



Agenda Item 3: Implementation of the International Airways Volcano Watch (IAVW)

a) Review of the outcome of IAVWOPSG/4 Meeting

FOLLOW-UP TO IAVWOPSG/4 CONCLUSIONS

(Presented by the Secretariat)

1. Introduction

1.1 The Fourth Meeting of the International Airways Volcano Watch Operations Group (IAVWOPSG/4) was carried out from 15 to 19 September 2008 in Paris, France. The meeting formulated 29 conclusions and 2 decisions. Complete information regarding IAVWOPSG meetings can be found at IAVWOPSG website: <http://www.icao.int/anb/iavwopsg>, available in English only.

2. Implementation status of IAVWOPSG/4 Meeting conclusions

2.1 Considering that the follow-up information of the conclusions of the Fourth Meeting of the International Airways Volcano Watch Operations Group (IAVWOPSG/4) is published in English in the above mentioned website, the **Appendix** to this information paper includes the Follow-up Table to the conclusions formulated by this operations group.

3. Action suggested by the AERMETSG

3.1 The Subgroup is invited to take note of the information provided in this information paper.

- END -

APPENDIX

**FOLLOW-UP OF IAVWOPSG/4
CONCLUSIONS (C)**

Status on 11 September 2009

- = action by the Air Navigation Commission
- ✓ = action completed
- † = pending or not to be completed

Note. — No follow-up will be undertaken on the IAVWOPSG decisions.

No. and deliverable		Title/Action	Follow-up action (target/completion date in brackets)
4/2	2	Amendment to the IAVW-related regional procedures in the ANP/FASID That, the Secretariat forward the IAVW-related regional procedures as shown in Appendix B to this report to the ICAO Regional Offices for processing and onward transmission to States for comments, as necessary, in view of their early inclusion in the ANP/FASID.	ICAO Memo sent to ROs with updated regional procedures (6 November 2008)
✓			
4/3	2 3 7 9 10	Amendment to Annex 3 regarding volcanic ash and toxic chemicals That, the proposal to amend Annex 3 — <i>Meteorological Service for International Air Navigation</i> given in Appendix C to this report be included as part of Amendment 75 to Annex 3.	ICAO Included in draft Amendment 75 (30 October 2008)
✓			
4/4	7	Amendment to Annex 15 regarding volcanic ash depositions That, the proposal to amend Annex 15 — <i>Aeronautical Information Services</i> given in Appendix D to this report be included as part of Amendment 36 to Annex 15.	ICAO Included in draft Amendment 75 (30 October 2008)
✓			
4/5	2	Information required for VAACs to be able to distribute volcanic ash advisories to selected FIRs only That, the Secretariat examine the feasibility for ICAO to: a) provide VAACs with an access to a real-time database describing limits of FIRs in the world; and b) keep the VAAC informed about the operational AFTN addresses of the MWOs and ACCs.	ICAO Database provided to VAAC Toulouse (23 June 2009) Intent met by the continuous update of Doc. 9766 based on info from ROs (24 October 2008)
✓			
✓			

