Draft EXERCISE DIRECTIVE FOR VOLCANIC ASH EXERCISE IN KAMCHATKA IN 2017 (VOLKAM17) – updated 16 January 2017

1. INTRODUCTION

A simulated eruption of Koshelev volcano in the southern Kamchatka Peninsular that will produce volcanic ash with one plume with height to FL450 moving SE at 500 km/hr that will impact trans-east, Northern Pacific (NOPAC) and Pacific Organized Track System (PACOTS) routes. The plume will also move under the area of VAAC responsibility Tokyo, then Anchorage, and then Washington to test handover of each pair. VOLKAM17 will take place from **2200 UTC 20 April 2017** to **0130 UTC 21 April 2017**. The objectives to be tested are provided in section 3 of this report. The Exercise Leader will be Alexey Buevich of ATM Center Moscow. *There will be no operational impact in this exercise (dedicated staff is expected to be available for the test)*. The EUR/NAT Volcanic Ash Contingency Plan should be tested in this exercise, where applicable.

Note that if one or more particpants consider it difficult to continue this exercise due to severe events such as an acutal volcanic eruption or significant meteorological event, they may advise the Exercise Leader to cancel the exercise. In response, the Exercise Leader will announce the cancellation where appropriate.

2. PARTICIPATING AGENCIES

Discipline	Lead on top	Name	Email
Volcano Observatory	KVERT	Olga Girina	girina@kscnet.ru
VAAC	Tokyo	Kazuki Ito	kazuki.ito@met.kishou.go.jp
		Operational	vaac@eqvol2.kishou.go.jp
	Anchorage	Donald Moore	donald.moore@noaa.gov
		Operational	a-vaac@noaa.gov
	Washington	Jamie Kibler	Jamie.Kibler@noaa.gov
		Operational	w-vaac@noaa.gov
ATMC	MATMC of Russia	Alexey Buevich	alexey@matfmc.ru
	Fukuoka ATMC	Akimitsu Sakurai	sakurai-a07xr@mlit.go.jp

	US ATCSCC	Joe Varrati Franklin Mcintosh Lenard Carter	Joseph.Varrati@faa.gov Franklin.Mcintosh@faa.gov Lenard.l.carter@faa.gov
	National Operations Coordination Centre	Anik Bertrand	Anik.Bertrand@navcanada.ca
ACC	Anchorage ARTCC	Steve Kessler	Steve.Kessler@faa.gov
	Edmonton ACC	Bob Fiege	FiegeR@navcanada.ca
	Fukuoka ATMC Oceanic	Akimitsu Sakurai Hiroki Ukida	sakurai-a07xr@mlit.go.jp ukida-h076k@mlit.go.jp
	Khabarovsk	Roman Tkachenko	trg@dv.gkovd.ru
	Magadan	Mikhail Solntsev	acc@sv.gkovd.ru
	Oakland Center (TMO)	John Taggart Dustin Byerly CWSU	john.j.taggart@faa.gov Dustin.M.Byerly@faa.gov zoa.all.hands@noaa.gov
	Petropavlovsk-Kamchatsky	Sergey Butakov	sbutakov@kamaero.ru
	Sapporo	Fumio Satoh	satoh-f05tv@mlit.go.jp
	Vancouver	Dawn Whyte Greg Dansereau	Dawn.Whyte@navcanada.ca DanseGr@navcanada.ca
Regulatory	FATA	Elena Glukhovskaya	Gluhovskaya_ep@scaa.ru
	Roshydromet	Naryshkina Yuliya	juliaavia@mail.ru
	JCAB	Toshiyuki Masuda Tomoko	masuda-t46qd@mlit.go.jp ishikawa-t07p2@mlit.go.jp

