerequisite to achieve this goal is the establishment of a consistent decision making process in volcanic ash events at the global level.

The IVATF is invited to note the content of this attachment and, as necessary, develop a recommendation or further tasking for the consideration of the task force.

## 1. INTRODUCTION

1.1 Following on from a discussion at IVATF/2 (11 to 15 July 2011), a Volcanic Ash Challenge Team (VACT) meeting convened by ICAO on 20 September 2011 considered the need to avoid ambiguity in aeronautical information and to reduce information overload. The VACT endorsed the following long-term goal:

*One set of aeronautical information for one eruptive event.*

1.2 ICAO was requested to inform IVATF about this objective.

1.3 This Attachment to IVATF/3 PPT/04 points out that the prerequisite to achieve this goal is the establishment of a consistent decision making process in volcanic ash events at the global level.

## **2. ASSUMPTION**

2.1 This paper assumes that the essence of the long-term goal set out by VACT is the need to build a process that would support simplified information flow, including both aeronautical and meteorological information for one eruptive event.

## **3. DIFFERENT APPROACHES IN DIFFERENT ICAO REGIONS**

3.1 At present there is no agreed decision making process in volcanic ash events at the global level. Therefore, each region decides on the approach to be followed, which determines the flow of information regarding each volcanic ash event.

3.2 The consequence of this inconsistency across the regions is that aircraft operators and pilots face the challenge of processing a large amount of different types of information, which could hamper them in their operational decision making.

## **4. VOLCANIC ASH PRODUCTS**

### **4.1 VAAC PRODUCTS**

4.1.1 In accordance with Annex 3 – *Meteorological Service for International Air Navigation*, volcanic ash advisory centres (VAAC) issue volcanic ash advisories (VAA) and volcanic ash advisories in graphical format (VAG) in case of volcanic eruptions.

4.1.2 Decision makers in the EUR and NAT Regions requested VAACs to propose other products to support unlocking the *crisis* in April 2010 following the eruption of the Eyjafjallajökull volcano in Iceland. The result was the introduction of supplementary information in the form of modelled ash concentration charts by the meteorological offices collocated with VAACs London and Toulouse. This supplementary information is now considered as the most essential element of the SRA approach adopted by the European States, and recommended by the VACT.

4.1.3 The supplementary information referenced in 4.1.2 above is not a requirement placed on the VAACs within an Annex 3 context.

4.1.4 At time T, the meteorological offices collocated with VAACs London and Toulouse issue the supplementary information (in addition to the required Annex 3 products, VAA and VAG) for the T+0, T+6, T+12 and T+18 time horizons. During a volcanic ash event, the supplementary information is updated at 6-hour time intervals (in case of major changes in the forecast the information may be issued more frequently).

## 4.2 MET WATCH OFFICE PRODUCTS

4.2.1 SIGMET messages concerning volcanic ash cloud, prepared and issued by meteorological watch offices (MWO), should be based on advisory information provided by the VAACs – in accordance with Annex 3, 7.1.4 (Recommended practice). The SIGMETs are issued for affected FIR to inform pilots on the volcanic ash contamination.

4.2.2 In accordance with Annex 3, 7.1.3 and 7.1.6, MWOs issue SIGMETs for volcanic ash for a period of validity of up to six hours, and as soon as practicable but not more than 12 hours before the commencement of the period of validity. The more FIRs are impacted, the more SIGMETs are issued.

4.2.3 Air-reports (AIREP) may be used to modify the area based on the VAAs/VAGs published via SIGMETs. IVATF/3 PPT/04 Attachment ATM03 on ATM volcanic ash reporting sets out proposals for feeding these observations to the VAACs.

## 4.3 AIS PRODUCTS

4.3.1 By means of NOTAM/ASHTAM, States inform aircraft operators and pilots of the significant changes in volcanic activity including the volcanic eruption, horizontal/vertical extent of volcanic ash cloud and direction of movement, flight levels and route which could be affected and possible restrictions for airports and airspaces in their area of responsibility.

4.3.2 Depending on the region, NOTAM/ASHTAM may be issued for T+0, T+6, T+12 and T+18 hours forecast of volcanic ash cloud horizontal and vertical extent and movement.

4.3.3 Some States are using their local expertise in ash detection. When ash is detected in areas that differ from the area forecast by VAAC products and the associated SIGMET, a NOTAM is published declaring the modified area and a note added in the NOTAM to stress the difference between areas in VAAC products/SIGMET and NOTAM. Work is ongoing on how this local ash detection could be fed back to the relevant VAAC.

## 4.4 OTHER PRODUCTS

4.4.1 It is also observed that in order to simplify the decision making process some aircraft operators are relying on non-ICAO based products provided by service providers not responsible for the ICAO Annex 3 service provision. In the event where an aircraft operator has sufficient MET or volcanic ash expertise in house, they have developed their own volcanic ash forecasting products to support their decision making.

