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HANDBOOK ON THE INTERNATIONAL AIRWAYS VOLCANO WATCH (IAVW)

OPERATIONAL PROCEDURES AND CONTACT LIST

SECOND EDITION — 2004

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INTERNATIONAL CIVIL AVIATION ORGANIZATION

DOCUMENT CHANGE RECORD ON THE WEB

2nd EDITION

DATE	SECTION PAGES AFFECTED
29.10.04	Appendix on operational procedures for the coordination and transfer of responsibility between VAACs for volcanic ash evens
25.10.04	Part 4: AFTN address for ASHTAMs/NOTAMs
14.9.04	Part 3: VAAC Montreal
1.9.04	Part 2: VAAC Toulouse
16.8.04	Part 2: VAACs Anchorage, London and Toulouse
29.7.04	Part 2: VAACs Buenos Aires, Tokyo and Washington; Part 3, 3.3; Part 5: Canada, Russian Federation
19.4.04	Parts 3 and 4: VAACs London and Tokyo
3.3.04	Part 2: VAAC Toulouse; Part 5:Argentina
22.1.04	Parts 3 and 4: VAAC Tokyo

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Part 1

VOLCANOES ACTIVE DURING THE LAST 10 000 YEARS

VOLCANOES OF THE WORLD

Volcanoes with Eruptions During the Last 10,000 Years
Prepared in 1995 by Roland Pool, Smithsonian Institution,
Global Volcanism Program, NHB MRC 119, Washington, DC 20560

3000 0 3000 Km

Mercator Projection

A 101x147 cm map, This Dynamic Planet, showing these volcanoes, earthquake epicenters, impact craters, plus tectonic and physiographic data is available from: US Geological Survey, Map Distribution Center, Box 25256, Federal Center, Denver, CO 800225 (800) USA-MAPS

Part 2

VOLCANIC ASH ADVISORY CENTRES (VAACs) DESIGNATED BY ICAO AND THEIR RESPONSIBILITIES

(Note.— VAACs maintain a 24-hour watch)

Volcanic ash advisory centre	Area of responsibility	MWOs to which advisory information is to be sent to assist in the issuance of SIGMETs	ACCs to assist in the issuance of NOTAMs/ASHTAMs and flight information
Anchorage (United States)	Anchorage Oceanic Anchorage Continental Anchorage Arctic and west to E150, north of N60	Anadyr Anchorage Chaybukha Chersky Chokurdakh Kelowna Mys Shmidta Pevek Seymchan Tiksi Tokyo Zyryanka	Anadyr Anchorage Boston Chaybukha Chersky Chicago Chokurdakh Cleveland Denver Fairbanks Minneapolis Mys Shmidta New York Pevek Salt Lake Seattle Seymchan Tiksi Tokyo Washington Zyryanka

Volcanic ash advisory centre	Area of responsibility	MWOs to which advisory information is to be sent to assist in the issuance of SIGMETs	ACCs to assist in the issuance of NOTAMs/ASHTAMs and flight information
Buenos Aires (Argentina)	South of S10 between W10 and W90	Amazónico Antofagasta Asunción Brasilia Buenos Aires (Aeroparque) Comodoro Rivadavia Córdoba Curitiba La Paz Lima-Callao Mendoza Montevideo Puerto Montt Punta Arenas Recife Resistencia Santiago	Atlántico Amazónico Antofagasta Asunción Brasilia Buenos Aires (Ezeiza) Comodoro Rivadavia Córdoba Curitiba La Paz Lima Mendoza Montevideo Puerto Montt Punta Arenas Recife Resistencia Santiago
Darwin (Australia)	Southward from N10 and from E100 to E160, and the Perth FIR between E100 and E75, Colombo FIR, and those parts of the Kuala Lumpur, Bangkok, Chennai, Yangon and Calcutta FIRs lying within N10 E100 to N20 E100 to N20 E82 to N10 E82 to N6 E78 to S2 E78 to S6 E75	Adelaide Bangkok Biak Brisbane Chennai Darwin Denpasar Gia Lam Guam Hobart Honiara Jakarta Kota Kinabalu Kuala Lumpur Manila Melbourne Perth Port Moresby Singapore Sydney Townsville Ujung Pandang Yangon	Adelaide Bali Bangkok Brisbane Cairns Chennai Darwin Ho-Chi-Minh Honiara Jakarta Kota Kinabalu Kuala Lumpur Manila Medan Melbourne Perth Port Moresby Singapore Sydney Townsville Ujung Pandang Washington

Volcanic ash advisory centre	Area of responsibility	MWOs to which advisory information is to be sent to assist in the issuance of SIGMETs	ACCs to assist in the issuance of NOTAMs/ASHTAMs and flight information
London (United Kingdom)	Bødo Oceanic, Reykjavik, Shanwick Oceanic, London, Scottish, Shannon	Exeter Gander Kelowna Lisboa London Reykjavik Shannon Tromsø	Amsterdam Bodø Bordeaux Bremen Brest Brussels København London Oslo Paris Reykjavik Rovaniemi Scottish Shannon Stravanger Trondheim
Montreal (Canada)	Gander Oceanic Canadian Continental FIRs (including the Arctic Ocean) Reykjavik Søndre Strømfjord	Gander Kelowna Reykjavik Søndre Strømfjord	Edmonton Gander Moncton Montreal Reykjavik Søndre Strømfjord Toronto Vancouver Winnipeg

Volcanic ash advisory centre	Area of responsibility	MWOs to which advisory information is to be sent to assist in the issuance of SIGMETs	ACCs to assist in the issuance of NOTAMs/ASHTAMs and flight information
Tokyo (Japan)	N60 to N10 – and from E90 to Oakland Oceanic and Anchorage Oceanic and Continental FIR boundaries	Bangkok Blagoveshchensk Beijing Bratsk Chita Chulman Gia Lam Guangzhou Hong Kong Irkutsk Khabarovsky Kirensk Kunming Lanzhou Magadan Magdagachi Manila Naha Nikolayevsk-na-Amure Okha Okhotsk Petropavlovsk-Kamchatsky Phnom-Penh Pyongyang Seoul Shanghai Shenyang	Bangkok Blagoveshchensk Beijing Bratsk Changsha Chengdu Chingqing Chita Chulman Dalian Fukuoka Guangzhou Guilin Haikou Hanoi Harbin Hefei Ho-Chi-Minh Hohhot Hong Kong Irkutsk Jinan Khabarovsk Kirensk Kunming Lanzhou Manila Magadan Magdagachi

Volcanic ash advisory centre	Area of responsibility	MWOs to which advisory information is to be sent to assist in the issuance of SIGMETs	ACCs to assist in the issuance of NOTAMs/ASHTAMs and flight information
		Taibei Tokyo Ulan-Bator Urumqi Vientiane Vladivostok Wuhan Yuznosakhalinsk	Naha Nanchang Nanjing Nanning Nikolayevsk-na-Amure Okha Okhotsk Osaka Petropavlovsk-Kamchatsky Phnom-Penh Pyongyang Qingdao Sanya Shanghai Shenyang Taegu Taibei Taiyuan Tokyo Ulan-Bator Urumqi Vladivostok Washington Wuhan Xiamen Xi'an Yuzno-Sakhalinsk