		Ishikawa	
	FAA (MET Authority)	Steven Albersheim	Steven.Albersheim@faa.gov
NOF	Moscow	tbd	
	NOF serving RJJJ	Kiyoko Mochiduki	mochiduki-k4634@mlit.go.jp
	NOF serving (FAA U.S. NOTAM Office – USNOF) PZAN,PAZA, and KZOA	Jerry Torres	Jerry.Torres@faa.gov
MWO	Yelizovo Airodrome MET Center	Irina Veretennikova	arrow.ir@mail.ru
	Magadan MWO	Igor Marchenko	meteo_sokol@mail.ru
	Anchorage MWO	Donald Moore	donald.moore@noaa.gov
	Anchorage Centre Weather Service Unit	Gail Weaver	Gail.Weaver@noaa.gov
		Carrie Haisley	Carrie.Haisley@noaa.gov
ANSP	State ATM Corporation	Victor Tsimbal	cimbal@matfmc.ru
Airlines	IATA	Dmitry Kosolapov	kosolapovd@iata.org
	United Airlines	Gene Cameron	gene.cameron@united.com
		Gen Schnee	gen.schnee@united.com
		Mike Stills (PoC)	mike.stills@united.com
	JAL	Satoshi Shindo	satoshi.shindo@jal.com
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		Tsuneki Yoshino	ts.yoshino@ana.co.jp

	Cathay Pacific	Allan Tang Julian Fung	allan_tang@cathaypacific.com julian_fung@cathaypacific.com
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	Delta	Gary Edwards Greg Scott Greg Ginrich	ATL019.SASINT@delta.com Gregg.Scott@delta.com greg.ginrich@delta.com
	American Airlines	Steve Smith Robert Giangiulio Tobin Miller	Stephen.smith@aa.com Robert.Giangiulio@aa.com Tobin.Miller@aa.com
Airlines support	AA – The Weather Company (formerly WSI)	Elizabeth Krajewski	elizabeth.krajewski@weather.com
International and Inter-regional coordinator	ICAO	Christopher Keohan	ckeohan@paris.icao.int

3. AIMS AND OBJECTIVES

-demonstrate coordination procedures between all participating parties (ANSPs, ATM Centres, AIS, VO, VAACs, MWO, users)

-demonstrate tactical re-routes using available methods (use matrix from CPWG)

-demonstrate VAAC Tokyo / VAAC Anchorage / VAAC Washington handover

-demonstrate transmission of air-reports on volcanic ash in accordance to Annex 3 (aircraft->ACC->MWO->VAAC) beginning with voice communication from pilot to ACC

-demonstrate information sharing via teleconferences and website (KVERT website with PUFF and aeronautical information)

Noting no operational impact expected from test (e.g. dedicated staff is expected to be available for the test)

4. EXERCISE DURATION

2200 UTC 20 Apr 2017 / 0130 UTC 21 Apr 2017

5. EXERCISE VOLCANO

Koshelev 300020 N51 21 20 E156 45 11 1812m Russian Federation – Kamchatka

6. EXERCISE SCENARIO

Eruption with ash column to FL450 moving southeast at 500 km/hr to impact trans-east, NOPAC and PACOTS routes.

7. EXERCISE SCHEDULE

Time (UTC)	***Player***	***Event/Action***
20 Mar 2017	Exercise Leader (coordinating with ICAO EUR NAT VOLCEX Secretary)	Final directives to be published on the ICAO EUR/NAT office Volcanic Ash webpage (http://www.paris.icao.int/Volc_Ash/index.htm)
13 Apr 2017	MATMC (Russia)and US ATCSCC	Issue a general NOTAM via their national NOFs to inform the aviation community of the exercise
13 Apr 2017	NOFs	Issue consequential NOTAMs to inform the aviation community of the exercise
20 ***Apr 2017 (UTC TIME)***	EXERCISE VOLKAM17	
21:15	All	Practice telecon (5 minutes) (invitation 2045)
21:40	MATMC + Exercise Leader	Start VOLKAM17 through an email message to all exercise players
21:45	Koshelev (Kamchatka)	**EXPLOSIVE ERUPTION STARTS**
22:00	Volcano Observatory (KVERT, Institute of Volcanology & Seismology, Far East Branch, Russian Academy of Sciences)	Phone call to Yelizovo MWO providing information available related to the eruption (this call would enable the MWO to begin the process of generating and disseminating SIGMET) VONA is issued (indicating change in aviation colour code and giving first known data about eruption) and sent via email to MATMC, Petropavlovsk-Kamchatsky ACC, Yelizovo MWO, VAAC Tokyo, VAAC Anchorage, VAAC Washington, VAAC Montréal, VAAC Darwin, AVO and others, and post to KVERT web-site: http://www.kscnet.ru/ivs/kvert/van/ Reference VONA examples in section 8

