



**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)**

**4.2: Assessment of existing notification and warning procedures**

**SIGMET INFORMATION FOR LARGE VOLCANIC ASH EVENTS**

(Presented by the United States)

**SUMMARY**

Two ICAO groups, IAVWOPSG and METWSG, are currently working on improvements to the SIGMET information. This task force may wish to consider the work being done by these groups and provide input so that any new products meet the needs of ATM for large and complex volcanic ash events.

**1. INTRODUCTION**

1.1 SIGMET information has been the staple of aviation meteorological products for decades. In many cases it is the first product that provides warning for airborne aircraft, as well as Air Traffic Services (ATS). The Eyjafjallajökull volcanic eruption in April 2010 was a large volcanic ash event that affected many Flight Information Regions (FIR) and therefore was the responsibility of many associated Meteorological Watch Offices (MWO) who issued numerous SIGMET information products for their respective FIRs. ICAO Annex 3, Meteorological Service for International Navigation clearly states the operational requirements for the SIGMET information along with the required technical specifications.

**2. DISCUSSION**

2.1 SIGMET information is ideal for simple volcanic ash events. Small ash cloud events with uniform distribution of ash can be effectively communicated to users and decision makers using the prescribed textual and graphic formats in Annex 3. Those events that produce ash clouds moving in different directions at different levels, due to non-uniform wind profiles aloft, pose a problem to the

MWOs in the production of SIGMET information. SIGMET information in accordance with the technical specification of Annex 3 does not provide the MWOs with the ability to effectively describe a complex volcanic ash event in both textual and graphic formats. This problem is currently being addressed by the International Airways Volcano Watch Operations Group (IAVWOPSG) who formulated the following conclusion at their Fifth Meeting in March 2010:

**IAVWOPSG Conclusion 5/9 — Issuance of graphical SIGMET for complex VA events**

That, the ad-hoc working group consisting of IAVWOPSG Members from Australia, France, New Zealand, United Kingdom, United States (Rapporteur) and IATA:

- a) pursue the task of developing guidance material related to the reporting of complex volcanic ash events (multiple layers and/or more than one eruption within a FIR) in SIGMET; and
- b) present a report for consideration of the IAVWOPSG/6 Meeting.

2.2 A very large and complex volcanic ash event, like that from the Eyjafjallajokull volcanic eruption, had a significant impact on air transportation and commerce. SIGMET information for volcanic ash clouds provides a present position of the volcanic ash cloud as well as a six hour forecast position of the ash cloud. This is useful for short-haul flights as well as for tactical navigation in flight, but SIGMET information does not provide the necessary information for strategic flight decision of long-haul flights.

2.3 The Volcanic Ash Advisories (VAA), issued by the Volcanic Ash Advisory Centers, has become a better planning and decision product for ATM and flight operators. VAAs provide forecast positions of volcanic ash at six hour intervals out to eighteen hours. The VAA is not restricted to specific FIRs like the SIGMET, and for large volcanic events that extend over many FIRs, the VAA can offer ATM and flight operators with easier to use information.

2.4 The ICAO Meteorological Warning Study Group (METWSG) is currently looking into proposals for improved SIGMET information, including the introduction of a SIGMET Advisory product that may extend across FIR boundaries and provide information beyond the six hour SIGMET. These products would be issued by regionalized centers. The Second Meeting of the METWSG formulated the following action:

**METWSG Action agreed 2/1 — Feasibility study into the issuance of SIGMET advisory information from selected regional centre(s)**

That, an ad hoc group (A) consisting of Albert, Carole, CM (co-rapporteur), Colin, Herbert, Jun, Keith, Patrick (co-rapporteur), Steve, Sue (co-rapporteur), Tom, and Zhang will oversee the planning for, and conduct of a feasibility study into the issuance of SIGMET advisory information from selected regional centre(s) using the work plan in the Appendix C.

*Note. — The feasibility study is expected to be conducted after the METWSG/3 Meeting.*

2.5 In response to the Eyjafjallajökull volcanic eruption in April 2010, the UK Met Office and London VAAC began issuing graphic products depicting areas or zones of three levels of forecasts ash concentration (contamination); low, medium and high. This new service was a response to provide information to decision makers.

2.6 Neither SIGMET information nor the VAA provide any measure of uncertainty or any levels of ash concentration in their products. Could the new SIGMET Advisory, which is in a concept and design phase, be designed or tailored to provide the needed information for large complex volcanic ash events, such as areas or zones of uncertainty and concentrations of ash?

**3. CONCLUSION**

3.1 Two ICAO groups, the IAVWOPSG and the METWSG are currently working on solutions for improved SIGMET information for volcanic ash. It may be worthwhile for this task force to provide input to these two group's proposals, so that any new products meet the needs of ATM for large and complex volcanic ash events.

3.2 The meeting may wish to formulate the following action:

**Action Agreed 1/... — Improvement of SIGMET information for large complex volcanic ash events**

That, the IVATF consider the tasks and work being undertaken by the IAVWOPSG and METWSG with respect to improved SIGMET information for volcanic ash, and offer input to these groups on the provision of SIGMET information for large complex events, including the consideration of adding measure of uncertainty and/or levels of ash concentration in their products.

4. **ACTION BY THE IVATF**

4.1 The IVATF is invited to:

- a) note the information in this paper, and
- b) decide on the draft action.

— END —