Volcanic ash advisory centre	Area of responsibility	MWOs to which advisory information is to be sent to assist in the issuance of SIGMETs	ACCs to assist in the issuance of NOTAMs/ASHTAMs and flight information
Toulouse (France)	Santa Maria Oceanic, AFI Region to S45, EUR Region west of E60 (except for London, Scottish and Shannon FIRs) and MID Region: south of N71, west of E60	Abu Dhabi Accra Addis Ababa Aix Aktau Aktyubinsk Amderma Amilcar Cabral Amman Ankara Antananarivo Arkhangelsk Askhabad Astrakan Athinai Atyrau Baghdad Bahrain Baku Barcelona Beirut Beograd Berlin Bergen Beryozovo Bishkek Borispil Bordeaux Bratislava Brazzaville Brindisi Brussels Bucuresti Budapest Bujumbura Cairo Chelyabinsk Chisinau Dakar	Addis Ababa Aktau Aktyubinsk Amderma Amman Amsterdam Ankara Antananarivo Aralsk Arkhangelsk Askabad Asmara Astrakan Athinai Atyrau Baghdad Bahrain Baku Barcelona Beirut Beograd Berlin Beryozovo Bishkek Bødo Bordeaux Bratislava Bremen Brest Brindisi Brussels Bucuresti Budapest Cairo Canarias Chelyabinsk Chisinau Dakar Damascus

Volcanic ash advisory centre	Area of responsibility	MWOs to which advisory information is to be sent to assist in the issuance of SIGMETs	ACCs to assist in the issuance of NOTAMs/ASHTAMs and flight information
		Damascus	Dar-es-Salaam
		Dar-es-Salaam	Douala
		De Bilt	Dushambe
		Dushambe	Dusseldorf
		Essen	Emirates
		Gran Canaria	Frankfurt
		Hamburg	Geneva
		Helsinki	Genoa
		Istanbul	Istanbul
		Jeddah	Jeddah
		Kano	Kabul
		Kaliningrad	Kaliningrad
		Kazan	Kano
		Kharkiv	Kazan
		Khartoum	Kharkiv
		Kigali	Kigali
		Kinshasa	Kinshasa
		Kirov	Kirov
		København	København
		Kotlas	Kotlas
		Kuwait	Kuwait
		Kyzylorda	Kyiv
		Larnaca	L'viv
		Las Palmas	Lisboa
		Lisboa	London
		Ljubjana	Madrid
		L'viv	Malmo
		Madrid	Malta
		Malta	Marseille
		Milan	Mauritius
		Minsk	Milan
		Monrovia	Minsk
		Moscow	Moscow
		München	Munchen
		Murmansk	Murmansk
		Muscat	Muscat
		N'Djamena	Nairobi
		Nairobi	Niamey
		Niamey	Nicosia
		Nukus	Nukus
		Odessa	Odessa
		Offenback	Orenburg
		Ohrid	Oslo
		Orenburg	Paris
		Oslo	Pechora
		Palma de Mallorca	Penza
		Paris	Perm
		Pechora	Petrozsavodsk
		Penza	Prague
		Perm	

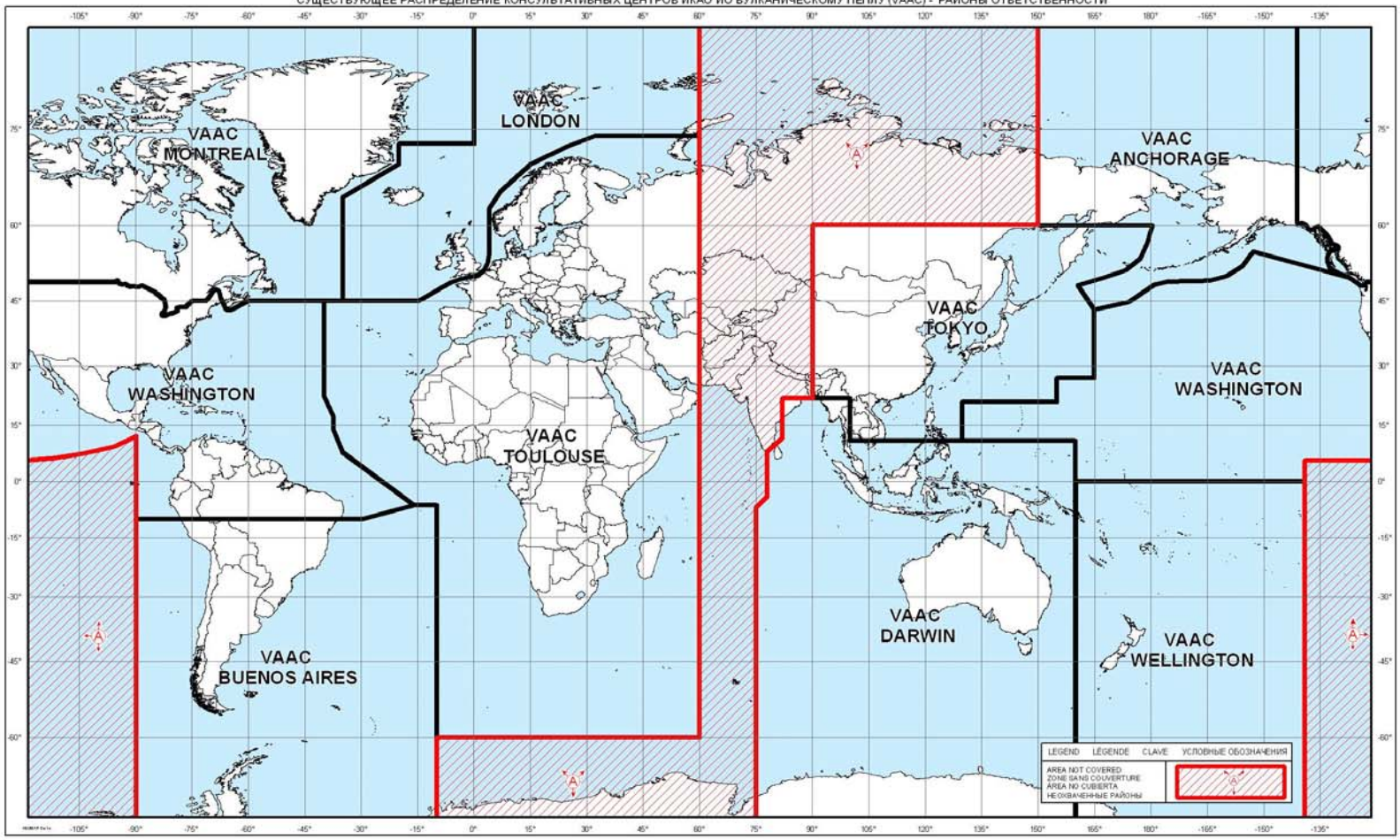
Volcanic ash advisory centre	Area of responsibility	MWOs to which advisory information is to be sent to assist in the issuance of SIGMETs	ACCs to assist in the issuance of NOTAMs/ASHTAMs and flight information
		Petrozavodsk Praha Rennes Riga Roma Rostov-na-donu Rovaniemi Samara Sana'a Sankt-Petersburg Simferopol Skopje Sofia Stockholm Strasbourg Syktyvkar Tallinn Tiblisi Tehran Tel Aviv Tirana Toulouse Tromso Ufa Uralsk Varna Velikie Luki Vilnius Volgograd Vologda Vorkuta Yekaterinburg Yerevan Warszava Wien Zagreb Zurich	Reims Riga Rome Rostov-na-donu Rovaniemi Saint Denis Sal Oceanic Samara Sana'a Sankt-Petersburg Sarajevo Simferopol Skopje Sofia Stavanger Sweden Syktyvkar Tallinn Tampere Tiblisi Tehran Tel Aviv Tirana Trondheim Ufa Uralsk Varna Velikie Luki Vilnius Volgograd Vologda Vorkuta Warszava Wien Yekaterinburg Yerevan Zagreb Zurich