Sequentially – preferably no more than 5 min after receipt of VONA	Yelizovo MWO	Issues first SIGMET to provide notification of an eruption to VAAC Tokyo, MATMC, PK ACC and other players concerned such as other weather providers
22:05	VAAC Tokyo	Issues first VAA without observed/forecasted VA. This information is about the eruption only; provides VAA to MATMC and other key players concerned. Follow guidance in Annex 3 on message format.
Sequentially	MATMC and PK ACC	MATMC requests Moscow NOF to issue NOTAM
Sequentially	Moscow NOF	Issues NOTAM in accordance to Annex 15 and indicates colour code RED – see example NOTAM for 2200 UTC in section 8
22:40	VAAC Tokyo	Issues second VAA/first VAG; provides VAA/VAG to MATMC and other key players concerned. Coordinate between Tokyo and Anchorage VAACs. Follow guidance in Annex 3 on message format.
Sequentially	MWOs affected	Issue SIGMETs for respective areas
Sequentially	MATMC and PK ACC	MATMC requests Moscow NOF to issue NOTAM
Sequentially	Moscow NOF	Issues NOTAM in accordance to Annex 15 and indicates colour code RED and references existing information (e.g. VAA/VAG and SIGMET) – see example NOTAM for 2240 UTC in section 8
Sequentially	ANSPs affected (ACCs)	Request national ATM Centers to apply ATFM measures (example on ATCSCC Advisory Database: http://www.atcscc.faa.gov/adv/advAdvisoryForm.jsp could be communicated via the web portal of ATM Centres)
Sequentially	National ATM Centers	Apply Air Traffic Flow Management measures on request of ACCs, if necessary – measures are taken when capacity is expected to be exceeded.
Sequentially	AO (coordination between dispatch and flight crews)	Take appropriate flight planning actions: e.g. reroute or cancel flights. All requests will be sent to the following email address volkam17@matmc.ru and forwarded to

		the respective centres. Reroute requests should be in the form of FPL. For deviating around the volcanic ash cloud, operators may consider Letter of Agreement among Magadan/PK ACC Russian Federation, Anchorage ARTCC United States and Fukuoka ATMC Japan – see reroute procedures below.
23:00	VO	Eruption stops – VONA with colour change from RED to ORANGE issued
sequentially	National ATM Centers and ACCs	Publish NOTAMs in accordance to Annex 15 via NOFs – see example NOTAM for 2300 UTC in section 8. NOTAMs issued indicate colour code change and references existing information such as VAA/VAG and SIGMET
23:15 (verify in early April flight schedules and who is available for report of ash prior 2300 in PK FIR and who maybe available to report ash in Fukuoka FIR after 2300) also – after 2300 a report of no ash in PK maybe possible **Also consider Oakland – CPDLC**	AO, ACC, MWO, VAAC AAL will send AIREPs via aircraft to the extent possible given the locations of aircraft on the actual day of the exercise	Special aircraft report of volcanic ash at lat/lon N50 00 E156 00. Communications of special air-report = aircraft –> ACC –> MWO –> VAAC Tokyo (also MWO to ROC Vienna, SADIS and WIFS – see exampe in section 8) Mode of sending AIREP from pilot to ACC (preferably by voice if possible - otherwise from dispatch to ACC via AFTN) including at least one SATCOM voice call to Magadan (Anchorage) ACC. United is to provide a particular flight to be included in this SATCOM Voice exercise. See example on special air-report on volcanic ash.
23:40	All	Operational teleconference to discuss the latest situation; (details of teleconference to be provided) Sharing information in advance via email is suggested
00:00	VAAC Tokyo / Anchorage / Washington	After demonstrating handover from VAAC Tokyo to VAAC Anchorage by sending a Handover Request Sheet (HRS) via email and making a confirmation phone call, VAAC Tokyo issues the third VAA/ second VAG of this exercise. Note that handover should be in accordance to the *Handbook on the International Airways Volcano Watch*