No. and deliverable		Title/Action	Follow-up action (target/completion date in brackets)
4/6	2	<p>Provision of volcanic ash training video to States</p> <p>That,</p> <p>a) the Secretariat and the VAACs provide a link on the IAVWOPSG and the VAACs websites to allow access to the training video on volcanic ash; and</p> <p>b) the Secretariat inform States and interested international organizations accordingly.</p>	<p>ICAO and VAACs</p> <p>E-mail sent to VAACs to ensure that a link be provided in their websites (28 November 2008)</p> <p>Cooperation of ICAO ROs requested by IOM (17 December 2008)</p>
4/7	2	<p>Standardization of volcanic ash advisories centres web pages</p> <p>That, VAACs, in providing a web-based interface via the public Internet, be required to give a direct link to a unique webpage that provides information relevant to ICAO volcanic ash products.</p> <p><i>Note 1. – The link needs to reside on the front page of each VAAC website; and</i></p> <p><i>Note 2. – The web-based service is in compliance with ICAO Doc 9855, Guidelines on the Use of the Public Internet for Aeronautical Applications.</i></p>	<p>VAACs</p> <p>Direct link to VA products provided (30 April 2009)</p>
4/8	2	<p>Daily volcano status briefing product</p> <p>That,</p> <p>a) the IAVWOPSG Member from Australia, in coordination with the IAVWOPSG Members from New Zealand, IUGG and IATA develop further the volcano status briefing product, incorporating user feedback during the process; and</p> <p>b) prepare a report in time for consideration by the IAVWOPSG/5 Meeting.</p>	<p>Australia, New Zealand, IUGG and IATA</p> <p>Develop the product and prepare progress report (30 October 2009)</p>
4/9	2	<p>Fostering implementation of the volcano observatory reporting</p> <p>That,</p> <p>a) the Secretariat include the guidance material as shown in Appendix E in Doc 9161, <i>Manual on Air Navigation Services Economics</i> (Appendix 3); and</p> <p>b) the IAVWOPSG Member from Australia, in coordination with the Secretariat and the IUGG member, develop further guidance material on the implementation of the Volcano Observatory Notice for Aviation (VONA) for posting on the website of the World Organization of Volcano Observatories.</p> <p><i>Note. – The guidance developed under a) will be referenced on the WOVO website in due course.</i></p>	<p>ICAO</p> <p>Draft guidance forwarded to ATB for inclusion in Doc 9161 (12 December 2008)</p> <p>Australia, ICAO and IUGG</p> <p>Developed further guidance material (30 April 2009)</p>

No. and deliverable	Title/Action	Follow-up action (target/completion date in brackets)
4/10 3	<p>Testing of the Volcano Observatory Notice for Aviation (VONA)</p> <p>That, the IUGG Member of the IAVWOPSG</p> <p>a) test the applicability of the VONA to assess its suitability by volcano observatories in providing timely information to ACC, MWO, and VAAC; and</p> <p>b) prepare a report in time for the IAVWOPSG/5 Meeting which would:</p> <ol style="list-style-type: none"> 1) identify areas of potential improvement to the VONA based on the testing conducted; 2) assess the acceptance of the VONA by the World Organization of Volcano Observatories; and 3) evaluate the implementation efforts required by volcano observatory worldwide. 	<p>IUGG</p> <p>Test the applicability of the VONA and prepare a progress report</p> <p>(30 October 2009)</p>
4/11 3 ✓ ✓	<p>Need for standard format of the VA advisories and VA SIGMET used for test purposes</p> <p>That, the Secretariat</p> <p>a) develop guidance material regarding the use of a standard format for test messages for testing VA advisories and VA SIGMETs; and</p> <p>b) after circulation to the IAVWOPSG Members include the guidance in the Doc 9766, <i>Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List</i>.</p>	<p>ICAO</p> <p>Guidance material developed and circulated</p> <p>(30 January 2009)</p> <p>Included in Doc 9766</p> <p>(27 February 2009)</p>
4/12 3 ✓	<p>Amendment to Annex 3 regarding the requirement to provide volcanic ash advisories both in alphanumeric and graphical format</p> <p>That,</p> <p>a) the proposal to amend Annex 3 given in Appendix C to the report be consolidated with other elements of draft Amendment 75 to Annex 3; and</p> <p>b) the Secretariat amend the guidance material included in Doc 9766, <i>Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List</i> accordingly.</p>	<p>ICAO</p> <p>Included in draft Amendment 75</p> <p>(30 October 2008)</p> <p>Prepare and issue guidance material</p> <p>(31 October 2010)</p>
4/13 3 ✓	<p>Amendment to Annex 3 regarding the possibility of issuance of volcanic ash advisories without forecast in case of first advisory</p> <p>That,</p> <p>a) the proposal to amend Annex 3, as given in Appendix C, be included with other elements of draft Amendment 75 to Annex 3; and</p> <p>b) the Secretariat, in coordination with VAACs, prepare appropriate guidance in case of first advisory.</p>	<p>ICAO</p> <p>Included in draft Amendment 75</p> <p>(30 October 2008)</p> <p>Prepare guidance material for inclusion in Doc 9766</p> <p>(31 October 2010)</p>