Volcanic ash advisory centre	Area of responsibility	MWOs to which advisory information is to be sent to assist in the issuance of SIGMETs	ACCs to assist in the issuance of NOTAMs/ASHTAMs and flight information
Washington (United States)	New York Oceanic, Oakland Oceanic and United States Continental FIRs, CAR Region, SAM Region, north of S10	Amazónico Bogotá Caracas Cayenne Darwin Gander Georgetown Guam Guayaquil Habana Honolulu Kansas City Kelowna Kingston Lima-Callao México Nassau Panamá Port-au-Prince Port-of-Spain Recife San Francisco San Juan, Puerto Rico Santo Domingo Tegucigalpa Tokyo Willemstad Zandery	Albuquerque Amazónico Atlanta Barranquilla Bogotá Boston Chicago Cleveland Curaçao Denver Fort Worth Georgetown Guayaquil Habana Honolulu Houston Indianapolis Jacksonville Kansas City Kingston Lima Los Angeles Maiquetía Mazatlán Memphis Mérida México Miami Minneapolis Monterrey Nassau New York Oakland Panamá Paramaribo Piarco Port-au-Prince Puerto Rico Recife Rochambeau Salt Lake City San Juan Santo Domingo Seattle Tegucigalpa Washington

Volcanic ash advisory centre	Area of responsibility	MWOs to which advisory information is to be sent to assist in the issuance of SIGMETs	ACCs to assist in the issuance of NOTAMs/ASHTAMs and flight information
Wellington[1] (New Zealand)	Southward from the Equator and from E160 to W140	Darwin Fiji Honiara Honolulu Nauru Tahiti Wellington	Auckland Brisbane Christchurch Darwin Honolulu Nadi New Zealand Tahiti Washington

1. New Zealand is currently providing the advisory service from the equator up to S60.

CURRENT STATUS OF ICAO VOLCANIC ASH ADVISORY CENTRES (VAAC) - AREAS OF RESPONSIBILITY
SITUATION ACTUELLE DES CENTRES OACI D'AVIS DE CENDRES VOLCANIQUES (VAAC) - ZONES DE RESPONSABILITÉ
ESTADO ACTUAL DE LOS CENTROS DE AVISOS DE CENIZAS VOLCÁNICAS (VAAC) DE LA OACI - ÁREAS DE RESPONSABILIDAD
СУЩЕСТВУЮЩЕЕ РАСПРЕДЕЛЕНИЕ КОНСУЛЬТАТИВНЫХ ЦЕНТРОВ ИКАО ИО ВУЛКАНИЧЕСКОМУ ПЕПЛУ (VAAC) - РАЙОНЫ ОТВЕТСТВЕННОСТИ



Part 3
USEFUL WEB SITES

Note.— These addresses are included for back-up information only, and it should be clearly understood that operational reliance on volcanic ash information obtained from web sites cannot be assured.

3.1 VOLCANIC ASH ADVISORY CENTRES

Anchorage:	http://aawu.arh.noaa.gov/vaac.php
Buenos Aires:	http://www.ssd.noaa.gov/VAAC/OTH/AG/messages.html
Darwin:	http://www.bom.gov.au/info/vaac
London:	http://www.metoffice.com/aviation/vaac/index.html
	http://www.ssd.noaa.gov/VAAC/OTH/UK/messages.html
	http://www.metoffice.com
Montreal:	http://www.msc-smc.ec.gc.ca/cmc/eer/VAAC/index_e.html
	http://weather.ec.gc.ca/eer/index_e.html
Tokyo:	http://www.jma.go.jp/JMA_HP/jma/jma-eng/jma-center/vaac/index.htm
	http://www.ssd.noaa.gov/VAAC/OTH/JP/messages.html
Toulouse:	http://www.meteo.fr/aeroweb/info/vaac
Washington:	http://www.ssd.noaa.gov/VAAC/washington.html
Wellington:	http://www.ssd.noaa.gov/VAAC/OTH/NZ/messages.html
	http://www.metservice.com

Note.— The homepage of each VAAC normally contains hyperlinks to the homepages of the other VAACs.

3.2 WORLDWIDE WEEKLY VOLCANIC ACTIVITY REPORTS

Smithsonian Institution:	http://www.volcano.si.edu/gvp
United States Geological Survey:	http://volcanoes.usgs.gov

Note.— These sites provide excellent up-to-date reports on active volcanoes.

3.3 OTHER SITES

Alaska Volcano Observatory:	http://www.avo.alaska.edu
Canadian Meteorological Centre:	http://www.msc-smc.ec.gc.ca/cmc/index_e.html
Caribbean Disaster Emergency Response Agency:	http://www.cdera.org
Global Volcanism Network Bulletin:	http://www.nmnh.si.edu/gvp/ http://www.osei.noaa.gov/TOMS/ http://toms.gsfc.nasa.gov http://www.geo.mtu.edu/~boris/ETNA_news.html
Institute of Volcanic Geology and Geochemistry FED RAS	http://www.kcs.iks.ru/ivgig/index.html
Kamchatkan Volcanic Eruption Response Team (KVERT)	http://www.kcs.iks.ru/ivgig/kvert/index.html http://geopubs.wr.usgs.gov/fact-sheet/fs064-02/
Current information release from KVERT	http://www.avo.alaska.edu/avo4/updates/kvertweekly.htm
Michigan Technical University:	http://www.geo.mtu.edu/volcanoes
Puff Tracking Model	http://puff.images.alaska.edu/index.html
VAFTAD:	http://www.ssd.noaa.gov/VAAC/vaftad.html
WAFS Internet:	http://weather.noaa.gov/fax/wafsfax.shtml
World Organization of Volcano Observatories (WOVO):	http://www.wovo.org http://www.wovo.org/dir-contents.htm (contacts)

Note.— Useful background information on volcanic ash and its impact on aviation may be found in the Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds *(Doc 9691). ICAO documents are available from the Document Sales Unit at sales_unit@icao.int.*

Part 4

INTERNATIONAL AIRWAYS VOLCANO WATCH

OPERATIONAL PROCEDURES FOR THE DISSEMINATION OF INFORMATION ON VOLCANIC ERUPTIONS AND ASSOCIATED VOLCANIC ASH CLOUDS IN AREAS WHICH COULD AFFECT ROUTES USED BY INTERNATIONAL FLIGHTS, AND NECESSARY PRE-ERUPTION ARRANGEMENTS