		(IAVW) (ICAO Doc 9766) In the third VAA/ second VAG of this exercise from VAAC Tokyo, the necessity of refering VAAs from Anchorage VAAC is notified. VAAC Anchorage issues first VAA/VAG of this exercise and coordinates with VAAC Washington. Follow guidance in Annex 3 on message format.
Sequentially	MWOs affected	Issue updated SIGMETs for respective areas (it may be that Yelizovo MWO cancels SIGMET, depending on whether the VAA issued by VAAC Anchorage overlaps the PK FIR).
Sequentially	ANSPs affected (ACCs)	Request national ATM Centers to apply ATFM measures (example on ATCSCC Advisory Database: http://www.atcscc.faa.gov/adv/advAdvisoryForm.jsp) – could be communicated via the web portal of ATM Centres)
Sequentially	National ATM Centers	Apply ATFM measures on request of ACCs, if necessary - measures are taken when capacity is expected to be exceeded.
Sequentially	AO (coordination between dispatch and flight crews)	Take appropriate flight planning actions: e.g. reroute or cancel flights. All requests will be sent to the following email address volkam17@matmc.ru and forwarded to the respective centres. Reroute requests should be in the form of FPL. For deviating around the volcanic ash cloud, operators may consider Letter of Agreement among Magadan/PK ACC Russian Federation, Anchorage ARTCC United States and Fukuoka ATMC Japan – see reroute procedures below.
00:15	MATMC	Issues an invitation to teleconference via email (time of teleconference at 0115)
00:30 (verify in early April flight schedules and who is available for report of ash	AO, ACC, MWO, VAAC AAL will send AIREPs via aircraft to the extent possible given the locations	Special aircraft report of volcanic ash at lat/lon N50 00 E156 00. Communications of special air-report = aircraft –> ACC –> MWO –> VAAC Tokyo (also MWO to ROC Vienna, SADIS and WIFS – see exampe in section 8)

prior 2300 in PK FIR and who maybe available to report ash in Fukuoka FIR after 2300) also – after 2300 a report of no ash in PK maybe possible **Also consider Oakland – CPDLC**	of aircraft on the actual day of the exercise	Mode of sending AIREP from pilot to ACC (preferably by voice if possible - otherwise from dispatch to ACC via AFTN) including at least one SATCOM voice call to Magadan (Anchorage) ACC. United is to provide a particular flight to be included in this SATCOM Voice exercise. See example on special air-report on volcanic ash.
00:50	VAAC Anchorage and VAAC Washington	VAAC Anchorage issues second VAA/VAG and sends to MATMC and other key players concerned – including MWO Yelizovo. VAAC Washington may issue first VAA/VAG depending on handover procedures between the two VAACs Follow guidance in Annex 3 on message format
Sequentially	MWOs affected	Issue updated SIGMETs for respective areas (it may be that Yelizovo and/or Anchorage MWO cancels SIGMET, depending on whether the VAA issued by VAAC Washington overlaps the PK FIR).
Sequentially	ANSPs affected (ACCs)	Request national ATM Centers to apply ATFM measures (example on ATCSCC Advisory Database: http://www.atcscc.faa.gov/adv/advAdvisoryForm.jsp) – could be communicated via the web portal of ATM Centres)
Sequentially	National ATM Centers	Apply Air Traffic Flow Management measures on request of ACCs, if necessary – measures are taken when capacity is expected to be exceeded.
Sequentially	AO (coordination between dispatch and flight crews)	Take appropriate flight planning actions: e.g. reroute or cancel flights. All requests will be sent to the following email address volkam17@matmc.ru and forwarded to the respective centres. Reroute requests should be in the form of FPL. For deviating around the volcanic ash cloud, operators may consider Letter of Agreement among Magadan/PK ACC Russian Federation, Anchorage ARTCC United States and Fukuoka ATMC Japan – see reroute procedures

		below.
01:15	All	Operational teleconference to discuss the latest situation; (details of teleconference to be provided)
01:30	MATMC + Exercise Leader	End VOLKAM17 announced by cancelling the initial exercise NOTAM and advisory NOTAMs, SIGMETs and VONAs (for those messages whose end period of validity is after 0130).