No. and deliverable		Title/Action	Follow-up action (target/completion date in brackets)
4/14	2	<p>Volcanic ash advisory bulletin headers</p> <p>That, the Secretariat include in Doc 9766, <i>Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List</i> the list of WMO bulletin headers being used by each VAAC for the volcanic ash advisories.</p>	<p>ICAO</p> <p>WMO bulletin headers included in Doc 9766</p> <p>(30 April 2009)</p>
4/15	3	<p>Amendment to Annex 3 of model VAG and related example of alphanumeric volcanic ash advisory</p> <p>That, as part of Amendment 75 to Annex 3,</p> <p>a) WMO be invited to replace the Model VAG in Appendix 1 to Annex 3 with the example given in Appendix F to this report; and</p> <p>b) ICAO replace Example A2-1 of the advisory message for volcanic ash in Appendix 2 to Annex 3 with the example given in Appendix C to this report.</p>	<p>ICAO</p> <p>Draft Model VAG forwarded to WMO</p> <p>(24 October 2008)</p> <p>Included in draft Amendment 75</p> <p>(30 October 2008)</p>
4/16	3	<p>Review of draft amendments related to model charts concerning volcanic ash included in Appendix 1 to Annex 3</p> <p>That, the IAVWOPSG Member of WMO, in coordination with the Secretariat, review the processing of draft amendments to Appendix 1 to Annex 3 related to volcanic ash to ensure an adequate review by WMO CAeM Members.</p>	<p>WMO and ICAO</p> <p>The processing of draft amendments to Appendix 1 reviewed</p> <p>(5 December 2008)</p>
4/17	2	<p>Use of the term “observation”</p> <p>That the IAVWOPSG Members from Australia, Canada (Rapporteur) and the United Kingdom, in coordination with the VAACs,</p> <p>a) develop a proposal for replacing the term “observation” used in Table A2-1 of Annex 3 with a more appropriate term; and</p> <p>b) report back to the IAVWOPSG/5 Meeting.</p>	<p>Australia, Canada (Rapporteur), UK and VAACs</p> <p>Develop proposal and prepare progress report</p> <p>(30 October 2009)</p>
4/18	3	<p>SIGMET guidance material</p> <p>That, an ad-hoc working group consisting of Members from Australia (Rapporteur), France, United Kingdom, United States, and IATA, be tasked to develop 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 SIGMET cancellation.</p> <p><i>Note. – Annex 3 may have to be subsequently amended.</i></p>	<p>Australia (Rapporteur), France, UK, US and IATA</p> <p>Develop guidance material</p> <p>(30 October 2009)</p>
4/19	3	<p>Depiction of ash movement in the graphical volcanic ash SIGMET</p> <p>That, WMO be invited to replace the Model SVA in Appendix 1 to Annex 3 with the example given in Appendix G to this report.</p>	<p>ICAO</p> <p>Draft Model VAG forwarded to WMO</p> <p>(24 October 2008)</p>