## 5. SITUATION AWARENESS APPLICATIONS

5.1 Some organisations (e.g. NOAA, EUROCONTROL) have been working on applications, which should assist airlines and pilots in enhancing situation awareness of the volcanic ash contamination at the regional network level. These applications, such as VAAC Anchorage's EVCM and EUROCONTROL's EVITA, provide a one-stop-shop for a combination of the above mentioned products: VAAs/VAGs, ash concentration charts, SIGMETs and ASHTAM/NOTAM.

## **6. DIGITAL GLOBAL EXCHANGE FORMATS FOR METEOROLOGICAL AND AERONAUTICAL INFORMATION**

6.1 New digital global exchange formats for meteorological and aeronautical information are identified as major enablers in improving harmonization and preventing duplication and information overload in general. The notion of digital information exchange and xml as an exchange format is included in the proposed amendment to Annex 3 and Annex 15 (applicable November 2013).

6.2 By already advancing the implementation of these structured formats for volcanic ash related information today, great benefits could already be obtained relatively easy. By applying these data structures in accordance with the globally interoperable information models (e.g. AIXM and WXXM) it will make it possible to validate information upfront and make the data suitable for automated processing by systems, and enabling graphical representation by visualization tools.

## **7. EXAMPLE OF AN ONGOING WORK IN THE EUR/NAT REGIONS**

7.1 At its Seventh Meeting, the ICAO EUR/NAT VOLCEX/SG agreed that items identified in the debrief of the exercise EUR/NAT VOLCEX/11/01 and eruption of Grimsvötn should be considered by the EUR/NAT VOLCEX/SG. The following consolidated key work streams were identified:

- MET products: Issuance time, validity, forecast layers, assimilation of ash observations etc
- SIGMET production, timeliness, MWO input
- NOTAM production, timeliness
- **Simplify information overload, what is useful, automation, graphical solution**
- Status of EVITA

7.2 EUROCONTROL established a cross-disciplinary group of experts to work on overcoming perceived information overload issues experienced during recent events and exercises. Due to the nature of the tasks this work also included a review of current processes for SIGMET and NOTAM production. Conclusions of that work are set out in a study note, which was submitted to the ICAO EUR/NAT VOLCEX/SG. As the ICAO EUR/NAT Office gave indications that any significant modifications to the ICAO EUR/NAT Volcanic Ash Contingency Plan would await conclusions of the IVATF, it is expected that the EUROCONTROL study would be used together with conclusions and guidelines of IVATF in the process of amending the EUR/NAT Volcanic Ash Contingency Plan.

## **8. CONSIDERATIONS FOR THE IVATF**

8.1 It can be concluded that, by applying the existing ICAO global provisions, a large amount of information could be exchanged in the case of volcanic ash impacting airports or airspace. All this information is not necessarily harmonised with respect to the content and format. However, in some instances, global provisions could be implemented in such a manner that one report from one originator is only a one-on-one copy of another originator.

8.2 Paramount to modifying existing or newly developed provisions are a clear indication of the roles and responsibilities in an agreed decision making process.

8.3 On one side, the MET service providers are responsible for providing the information with respect to reported ash and the forecasting of ash clouds for the upcoming 18-24 hours. States responsibility is to assess the impact of the volcanic ash forecast information and decide on the potential impact and possible restrictions for airports and airspace under their responsibility and to notify aircraft operators and pilots by means of NOTAM/ASHTAM in accordance with ICAO Annex 15.

8.4 An important consideration for IVATF is if and how the assessed impact of a volcanic ash cloud on airports or airspace should be regulated and communicated to users, not only from a single State perspective but also when applied on a multi State or regional network scale. Worthwhile to address in this context are the ongoing trials conducted by the Meteorological Warnings Study Group (METWSG) to assist the ICAO Secretariat in resolving known generic SIGMET issues.

8.5 When the decision making processes on the assessed impact of a volcanic ash event are agreed, the appropriate information exchange ‘chain’ can be refined or newly developed. This should contribute to reducing information overload in future volcanic ash events.

## **9. FURTHER CONSIDERATION**

9.1 The IVATF may wish to discuss and agree that the essence of the long-term goal “*One set of aeronautical information for one eruptive event*” as set out by VACT is the need to build a process that would support simplified information flow, including both aeronautical and meteorological information. In addition, the task force may wish to discuss and agree that the prerequisite to achieving this goal is the establishment of a consistent decision making process in volcanic ash events at the global level. Tasking of an appropriate IVATF Sub-Group (or Sub-Groups) is suggested for task force consideration in order to develop such a decision making process in volcanic ash events.

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