8. EXERCISE SCENARIO MESSAGES

VONA

First VONA (2200 UTC, 20 April 2017)

VOLKAM17 EXERCISE EXERCISE EXERCISE

(1) **VOLCANO OBSERVATORY NOTICE FOR AVIATION (VONA)**

(2) Issued: 20170420/2200Z

(3) Volcano: Koshelev (CAVW #300020)

(4) Current Aviation Color Code: **RED**

(5) Previous Aviation Color Code: green

(6) Source: KVERT

(7) Notice Number: 2017-0000

(8) Volcano Location: N 51 deg 21 min E 156 deg 45 min

(9) Area: Kamchatka, Russia

(10) Summit Elevation: 5943 ft (1812 m)

(11) Volcanic Activity Summary: Very strong explosive eruption of Koshelev volcano began at 21:45 UTC on April 20, 2017. According to satellite data, ash is reaching 45,000 ft (13.8 km) a.s.l. and ash plume is drifting to the southeast of the volcano on the height 45,000 ft (13.8 km) a.s.l. at this time. Ash emission is continuing.

A strong explosive eruption of the volcano continues. Ongoing activity could affect international and low-flying aircraft.

(12) Volcanic cloud height:

45,000 ft (13.8 km) a.s.l. Time and method of ash plume/cloud height determination: 20170420/2145Z – NOAA 18 (4m5)

(13) Other volcanic cloud information:

Distance of ash plume/cloud of the volcano: 19 mi (30 km)
Direction of drift of ash plume/cloud of the volcano: SE / azimuth 120 deg
Time and method of ash plume/cloud determination: 20170420/2145Z – NOAA 18 (4m5)

(14) Remarks: This strong explosive eruption is extremely hazardous for aircraft downwind. There was one known a strong explosive eruption of Koshelev volcano which occurred probably in the end of 17 Century. Koshelev volcano is not monitored with a seismic station. KVERT uses satellite data and sometimes visual observations from Severo-Kurilsk (Paramushir Island) and pilots reports to monitor Koshelev volcano.

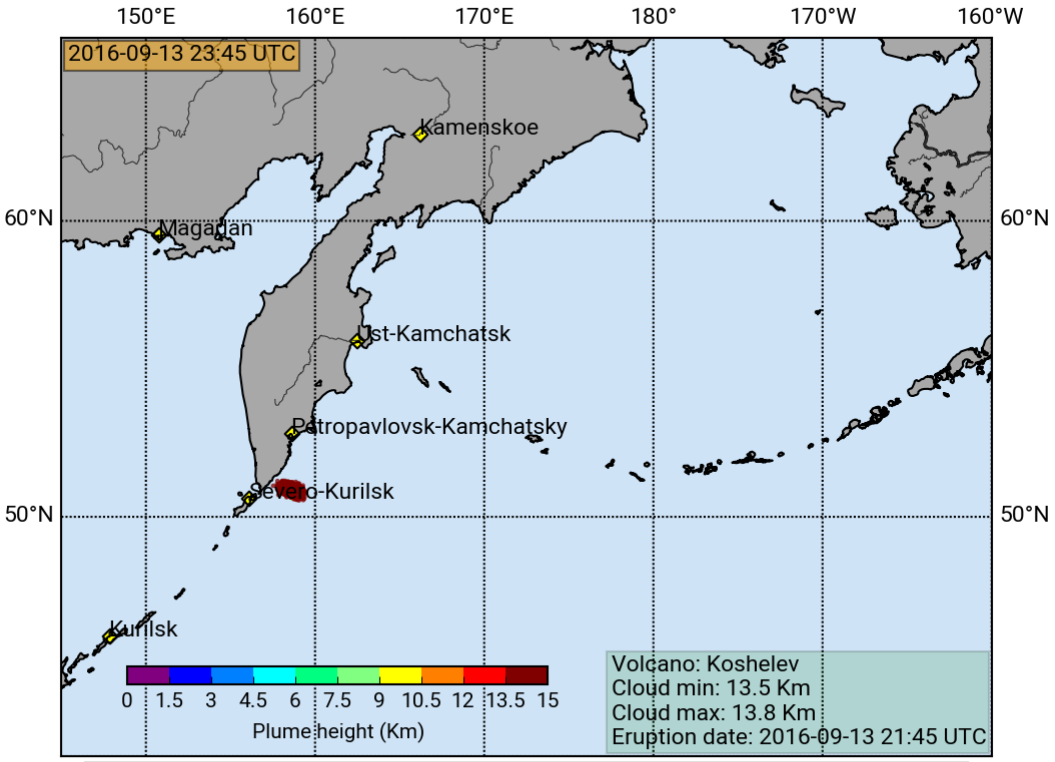
(15) Contacts: Dr. Olga A. Girina, Head of KVERT, IVS FEB RAS; girina@kscnet.ru +74152202044
Duty scientist: +79622825253