4.1. PRE-ERUPTION PROCEDURES

4.1.1 In order to permit efficient application of the measures noted in 4.2, 4.3, 4.4 and 4.5, States responsible for flight information regions (FIRs) in which there are active or potentially active volcanoes in proximity to routes used by international flights should make arrangements to ensure that:

a) information on increasing volcanic activity, a volcanic eruption or volcanic ash cloud in areas which could affect routes used by international flights, available from one or more observing sources, such as vulcanological, seismological, geological, meteorological, or the police/military networks and domestic aviation, is passed **immediately** to the area control centre/flight information centre (ACC/FIC) and the meteorological watch office (MWO) concerned;

b) appropriate channels of communication are established between such sources of observation (especially vulcanological observing stations) and the nearest ACC/FIC and MWO to ensure that, in the event of an eruption, the information reaches the ACC/FIC/MWO as speedily as possible;

c) access to information from available geostationary and polar-orbiting weather satellites and other sources, such as volcanic ash advisory centres (VAACs), is arranged through the national meteorological authority concerned in order to obtain, as far as practicable, information regarding the extent and trajectory of volcanic ash clouds (see 4.4.1 a));

d) access to vulcanological advice is made available to the ACC/FIC and MWO and, in the Provider States concerned, to the VAAC, including 24-hour telephone contact numbers at which a vulcanologist can be contacted in an emergency;

Note.— A convenient forum to explore ways and means to implement the foregoing measures is the National Disaster Committee or any similar consultative body.

e) the State international NOTAM office personnel are familiar with the issuance of ASHTAMs[1] (or NOTAMs for volcanic ash);

f) information, preferably supplemented by charts, concerning volcanoes in the FIRs for which the State is responsible should be included in the State aeronautical information publication in accordance with Annex 15, Appendix 1, Section ENR 5.3.1; and

g) ATM contingency arrangements in respect of volcanic ash are made and promulgated, as necessary, for air routes crossing FIRs for which the State is responsible, in coordination with adjacent FIRs.

4.1.2 Contracting States shall promulgate a requirement for pilots to make and transmit a special aircraft observation, in accordance with 5.5.1 g) and h) of Annex 3, in the event that pre-eruption volcanic activity or a volcanic eruption is observed or a cloud of volcanic ash is encountered or observed which may affect the safety of other aircraft operations, and to record a special air-report in accordance with 5.8 of Annex 3. In addition, the International Air Transport Association (IATA), the International Federation of Air Line Pilots' Associations (IFALPA) and the International Council of Aircraft Owner and Pilot Associations (IAOPA) should bring this requirement to the attention of pilots.

Note.— Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

4.1.3 It is essential that the foregoing arrangements be made in every State concerned and their efficacy continually maintained. In the case of volcanic ash, the hazard to jet transport aircraft is greatest within the first few hours following an eruption; hence speed of notification between all links in the chain of communication is critical. States may wish to consider drawing up letters of agreement between the parties involved, in particular, the civil aviation and meteorological authorities and the vulcanological agency, to record the agreed responsibilities of each party.

4.2 ACTION TO BE TAKEN BY THE ACC IN THE EVENT OF A VOLCANIC ERUPTION

In the event of significant pre-eruption volcanic activity, a volcanic eruption occurring or a volcanic ash cloud being reported in areas which could affect routes

1. The ASTAM is a special series NOTAM specifically for volcanic activity.

used by international flights, the ACC/FIC responsible for the FIR concerned, on receiving information of the occurrence, should take the following actions:

a) Pass this information **immediately** to aircraft in flight which could be affected by the volcanic ash cloud and advise ACCs in relevant adjacent FIRs. Issue an ASHTAM or a NOTAM through the State International Notam Office (NOF), in accordance with Annex 15, Chapter 5, giving details of the pre-eruption activity, volcanic eruption and ash cloud, including the name and geographical coordinates of the volcano, the date and time of the eruption, the flight levels and routes or portions of routes which could be affected and, as necessary, routes temporarily closed to air traffic. Include in the address list for ASHTAMs or NOTAMs concerning volcanic activity the associated MWO (see Part 2 of this document), all VAACs, the World Area Forecast Centre (WAFC) London at EGZZVANW and the WAFC Washington at KWBCYMYX.

*Note 1.— In issuing an ASHTAM or a NOTAM concerning significant pre-eruption volcanic activity, or for volcanic eruptions **not** producing ash plumes, it is recommended that the ASHTAM or NOTAM text include the following actual wording, as appropriate:*

"INCREASED VOLCANIC ACTIVITY REPORTED FOR VOLCANO (NAME AND LAT/LONG) AIRCRAFT ADVISED TO EXERCISE CAUTION UNTIL FURTHER NOTICE AND MAINTAIN WATCH FOR ASHTAM/NOTAM/ SIGMET FOR AREA".

or

"VOLCANO (NAME AND LAT/LONG) ERUPTED (DATE/TIME UTC) BUT NO ASH PLUME REPORTED, AIRCRAFT ADVISED TO AVOID FLYING WITHIN ... KM OF THE VOLCANO UNTIL FURTHER NOTICE, MAINTAIN WATCH FOR ASHTAM/NOTAM/SIGMET FOR AREA".

Use of such language in an ASHTAM or a NOTAM ensures that large volumes of airspace are not rendered unavailable to aircraft unnecessarily until such time as a volcanic ash plume/cloud is actually reported, or observed from satellite data.

Note 2.— In order to ensure speedy transmission of initial information to aircraft, the first ASHTAM or NOTAM issued may simply contain information that an eruption and/or ash cloud has been reported and the date/time and location. It is not necessary to await further detailed information; this may be included in subsequent ASHTAMs or NOTAMs as it becomes available.

Note 3.— A volcano level of alert colour code has been developed for aviation which may be used by some vulcanological agencies to report

volcanic activity information to aviation. In those States where the colour code has been introduced by the vulcanological agency, it is useful to include the reported colour code in ASHTAMs or NOTAMs issued for volcanic activity. The aviation volcano level of alert colour code is:

Level of alert colour code	Status of activity of volcano
RED ALERT	VOLCANIC ERUPTION IN PROGRESS. ASH PLUME/CLOUD REPORTED ABOVE FL 250. OR VOLCANO DANGEROUS, ERUPTION LIKELY, WITH ASH PLUME/CLOUD EXPECTED TO RISE ABOVE FL 250.
ORANGE ALERT	VOLCANIC ERUPTION IN PROGRESS BUT ASH PLUME/CLOUD NOT REACHING NOR EXPECTED TO REACH FL 250. OR VOLCANO DANGEROUS, ERUPTION LIKELY BUT ASH PLUME/CLOUD NOT EXPECTED TO REACH FL 250.
YELLOW ALERT*	VOLCANO KNOWN TO BE ACTIVE FROM TIME TO TIME AND VOLCANIC ACTIVITY HAS RECENTLY INCREASED SIGNIFICANTLY, VOLCANO NOT CURRENTLY CONSIDERED DANGEROUS BUT CAUTION SHOULD BE EXERCISED. OR (AFTER AN ERUPTION, I.E. CHANGE IN ALERT TO YELLOW FROM RED OR ORANGE.) VOLCANIC ACTIVITY HAS DECREASED SIGNIFICANTLY, VOLCANO NOT CURRENTLY CONSIDERED DANGEROUS BUT CAUTION SHOULD BE EXERCISED. * The code "yellow" may be used in cases of "regular" or "quasi-permanent" volcanic eruptions that do not normally reach FL 250 and do not necessarily involve a "significant increase in volcanic activity".
GREEN ALERT	VOLCANIC ACTIVITY CONSIDERED TO HAVE CEASED AND VOLCANO REVERTED TO ITS NORMAL STATE.