No. and deliverable		Title/Action	Follow-up action (target/completion date in brackets)
4/20	2	<p>Recommended practice for “gradual” advisory cessation</p> <p>That, the Secretariat include the following guidance in Section 4.5.1 of Doc 9766, <i>Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List</i>:</p> <p>“In the event of a significant, long-lived volcanic eruption cloud no longer being identifiable on satellite imagery, the VAAC may choose to use the following method of gradual advisory cessation:</p> <p>a) extrapolate forecast ash boundaries such that the previous 6, 12 and 18 hours forecasts become the current analysis position, 6 and 12 hour forecasts respectively, with no ash boundary specified for the 18 hour forecast; and</p> <p>b) unless remote sensing or pilot reports suggest there has been an error in these forecasts, continue extrapolating forecast boundaries, reducing the outlook period by 6 hours at each issue.”</p>	<p>ICAO</p> <p>Guidance included in Doc 9766</p> <p>(27 February 2009)</p>
4/21	4	<p>Guidance to pilots on the detection of sulphur dioxide gas on the flight deck</p> <p>That,</p> <p>a) the Secretary include the guidance on practices that can be followed by pilots on the flight deck regarding the detection of sulphur dioxide gas as given in Appendix H to this report for inclusion in Doc 9766, <i>Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List</i>;</p> <p><i>Note. – A qualifying statement will be added to indicate that this is an example of a practice and does not necessarily reflect other practices that are used by operators.</i></p> <p>b) the ad-hoc working group consisting of the IAVWOPSG Member of Australia, Canada, the United States, IATA and IUGG (Rapporteur),</p> <p>1) continue the review of the adequacy of the information in Doc 9766, <i>Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List</i> and Doc 9691, <i>Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds</i> regarding the description and background information on SO₂ and related volcanic gases and aerosols in the atmosphere; and</p> <p>2) report back to the IAVWOPSG/5 Meeting.</p>	<p>ICAO</p> <p>Guidance included in Doc 9766</p> <p>(14 May 2009)</p> <p>Australia, Canada, US, IATA and IUGG (Rapporteur)</p> <p>Review the description and background information of SO₂ in Doc 9766 and Doc 9691; prepare a progress report</p> <p>(30 October 2009)</p>

No. and deliverable		Title/Action	Follow-up action (target/completion date in brackets)
4/22	4	<p>Change to volcanic activity report to include the reporting of SO2</p> <p>That,</p> <p>a) the volcanic activity report in Appendix 1 to PANS-ATM (Doc 4444), <i>Procedures for Air Navigation Services — Air Traffic Management</i> be modified to include the reporting of SO2 as shown in Appendix I to this report;</p> <p>b) the VAAC Darwin be invited to</p> <ol style="list-style-type: none"> 1) establish, on a trial basis, a facility for the global collection of the VAR forms for forwarding to the Smithsonian and the relevant VAACs, and 2) report back to the IAVWOPSG/5 Meeting; and <p>c) IATA and IFALPA be invited to inform their members on the availability of the above facility and promote the full use of the VAR form including its dissemination to the VAAC Darwin.</p>	<p>ICAO</p> <p>Included in draft amendment to the to PANS-ATM (Doc 4444)</p> <p>(30 October 2008)</p> <p>VAAC Darwin</p> <p>Collect VAR forms and prepare a progress report</p> <p>(30 October 2009)</p> <p>ICAO</p> <p>Sent a letter to IATA and IFALPA</p> <p>(12 December 2008)</p>
4/23	6	<p>Invitation to WMO to reconstitute training sub-group for volcanic ash</p> <p>That, WMO be invited to:</p> <p>a) reconstitute a training sub-group as agreed at the Fourth International Workshop on Volcanic Ash, and</p> <p>b) prepare a report for the IAVWOPSG/5 Meeting.</p>	<p>ICAO</p> <p>Sent a letter</p> <p>(12 December 2008)</p> <p>WMO</p> <p>Prepare a progress report</p> <p>(30 October 2009)</p>
4/24	6	<p>Issue of “safe” concentration of volcanic ash</p> <p>That,</p> <p>a) WMO be invited to further explore the issue of measuring the concentration of volcanic ash from the scientific viewpoint;</p> <p>b) the IAVWOPSG Members from IATA and IFALPA, explore the issues related to “safe” concentration of volcanic ash from an industry viewpoint, including the possibility to invite the manufacturers to IAVWOPSG meetings; and</p> <p>c) the IAVWOPSG Members from IATA, IFALPA and WMO prepare reports in time for consideration by the IAVWOPSG/5 Meeting.</p>	<p>ICAO</p> <p>Sent a letter</p> <p>(12 December 2008)</p> <p>IATA, IFALPA and WMO</p> <p>Explore “safe” concentration of ash; Prepare a progress report</p> <p>(30 October 2009)</p>
4/25	6	<p>Evaluation of the results of infrasound projects</p> <p>That, VAACs Montreal, Toulouse and Washington :</p> <p>a) continue to assess the feasibility of using infrasound to automatically identify ash producing volcanic eruptions; and</p> <p>b) prepare a report in time for consideration by the IAVWOPSG/5 Meeting.</p>	<p>VAACs Montreal, Toulouse and Washington</p> <p>Assess feasibility; Prepare a progress report</p> <p>(30 October 2009)</p>