(16) Next Notice: A new VONA will be issued if conditions change significantly or the Aviation Color Code changes. VONAs are posted at http://www.kscnet.ru/ivs/kvert/van/

In Russia, KVERT, on behalf of the Institute of Volcanology and Seismology (IVS) FED RAS, is responsible for providing information on volcanic activity to international air navigation services for the airspace users.

VOLKAM17 EXERCISE EXERCISE EXERCISE

PUFF model – DRAFT 13.09.2016. We cannot do PUFF for 20.04.2017



Second VONA (2300 UTC, 20 April 2017)

VOLKAM17 EXERCISE EXERCISE EXERCISE

(1) **VOLCANO OBSERVATORY NOTICE FOR AVIATION (VONA)**

(2) Issued: 20170420/2300Z

(3) Volcano: Koshelev (CAVW #300020)

(4) Current Aviation Color Code: **ORANGE**

(5) Previous Aviation Color Code: red

(6) Source: KVERT

(7) Notice Number: 2017-0001

(8) Volcano Location: N 51 deg 21 min E 156 deg 45 min

(9) Area: Kamchatka, Russia

(10) Summit Elevation: 5943 ft (1812 m)

(11) Volcanic Activity Summary: The strong explosive eruption of Koshelev volcano has finished. According to satellite data, a thermal anomaly is observed over the volcano but no ash is erupting from the volcano at this time.

A moderate gas-steam activity of the volcano continues. Ongoing activity could affect low-flying aircraft.

(12) Volcanic cloud height: NO ASH CLOUD PRODUCED

(13) Other volcanic cloud information: NO ASH CLOUD PRODUCED

(14) Remarks: According to VAAC Tokyo forecast, at 2240 UTC on April 20, the leading edge of the ash cloud is an estimated 270 miles south-east of the volcano (FL450). See the VAAC Tokyo VAA/VAG and SIGMETs for current ash cloud information.

(15) Contacts: Dr. Olga A. Girina, Head of KVERT, IVS FEB RAS; girina@kscnet.ru +74152202044
Duty scientist: +79622825253

(16) Next Notice: A new VONA will be issued if conditions change significantly or the Aviation Color Code changes. VONAs are posted at http://www.kscnet.ru/ivs/kvert/van/

In Russia, KVERT, on behalf of the Institute of Volcanology and Seismology (IVS) FED RAS, is responsible for providing information on volcanic activity to international air navigation services for the airspace users.