The colour code for the level of alert indicating the status of activity of the volcano and any change from a previous status of activity should be provided

to the area control centre by the responsible vulcanological agency in the State concerned, e.g. "RED ALERT FOLLOWING YELLOW" OR "GREEN ALERT FOLLOWING ORANGE".

b) Activate contingency arrangements, including the implementation of alternative routes bypassing the area likely to be affected by the volcanic ash cloud, in coordination with ACCs and FICs responsible for adjacent FIRs.

c) Advise the associated MWO(s) and VAAC of the volcanic eruption and/or the existence of volcanic ash cloud (including the forwarding of all special air-reports in accordance with existing provisions in Annex 11, 4.2.3) and maintain continuous coordination with the MWO to ensure consistency in the issuance and content of ASHTAMs or NOTAMs and SIGMETs.

d) Cancel the ASHTAM or NOTAM as soon as it is considered that the volcano has reverted to its normal state and the airspace is not contaminated by volcanic ash.

4.3 ACTION TO BE TAKEN BY THE NOF IN THE EVENT OF A VOLCANIC ERUPTION

4.3.1 In the event of significant pre-eruption volcanic activity, a volcanic eruption occurring, or a volcanic ash cloud being reported in areas which could affect airspace in the FIRs of the State in which the Notam Office (NOF) is designated, the NOF should issue an ASHTAM (or a NOTAM for volcanic activity) based on information provided by the ACC responsible for the FIR concerned. The ASHTAM or NOTAM must be cancelled, in consultation with the ACC, as soon as it is considered that the airspace is not contaminated by volcanic ash. Include in the address list for ASHTAMs or NOTAMs concerning volcanic activity the associated MWO (see Part 2 of this document), all VAACs and the WAFC London at EGZZVANW and the WAFC Washington at KWBCYMYX.

4.3.2 In addition to addressing the ASHTAM (or NOTAM) to other NOFs for whom the information is of direct operational significance, the NOF should compile a separate message to be transmitted to the VAAC responsible for the FIRs concerned. This separate message should be sent by AFTN to the AFTN switching centres designated in Table 4-1, but the ASHTAM (or NOTAM) must first be encapsulated within a dummy WMO abbreviated heading. This enables the receiving AFTN or MET switching centre to forward the ASHTAM (or NOTAM) to the VAAC concerned on internal MET communications circuits.

Note.— The dummy WMO abbreviated headers to be used by the NOFs in States responsible for FIRs in which there are active volcanoes are given in Table 4-1.

These headers are standardized as far as practicable, but the correct date and time group should be inserted at the time the message is compiled.

The WMO abbreviated dummy header, which is to be used inside the usual AFTN header, is comprised of three groups as follows:

$T_1T_2A_2A_2$ii CCCC YYGGgg

For ASHTAMs and NOTAMs for volcanic ash sent from NOFs to the VAAC responsible for their area, in the WMO dummy header:

— T_1T_2 will always be "NW";

— A_1A_2 will always be the WMO State geographical designator as indicated in Table 4-1;

— ii will always be "31";

— CCCC will always be the ICAO four-letter location indicator for the originating NOF;

— YY is the date;

— GGgg is the time in whole hours and minutes.

As an example:

An ASHTAM issued by the Tegucigalpa NOF would be sent to the VAAC Washington as follows:

ZCZC
GG KWBCYMYX
170630 MHTGYNYX
NWGU31 MHTG 170630

ASHTAM

C. VOLCAN SAN CRISTOBAL.14004-02
D. 124211N0870024W
E. YELLOW ALERT
F. SFC/11000FT
G. E/SE
H. VOR/DME MGA A317 TUKOR CNL
I. VOR/DME MGA A317 TUKOR RTE AVBL. ALT RTE
MGA VOR/DME A502 BERTA GABOS A317.
VOR/DME/CAT/ABVL

J. INSTITUTO NACIONAL DE ESTUDIOS TERRITORIALES. DPTO. DE SISMOLOGÍA
K. GNE AVIATION CTN WIND 60KM/H E/SE FM VOLCANO

NNNN

A similar example, this time showing a NOTAM issued by Guayaquil NOF, would be sent to the VAAC Washington as follows, showing the four sections of the message:

1	ZCZC GG KWBCYMYX 151840 SEGUYNYX	USUAL AFTN HEADER 9 ENVELOPE
2	NWEQ31 SEGU 151840	WMO ABBREVIATED 9 HEADER
3	A0623/00/00 NOTAMN Q) SEGU/QWWXX/IV/NBO/W/000 /250/080128S 07826W A) SEGU B) 0002151830 C) 0002171830 E) SIGNIFICANT VOLCANIC ACT TUNGURAHUA VA MOV W. AWY RESTRICTIONS AND ALT RTE NOTIFIED BY ATC	ACTUAL NOTAM
4	NNNN	USUAL AFTN ENDING 9 ENVELOPE

4.4 ACTION TO BE TAKEN BY THE MWO IN THE EVENT OF A VOLCANIC ERUPTION

4.4.1 On receipt from the ACC/FIC of information concerning a volcanic eruption and/or the existence of a volcanic ash cloud, the MWO should take the following steps:

a) notify the VAAC designated to provide advice on volcanic ash trajectories for the FIR for which the State is responsible that a volcanic eruption and/or ash cloud has been reported, provide available relevant details and request advisory information on the extent and trajectory of volcanic ash. In particular, special

air-reports of pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud received by MWOs should be transmitted to their associated VAACs, to the WAFC London at EGZZVANW, the WAFC Washington at KWBCYMYX, and the Vienna International OPMET Data Bank at LOZZMMSS;

Note 1.— The area of responsibility of the VAACs and the MWOs to which volcanic ash advisory information is to be sent are given in the ICAO regional air navigation plans and in Part 2 of this document.

Note 2.— The contact numbers that the MWOs should use to notify volcanic eruptions/volcanic ash cloud to the VAAC are given in Table 4-2.

b) as soon as practicable, advise the associated ACC/FIC whether or not the volcanic ash cloud is identifiable from satellite images/data and, if possible, provide regular information based on advice received from the VAAC on the horizontal and vertical extent of the cloud and the trajectory of the cloud; and

c) issue a SIGMET message for volcanic ash for a validity period of 6 hours, to which is appended an "outlook" providing information concerning the trajectory of the ash cloud for up to 12 hours beyond the initial 6-hour validity period based on the advisory information provided by the VAAC concerned. Include in the SIGMET address all VAACs (see 4.4.1 a)), the WAFC London at EGZZVANW, the WAFC Washington at KWBCYMYX, the Vienna International OPMET Data Bank at LOZZMMSS and the Regional OPMET Data Bank(s) responsible. Maintain continuous coordination with the associated ACC/FIC to ensure consistency in the issuance and content of SIGMETs, and ASHTAMs or NOTAMs.

Note 1.— The associated ACC/FIC should automatically be on the address list for all SIGMETs issued by the MWO.

Note 2.— In order to ensure speedy transmission of initial information to aircraft, the first SIGMET issued may simply contain information that an ash cloud has been reported and the date/time and location. It is not necessary to await further detailed information, or even information for the "outlook" part of the SIGMET, before issuing the first SIGMET. Such information may be included in subsequent SIGMETs as it becomes available.