No. and deliverable	Title/Action	Follow-up action (target/completion date in brackets)
4/26	<p>7</p> <p>Guidance on reporting of volcanic ash deposition at aerodromes</p> <p>That, the IAVWOPSG Member of the United States, in collaboration with the IAVWOPSG Members of Argentina and IUGG, develop draft guidance for inclusion in Doc 9766, <i>Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List</i> on how to report ash deposition at an aerodrome for review by the IAVWOPSG/5 Meeting.</p> <p><i>Note.— Draft guidance will include the format (a sample NOTAM), and frequency of updates of NOTAM related to the volcanic ash deposition at the aerodrome.</i></p>	<p>Argentina, United States and IUGG</p> <p>Develop draft guidance; Prepare a progress report</p> <p>(30 October 2009)</p>
4/27	<p>8</p> <p>Research on eruption source parameters (ESP)</p> <p>That,</p> <p>a) the IAVWOPSG Members from Canada and IUGG:</p> <p>1) distribute the classification matrix of eruption types with ESP values and the preliminary spreadsheet of volcanoes of the world with default eruption type to the IAVWOPSG members, as well as to other scientific experts, for review and comment; and</p> <p>2) provide the final product to the Secretariat for inclusion in the ICAO Doc 9766, <i>Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List</i>, by the IAVWOPSG/5 Meeting; and</p> <p>b) ICAO express recognition to IUGG and project partners for completing the ESP Project and producing the on-line tools for use by the VAACs.</p>	<p>Canada and IUGG</p> <p>Classification matrix distributed (27 February 2009)</p> <p>Provided the final product for inclusion in Doc 9766 (21 July 2009)</p> <p>ICAO Sent a letter to IUGG (12 December 2008)</p>
4/28	<p>9</p> <p>Draft Nuclear Emergency Message Template</p> <p>That, VAAC London,</p> <p>a) implement the Nuclear Emergency Message Template for informing ACCs about the release of radioactive material as given in Appendix J to this report; and</p> <p>b) transmit the Nuclear Emergency Message to adjacent ACCs to which the release took place and subsequently made available, subject to relevant international agreement, through the AFS.</p>	<p>United Kingdom</p> <p>Implement the template; transmit info, if necessary, to adjacent ACCs</p> <p>(31 October 2010)</p>
4/29	<p>11</p> <p>Development of space weather training material</p> <p>That, the IAVWOPSG Members from Australia, Canada, New Zealand, the United States (Rapporteur) and WMO be tasked to:</p> <p>a) coordinate the development of training material on space weather with emphasis on the description of the impact of space weather on international air navigation; and</p> <p>b) prepare a report in time for consideration by the IAVWOPSG/5 Meeting.</p>	<p>Australia, Canada, New Zealand, US (Rapporteur) and WMO</p> <p>Coordinate the development of training material; Prepare a progress report</p> <p>(30 October 2009)</p>