VOLKAM17 EXERCISE EXERCISE EXERCISE

VAA

(**First VAA from VAAC Tokyo**)

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FVFE01 RJTD 202205

VA ADVISORY

DTG: 20170420/2205Z

VAAC: TOKYO

VOLCANO: KOSHELEV 300020

PSN: N5121 E15645

AREA: RUSSIA

SUMMIT ELEV: 1822M

ADVISORY NR: 9999/1

INFO SOURCE: VA EXERCISE VOLKAM17 HIMAWARI-8 KVERT UHPP

AVIATION COLOUR CODE: NIL

ERUPTION DETAILS: VA EXERCISE ERUPTION AT 20170420/2145Z FL450 EXTD

SE MOV 270KT REPORTED

OBS VA DTG: 20/2150Z

OBS VA CLD: VA NOT IDENTIFIABLE FM SATELLITE DATA WIND FL450
310/270KT

FCST VA CLD +6 HR: NOT AVBL

FCST VA CLD +12 HR: NOT AVBL

FCST VA CLD +18 HR: NOT AVBL

RMK: VA EXERCISE VOLKAM17

WE WILL ISSUE FURTHER ADVISORY IF VA IS DETECTED IN SATELLITE

IMAGERY

EXERCISE EXERCISE EXERCISE

NXT ADVISORY: NO FURTHER ADVISORIES=
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(**Second VAA from VAAC Tokyo**)

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FVFE01 RJTD 202240

VA ADVISORY

DTG: 20170420/2240Z

VAAC: TOKYO

VOLCANO: KOSHELEV 300020

PSN: N5121 E15645

AREA: RUSSIA

SUMMIT ELEV: 1822M

ADVISORY NR: 9999/2

INFO SOURCE: VA EXERCISE VOLKAM17 HIMAWARI-8 KVERT UHPP

AVIATION COLOUR CODE: NIL

ERUPTION DETAILS: VA EXERCISE ERUPTION AT 20170420/2145Z FL450 EXTD

SE MOV 270KT REPORTED

OBS VA DTG: 20/2210Z

OBS VA CLD: SFC/FL450 N5120 E15647 - N5037 E15726 - N5000 E15819 -

N4919 E15728 - N5028 E15641 MOV SE 270KT

FCST VA CLD +6 HR: 21/0410Z SFC/FL450 N5116 E15645 - N4831 E16034 -

N4636 E16500 - N4618 E16156 - N4845 E15734

FCST VA CLD +12 HR: 21/1010Z SFC/FL450 N5120 E15647 - N4837 E16132 -

N4619 E16647 - N4556 E16435 - N4830 E15838

FCST VA CLD +18 HR: 21/1610Z SFC/FL450 N5118 E15648 - N4844 E16105 -

N4549 E16733 - N4515 E16522 - N4800 E15845

RMK: VA EXERCISE VOLKAM17 NIL EXERCISE EXERCISE EXERCISE

NXT ADVISORY: 20170421/0000Z=
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(Third VAA from VAAC Tokyo)

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FVFE01 RJTD 210000

VA ADVISORY

DTG: 20170421/0000Z

VAAC: TOKYO

VOLCANO: KOSHELEV 300020

PSN: N5121 E15645

AREA: RUSSIA

SUMMIT ELEV: 1822M

ADVISORY NR: 9999/3

INFO SOURCE: VA EXERCISE VOLKAM17 HIMAWARI-8 AIREP

AVIATION COLOUR CODE: NIL

ERUPTION DETAILS: VA EXERCISE VA CONTINUOUSLY OBS ON SATELLITE
IMAGERY

OBS VA DTG: 20/2330Z

OBS VA CLD: SFC/FL450 N4958 E15757 - N4743 E16001 - N4549 E16723 -

N4356 E16604 - N4528 E15935 - N4926 E15734 MOV SE 270KT

FCST VA CLD +6 HR: 21/0530Z SFC/FL450 N4640 E16242 - N4758 E16331 -

N4555 E16900 - N4139 E17022 - N4122 E16813 - N4416 E16627

FCST VA CLD +12 HR: 21/1130Z SFC/FL450 N4719 E16717 - N4428 E17207 -

N4109 E17212 - N4101 E16915 - N4310 E16913 - N4550 E16553

FCST VA CLD +18 HR: 21/1730Z SFC/FL450 N4625 E16935 - N4330 E17221 -

N3947 E17224 - N4008 E16927 - N4258 E16921 - N4533 E16645

RMK:  VA EXERCISE VOLKAM17

THE RESPONSIBILITY FOR THIS ASH EVENT IS BEING TRANSFERRED TO

ANCHORAGE. THE NEXT ADVISORY WILL BE ISSUED BY ANCHORAGE BY 0100UTC

UNDER HEADER FVAK21 PAWU.