4.4.2 In the event that the MWO becomes aware of the occurrence of pre-eruption activity, a volcanic eruption or ash cloud from any source other than its associated ACC/FIC, that information should be passed **immediately** to the associated ACC/FIC. The procedures in 4.4.1 should then be followed.

4.4.3 In the event that a meteorological office becomes aware of the occurrence of pre-eruption activity, a volcanic eruption or ash cloud from any source, the information should be passed **immediately** to its associated MWO for onward transmission to the ACC/FIC.

4.5 ACTION TO BE TAKEN BY VAACs IN THE EVENT OF A VOLCANIC ERUPTION

4.5.1 On receipt of information from an ACC or MWO or any other source[2] that a volcanic eruption has been reported and/or a volcanic ash cloud has been observed in the FIR for which the MWO is responsible, the VAAC should:

a) initiate the volcanic ash computer trajectory/dispersion model in order to provide advisory information on volcanic ash trajectories to the MWOs, ACCs and, to the extent possible, to the airlines[3] concerned;

b) review satellite images/data of the area for the time of the event to ascertain whether a volcanic ash cloud is identifiable and, if so, its extent;

c) prepare and issue advisory information on the extent and forecast trajectory of the volcanic ash cloud, in message format, as shown below, and/or graphical format[4], for transmission to the MWOs, ACCs and, to the extent possible, to the airlines[3] concerned in the VAAC area of responsibility, to the WAFC London atEGZZVANW, the WAFC Washington at KWBCYMYX, the Vienna International OPMET Data Bank at LOZZMMSS and other VAACs.

The volcanic ash advisory message should contain the following information:

message type
— VOLCANIC ASH ADVISORY

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2. When initial notification of the eruption is received from a source other than an ACC/MWO, this information should be passed **immediately** by telephone to the relevant ACC and/or MWO. Thereafter, the procedures in a) to g) should be followed.

3. Advisory information from VAACs is intended to assist MWOs in the preparation of the SIGMET, especially the "outlook" portion thereof. However, in order to provide airline operators with the earliest possible advance information on volcanic ash, an AFTN address (EGLLSITV) has been provided on the SITA network to which VAACs may send their advisories for onward distribution to airline operators by SITA. SIGMETs for volcanic ash will, of course, be disseminated in accordance with the relevant regional air navigation plan OPMET exchange tables.

4. Volcanic ash advisories in graphical format will be included on the London and Washington satellite broadcasts. An example of the graphical format is given in the Appendix 1 to Annex 3 (Amendment 72 to Annex 3, applicable 1 November 2001).

issue time, date and name of issuing VAAC
— time (UTC), day/month/year; volcanic ash advisory centre issuing advisory

name of volcano and volcano reference number
— volcano name (if known) and reference number (International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI))

the State or area in which the volcano is located and the latitude/longitude
— name of State or area (e.g. oceanic) and latitude/longitude of volcano

source(s) of information
— volcano agency or special AIREP, etc.

details of eruption
— time (UTC), day/month/year of the eruption

details of ash cloud
— vertical extent in flight levels and horizontal extent in kilometres (nautical miles) and boundary of ash cloud in degrees and minutes

trajectory of ash cloud
— indication of direction and speed of movement of ash cloud at selected flight levels in broad descriptive terms

forecast movement of ash cloud
— forecast boundaries of ash cloud in degrees and minutes at selected flight levels for 6, 12 and 18 hours following time of issuance of advisory message

next advisory
— expected time of issuance of next advisory.

In order for the VAAC to initiate the monitoring of volcanic ash from satellite data and the forecast of volcanic ash trajectories, MWOs are expected to notify the relevant VAAC immediately on receipt of information that a volcanic eruption has occurred or volcanic ash has been observed in the FIR for which they are responsible in accordance with 4.4.1 a). In particular, any special air-reports of pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud, received by MWOs, should be transmitted without delay to the associated VAAC and to other addresses in accordance with 4.4.1 a);

d) monitor subsequent satellite information to assist in tracking the movement

of volcanic ash cloud;

e) continue to issue updated advisory information to MWOs, ACCs and airlines[5] concerned at least at 6-hour intervals, and preferably more frequently, until such time as it is considered that the volcanic ash cloud is no longer identifiable from satellite data, no further reports of volcanic ash are received from the area and no further eruptions of the volcano are reported;

f) maintain regular contact with other VAACs, as necessary, and the Smithsonian Institution Global Volcanism Network, in order to keep up to date on the activity status of volcanoes in the VAAC area of responsibility; and

g) in cases where volcanic ash cloud crosses the boundary between VAAC areas of responsibility, the first VAAC should retain responsibility for the issuance of advisories until such time as the handover of responsibility has been agreed between VAACs. Standardized operational procedures for the coordination and transfer of responsibility between VAACs for volcanic ash events are at the appendix.

Note.— This means that, while the volcanic ash cloud straddles the common boundary, only one VAAC will issue advisories at any one time, and these advisories must be sent by each VAAC to MWOs and ACCs in their respective areas of responsibility.

VAACs should insert a note in their "last"/"first" advisory of the message and graphical series that the "handover"/"takeover" will take place at that message/graphic number.

4.5.2 For those VAACs which have not yet implemented a computer volcanic ash dispersion forecast model, on receipt of information from an MWO, or from any other source in its area of responsibility, that a volcano has erupted and/or volcanic ash cloud has been reported from the FIR for which the MWO is responsible, the VAAC should immediately contact the VAAC Washington at the following 24-hour contact numbers:

Tel.: +1 (301) 763-8444
Fax: +1 (301) 763-8333

to request initiation of the United States Volcanic Ash Forecast Transport and

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5. Advisory information from VAACs is intended to assist MWOs in the preparation of the SIGMET, especially the "outlook" portion thereof. However, in order to provide airline operators with the earliest possible advance information on volcanic ash, an AFTN address (EGLLSITV) has been provided on the SITA network to which VAACs may send their advisories for onward distribution to airline operators by SITA. SIGMETs for volcanic ash will, of course, be disseminated in accordance with the relevant regional air navigation plan FASID Table MET 2A.

Dispersion (VAFTAD) model and the provision of the necessary trajectory forecasts. Alternatively, VAACs may interactively run a dispersion model via the Internet at the following web site: http://www.arl.noaa.gov/vaftad.html. This site also contains a number of model runs of hypothetical volcanic eruptions, generally of recently active volcanoes or those suspected to become active. If for any reason the VAAC Washington is unable to respond, or contact cannot be achieved, recourse should be made to the VAACs London, Montreal or Toulouse at the 24-hour contact numbers given in 4.4.1 to run their dispersion models.

