# MEETING OF THE METEOROLOGY PANEL (METP)
# METEOROLOGICAL OPERATIONS GROUP (MOG)

**SECOND MEETING**

**Buenos Aires, Argentina, 16 to 19 April 2016**

**Agenda Item 5: Identification of New and Additional Tasks**

## Efficacy of post-encounter reporting arrangements

**(Presented by the WMO-IUGG Volcanic Ash Science Advisory Group)**

**SUMMARY**

Recent experience following an aircraft encounter with volcanic ash suggests that there is currently no currently effective procedure for ensuring that damage reports are made available to the scientific and operational International Airways Volcano Watch communities. This paper suggests that the problem be studied and recommendations be made in order to improve the efficacy of post-encounter reporting arrangements.

## 1. INTRODUCTION

1.1 The reporting of aircraft encounters with volcanic ash has long been a source of discussion in various fora relating to the International Airways Volcano Watch. Particular focus came to this area during the discussions of the International Volcano Watch Task Force, due to related conversations about the damage that volcanic ash causes, and whether a safe or acceptable concentration exists. Apart from the limited laboratory-style testing, investigation of real-world encounters has been the principle mechanism for advancing our knowledge of the hazard that volcanic ash poses to aircraft. The knowledge gained has been invaluable[1] and has greatly influenced IAVW practices. In addition, real-world examples of incidents are highly educative for the general aviation community. Generally, these examples are used sensitively and appropriately, and often (for incidents that have not been widely reported) with the airline involved de-identified.

1.2 Historically, much of the individual cases investigated have required proactive investigative work by highly motivated individuals, using a variety of sometimes innovative techniques to gather information.

1.3 The meeting will recall that, in 2010, WMO-IUGG Volcanic Ash Science Advisory Group was created in order to assist with science advice and coordination for the International Airways Volcano Watch. In October 2015, the group had its 6th meeting, immediately following the highly successful WMO 7th International Workshop on Volcanic Ash, in Anchorage, USA[2]. At the VASAG meeting,

[1] Much of the material collected is summarised in: Guffanti M, Casadevall TJ, Budding K, 2010, Encounters of aircraft with volcanic ash clouds—a compilation of known incidents, 1953–2009. US Geological Survey Data Series 545. http://pubs.usgs.gov/ds/545/

[2] Minutes of the VASAG meeting can be found at https://www.wmo.int/aemp/sites/default/files/VASAG-6_FINAL-

attendees discussed the ongoing scientific efforts to investigate the February 2014 eruption of Kelud, Indonesia, which resulted in one known significant aircraft encounter (IAVWOPSG Conclusion 8/26 refers), and which had been discussed at the WMO Workshop. VASAG discussed how to improve incident reporting, as follows:

> *….related (scientific) efforts include work by DLR and USGS to update the volcanic ash encounter database, adding to our knowledge of significant incidents. In regard to aviation encounters, the sensitivity of some of the critical information around these incidents, and the maintenance of trust of information sharing between those involved, the group noted the long-standing practices of care and confidentiality used by those compiling such information (eg Casadevall, Guffanti et al), and encouraged that these practices be captured in relevant work by IAVCEI to update their guidelines to scientists for professional behaviour during volcanic crises….*
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> *….The meeting recalled the earlier discussion on ash encounters in general, and how the analysis of such encounters might be encouraged, noting that this action item derives from a request from ICAO to the International Coordinating Council of Aerospace Industries Associations (ICCAIA) at IAVWOPSG/8. The active engagement of ICCAIA members since then has been warmly welcomed, and should be further encouraged from an institutional point of view. It was suggested, for example, that ICAO METP should be asked to promote the importance of sharing the outcomes of incident investigations with the science community to facilitate more focused research. Together with the earlier described work to update the ash encounters database and to produce relevant guidelines for scientists, this would be of assistance in filling the obvious gaps in the ash encounters analysis effort, at least for the more significant incidents.*

## 2. DISCUSSION

2.1 In examining this matter, the Group may consider that, while it is relatively straightforward to promote the importance of sharing the outcomes of incident investigations with the scientific (and operational) community, the procedures to do so do not necessarily exist to the satisfaction of all concerned. Each incident has a number of key players (the operator, the OEMs for aircraft and engines, relevant regulators, the responsible VAAC, WMO and ACCCs where the incident occurred), and each party has relevant communication and sharing protocols. In practice, and despite the goodwill of all concerned, this may mean that important information is not necessarily made available in a timely fashion, or is done so on an informal basis that inhibits proper use of the material.

2.2 The Group may wish to therefore conclude that the good operations of the IAVW may be improved by ensuring sufficient procedures exist to ensure that volcanic ash incident information is shared with the scientific and operational communities. Development of these procedures may require careful consideration of current arrangements and their adequacy.

## 3. CONCLUSION

3.1 In view of the foregoing the group is invited to consider the following conclusion:

3.2 An ad hoc group be formed to consider proposals to improve the reporting of volcanic ash encounter incident and investigation details to the scientific and operational IAVW communities, and put forward an implementation plan for consideration

## 4. ACTION BY THE METP-WG/MOG VLCANIC ASH WORK STREAM

4.1 The METP-WG/MOG Volcanic Ash Work Stream is invited to:

a) Note the information in the Study Note, and
b) Agree on an action for the group's consideration

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REPORT_0.pdf , and a report of the WMO Workshop is at
https://www.wmo.int/aemp/sites/default/files/IVAW7_final_report.pdf