Table 4-1. WMO abbreviated headers for NOFs to use to send ASHTAMs or NOTAMs on volcanic activity to their associated VAAC
(*4.3.2 refers)*

Argentina	NWAG31	SAEZ	(date/time group)	– sent to SABMYMYX EGZZVANW
Cameroon	NWCM31	FCCC	(date/time group)	– sent to LFPWYMYX EGZZVANW
Canada	NWCN31	CYHQ	(date/time group)	– sent to CWAOYMYU EGZZVANW
Cape Verde	NWCV31	CYAC	(date/time group)	– sent to LFPWYMYX EGZZVANW
Chile	NWCH31	SCSC	(date/time group)	– sent to SABMYMYX EGZZVANW
China	NWCI31	ZBBB	(date/time group)	– sent to RJTDYMYX EGZZVANW
Colombia	NWCO31	SKBO	(date/time group)	– sent to KWBCYMYX EGZZVANW
Comoros	NWIO31	FMCN	(date/time group)	– sent to LFPWYMYX EGZZVANW
Costa Rica	NWCS31	MHTG	(date/time group)	– sent to KWBCYMYX EGZZVANW
Democratic Republic of the Congo	NWCG31	FCCC	(date/time group)	– sent to LFPWYMYX EGZZVANW
Ecuador	NWEQ31	SEGU	(date/time group)	– sent to KWBCYMYX EGZZVANW

El Salvador	NWES31	MHTG	(date/time group)	– sent to KWBCYMYX EGZZVANW
Eritrea	NWEI31	HHAS	(date/time group)	– sent to LFPWYMYX EGZZVANW
Ethiopia	NWET31	HAAB	(date/time group)	– sent to LFPWYMYX EGZZVANW
France (Île de la Réunion)	NWRE31	FMMM	(date/time group)	– sent to LFPWYMYX EGZZVANW
French Antilles (France)	NWCA31	TTPP	(date/time group)	– sent to KWBCYMYX EGZZVANW
Greece	NWGR31	LGGG	(date/time group)	– sent to LFPWYMYX EGZZVANW
Guatemala	NWGU31	MHTG	(date/time group)	– sent to KWBCYMYX EGZZVANW
Guyana	NWGY31	SYTM	(date/time group)	– sent to KWBCYMYX EGZZVANW
Iceland	NWIL31	BIRK	(date/time group)	– sent to EGZZVANW
Indonesia	NWID31	WIIX	(date/time group)	– sent to YPDMYMYX EGZZVANW
Italy	NWIT31	LIIA	(date/time group)	– sent to LFPWYMYX EGZZVANW
Japan	NWJP31	RJAA	(date/time group)	– sent to RJTDYMYX EGZZVANW
Kenya	NWKN31	HKNA	(date/time group)	– sent to LFPWYMYX EGZZVANW
Mexico	NWMX31	MMMX	(date/time group)	– sent to KWBCYMYX EGZZVANW
Montserrat (United Kindom)	NWCA31	TTPP	(date/time group)	– sent to KWBCYMYX EGZZVANW
New Zealand	NWNZ31	NZCH	(date/time group)	– sent to NZKLYMYX EGZZVANW

Nicaragua	NWNK31	MHTG	(date/time group)	– sent to KWBCYMYX EGZZVANW
Papua New Guinea	NWAE31	AYPY	(date/time group)	– sent to YPDMYMYX EGZZVANW
Peru	NWPR31	SPIM	(date/time group)	– sent to KWBCYMYX SABMYMYX EGZZVANW
Philippines	NWPH31	R PLL	(date/time group)	– sent to RJTDYMYX YPDMYMYX EGZZVANW
Portugal	NWAZ31	LPPP	(date/time group)	– sent to LFPWYMYX EGZZVANW
Russian Federation	NWRA31	UUUU	(date/time group)	– sent to KWBCYMYX RJTDYMYX EGZZVANW
Solomon Islands	NWSO31	AGGH	(date/time group)	– sent to NZKYMYX YPDMYMYX EGZZVANW
Spain	NWCR31	LEAC	(date/time group)	– sent to LFPWYMYX EGZZVANW
Trinidad and Tobago	NWTD31	TTPP	(date/time group)	– sent to KWBCYMYX EGZZVANW
Vanuatu	NWPS31	NFOF	(date/time group)	– sent to NZKYMYX EGZZVANW

Table 4-2. VAAC contact numbers
(4.4.1 a) refers)

Note.— E-mail addresses are provided as back-up. Telephone/fax numbers should always be used first.

VAAC Anchorage

Tel.:	Operational	+1 (907) 266-5110
	Administrative	+1 (907) 266-5116
Fax:		+1 (907) 266-5188
AFTN:		via KWBCYMYX
E-mail:	Operational	W-AR-VAAC@noaa.gov
	Administrative	jeffrey.osiensky@noaa.gov
	Additional information	tom.renz@noaa.gov
		bill.alexander@noaa.gov
Homepage:		http://aawu.arh.noaa.gov/vaac.php

VAAC Buenos Aires

Tel.:	Operational	+ 54 (11) 5167 6767, Ext. 18103
		+54 (11) 5167 6705 (Tel. & Fax)
Fax:		+54 (11) 5167 6709
	Administrative	+54 (11) 5167 6767, Ext. 18235
		+54 (11) 5167 6707
AFTN:		SABMYMYX
E-mail:	Operational	bue.vaac@meteofa.mil.ar
		metaer@meteofa.mil.ar
	Administrative	gflores@meteofa.mil.ar
Homepage:		http://www.ssd.noaa.gov/VAAC/OTH/AG/messages.html

VAAC Darwin

Tel.:	Operational	+61 (8) 8920 3830 (PABX) +61 (8) 8927 9189 (direct)
	Administrative	+61 (8) 8920 3872
Fax:		+61 (8) 8920 3829
AFTN:		YPDMYMYX
E-mail:	Operational	darwin.vaac@bom.gov.au
	Administrative	darwin.vaac.admin@bom.gov.au
Homepage:		http://www.bom.gov.au/info/vaac/

VAAC London

Tel.:	Operational	+44 (0) 1392 884167
	Administrative	+44 (0) 1392 886095
Fax:	Operational	+44 (0) 1392 447372
	Administrative	+44 (0) 1392 446682
AFTN:		EGZZVANW
E-mail:	Operational	vaac@metoffice.com
	Administrative	nigel.gait@metoffice.com
Homepage:		http://www.ssd.noaa.gov/VAAC/OTH/UK/messages.html http://www.metoffice.com

VAAC Montreal

Tel.:	Operational	+1 (514) 421 4635
	Administrative	+1 (514) 421 4704
Fax:	Operational	+1 (514) 421 4639
	Administrative	+1 (514) 421 4679
AFTN:		CWAOYMYU
E-mail:	Operational	vaac@ec.gc.ca
	Administrative	rene.servranckx@ec.gc.ca mark.mccrady@ec.gc.ca
Homepage:		http://www.msc-smc.ec.gc.ca/cmc/eer/VAAC/Index_e.html

VAAC Tokyo

Tel.:	Operational	+81 (3) 5756 0291
	Administrative	+81 (3) 5756 0291
Fax:		+81 (3) 5756 0292
AFTN:		RJTDYMYX
E-mail:	Operational	vaac@eqvol.kishou.go.jp
	Administrative	t-koizumi@met.kishou.go.jp
	Additional information	akira.ootani-a@met.kishou.go.jp
		hyamasato@met.kishou.go.jp
		volcano@eqvol.kishou.go.jp
Homepage:		http://www.jma.go.jp/JMA_HP/jma/jma-eng/jma-center/vaac/index.htm
		http://www.ssd.noaa.gov/VAAC/OTH/JP/messages.html

VAAC Toulouse

Tel.:	Operational	+33 (5) 61 07 82 30 or 07 85 10
	Administrative	+33 (5) 61 07 82 37/82 39
Fax:	Operational	+33 (5) 61 07 82 54
	Administrative	+33 (5) 61 07 82 09
AFTN:		LFPWYMYX or LFPWYMCR
E-mail:	Operational	vaac@meteo.fr
	Administrative	philippe.husson@meteo.fr
	Additional information	pascale.dupuy@meteo.fr
Homepage:		http://www.meteo.fr/aeroweb/info/vaac/

VAAC Washington

Tel.:	Operational	+1 (301) 763-8444/8298
	Administrative	+1 (301) 763 8000, Ext. 7158
		+1 (301) 763 8444
Fax:		+1 (301) 763 8333/8592
AFTN:		KWBCYMYX
E-mail:	Operational	w-vaac@noaa.gov
	Administrative	gswanson@noaa.gov
	Additional information	davida.streett@noaa.gov
		buzz.burek@noaa.gov

Homepage:		http://www.ssd.noaa.gov/VAAC/washington.html

VAAC Wellington

Tel.:	Operational	+64 (4) 470 0808
	Administrative	+64 (4) 470 0731
Fax:		+64 (4) 470 0801
AFTN:		NZKLYMYX
SITA:		WLGNZ7X
E-mail:	Operational	vaac@met.co.nz duty.avfcstr@metservice.com
	Administrative	travers@metservice. com
	Additional information	Mackersey@met.co.nz
Homepage:		http:www.ssd.noaa.gov/VAAC/OTH/NZ/messages.html http://www.metservice.com/

APPENDIX

**OPERATIONAL PROCEDURES
FOR THE COORDINATION AND TRANSFER OF RESPONSIBILITY
BETWEEN VAACs
FOR VOLCANIC ASH EVENTS**

1. As soon as one of the VAACs learns of an eruption (for volcano erupting within 5 degrees latitude of the VAACs boundary) or when an ash cloud is expected to come within 5 degrees (latitude) of the VAACs and/or FIR boundary, an information /coordination phone call will be made. The possibility of a hand-off will be discussed if appropriate.

2 Hand-off of operational responsibility shall be coordinated by the lead VAAC with adjacent affected VAACs and MWOs when the ash cloud is not less than 5 degrees (latitude) from a VAAC and/or FIR boundary. In the rare situation of large or persistent ash emissions, adjacent responsible VAACs, upon coordination, may agree to divide operational forecast responsibility.

3 Once a hand-off has been decided, the last volcanic ash advisory issued by the lead VAAC before hand-off will include the following at the end of the message (in the REMARKS):

"THE RESPONSIBILITY FOR THIS ASH EVENT IS BEING TRANSFERRED TO VAAC **aaaa** THE NEXT ADVISORY WILL BE ISSUED BY VAAC **aaaa** BY **xxxx** UTC UNDER HEADER **bbbb**."

Where:
aaaa is the name of the VAAC taking over
bbbb is the bulletin header that will be used by the VAAC taking over (FVCN01 CWAO, FVXX21 KWBC, FVAK20 PANC, etc.)
xxxx is the time in UTC

Example:
"THE RESPONSIBILITY FOR THIS ASH EVENT IS BEING TRANSFERRED TO VAAC MONTREAL. THE NEXT ADVISORY WILL BE ISSUED BY VAAC MONTREAL BY 2200 UTC UNDER HEADER FVCN01 CWAO."

4. The first volcanic ash advisory issued by the VAAC that has taken over responsibility will include the following:

"VAAC **cccc** HAS TRANSFERRED RESPONSIBILITY OF THIS EVENT TO VAAC **dddd**. THIS ADVISORY UPDATES MESSAGE **eeee**."

Where:
cccc is the name of the VAAC which had the lead before the hand-off
dddd is the name of the VAAC which has taken over
eeee is the full bulletin header (e.g FVAK PANC 261200) of the last message issued by the VAAC which had the lead before the hand-off.

Example:
"VAAC ANCHORAGE HAS TRANSFERRED RESPONSIBILITY OF THIS EVENT TO VAAC MONTREAL. THIS ADVISORY UPDATES MESSAGE FVAK20 PANC 261200."

5. When the lead VAAC is issuing messages covering a portion of another VAAC's area of responsibility, or an ash cloud is approaching (within 5 degrees of latitude) the area of responsibility of a non-lead VAAC, the non-lead VAAC should issue a volcanic ash advisory directing the user to the correct product. The following wording is suggested:

"PLEASE SEE **ffff** ISSUED BY VAAC **gggg** WHICH DESCRIBES CONDITIONS OVER OR NEAR THE VAAC **hhhh** AREA OF RESPONSIBILITY."
Where:
ffff is the full bulletin header of the message issued by the lead VAAC
gggg is the name of the lead VAAC
hhhh is the name of the VAAC re-broadcasting the lead VAAC message

Example of rebroadcast message issued by VAAC Montreal:
PLEASE SEE FVAK20 PANC 121200 ISSUED BY VAAC ANCHORAGE WHICH DESCRIBES CONDITIONS OVER OR NEAR THE VAAC MONTREAL AREA OF RESPONSIBILITY"

6. For situations in which two or more distinct ash clouds would be present (different eruptions or one eruption for which the ash cloud has divided in two or more distinct parts), the 'hand-off' only applies to the ash cloud approaching or crossing VAAC boundaries.

7. Ending of advisory for a volcanic ash event shall be performed by the lead VAAC, upon coordination with adjacent affected VAACs and MWOs.

8. Only the lead VAAC shall issue volcanic ash advisories in graphical format on ISCS or SADIS,

Part 5

INTERNATIONAL AIRWAYS
VOLCANO WATCH CONTACT LIST

Click here

Part 5
INTERNATIONAL AIRWAYS VOLCANO WATCH CONTACT LIST

5.1 ALPHABETICAL LISTING

Antigua and Barbuda
Argentina
Australia
Bolivia
Brazil
Cameroon
Canada
Cape Verde
Chile
China
Colombia
Comoros
Costa Rica
Democratic Republic of the Congo
Ecuador
El Salvador
Eritrea
Ethiopia
France
France (Île de la Réunion)
French Antilles
French Guiana (France)
Greece
Grenada
Guatemala
Guyana
Iceland
Indonesia
Italy
Japan
Kenya
Mexico
Montserrat (United Kingdom)
New Zealand
Nicaragua
Pakistan
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Portugal
Russian Federation
Saint Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Solomon Islands
Spain
Trinidad and Tobago
United States
Uruguay
Vanuatu
Venezuela

5.2 LIST OF STATES BY ICAO REGION

AFI

Cameroon
Cape Verde
Comoros
Democratic Republic of the Congo
Eritrea
Ethiopia
France (Île de la Réunion)
Kenya

ASIA/PAC

Australia
China
Indonesia
Japan
New Zealand
Pakistan
Papua New Guinea
Philippines
Solomon Islands
Vanuatu

CAR/SAM

Antigua and Barbuda
Argentina
Bolivia
Brazil
Chile
Colombia
Costa Rica
Ecuador
El Salvador
French Antilles (France)
French Guiana (France)
Grenada
Guatemala
Guyana
Mexico
Montserrat (United Kingdom)
Nicaragua
Panama
Paraguay
Peru
Trinidad and Tobago
Saint Kitts and Nevis
Saint Vincent and the Grenadines
Saint Lucia
Uruguay
Venezuela

EUR

France
Greece
Italy
Portugal
Russian Federation
Spain

NAM/NAT

Canada
Iceland
United States