EXERCISE EXERCISE EXERCISE

NXT ADVISORY: NO FURTHER ADVISORIES
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(**First VAA from VAAC Anchorage**)

(update)

Note: VAAC Anchorage has taken the responsibility for volcanic ash cloud extending to the the northeast.

FVAK22 PAWU 220050

VA ADVISORY

DTG: 20160422/0050Z

VAAC: ANCHORAGE

VOLCANO: KARPINSKY GROUP 290350

PSN: N5009 E15522

AREA: KURIL ISLANDS

SUMMIT ELEV: 4350FT (1326M)

ADVISORY NR: 9999/1

INFO SOURCE: EXERCISE VOLKAM17 HIMAWARI-8 KVERT

AVIATION COLOR CODE: RED

ERUPTION DETAILS: EXERCISE VA WELL OBSERVED IN SATELLITE IMAGERY

OBS VA DTG: 22/0020Z

OBS VA CLD: SFC/FL200 N5015 E15517 – N6055 E16324 – N6226 E16729 – N6124 E16806 – N5956 E16451 – N5014 E15608 – N5015 E15517 MOV NE 150KT

FCST VA CLD +6HR: 22/0620Z SFC/FL200 N5017 E15519 – N6058 E16331 -
N6413 E17450 – N6243 E17544 – N6000 E16552 – N5016 E15610 – N5017 E15519

FCST VA CLD +12HR: 22/1220Z SFC/FL200 N5016 E15516 – N6054 E16332 -
N6648 W17218 – N6425 W17024 – N5958 E16637 – N5008 E15632 – N5017 E15514 – N5016 E15516

FCST VA CLD +18HR: 22/1820Z SFC/FL200 N5015 E15514 – N6049 E16404 – N6657 W16208 – N6337 W16150 – N5940 E16707 – N5010 E15636 – N5015 E15514 – N5015 E15514

RMK: EXERCISE VOLKAM16 VAAC TOKYO HAS TRANSFERRED RESPONSIBILITY FOR A PORTION OF THE ASH PLUME TO VAAC ANCHORAGE. VAAC TOKYO HAS RESPONSIBILITY FOR THE REMAINDER OF THE ASH PLUME. SEE FVFE01 RJTD ISSUED BY VAAC TOKYO FOR CONDITIONS NEAR AND OVER VAAC ANCHORAGE AREA.

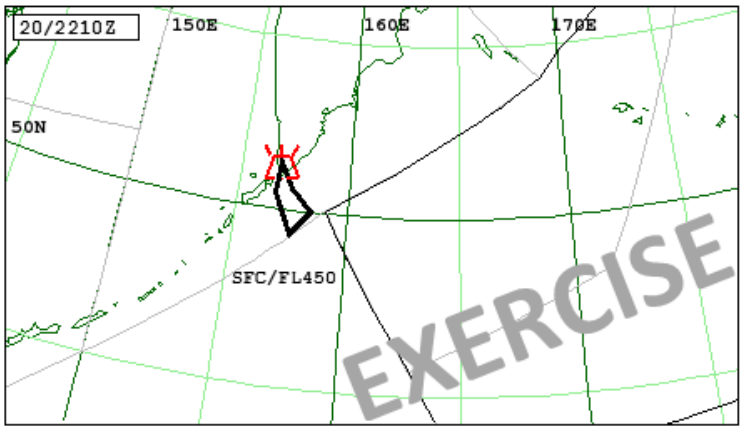
EXERCISE EXERCISE EXERCISE

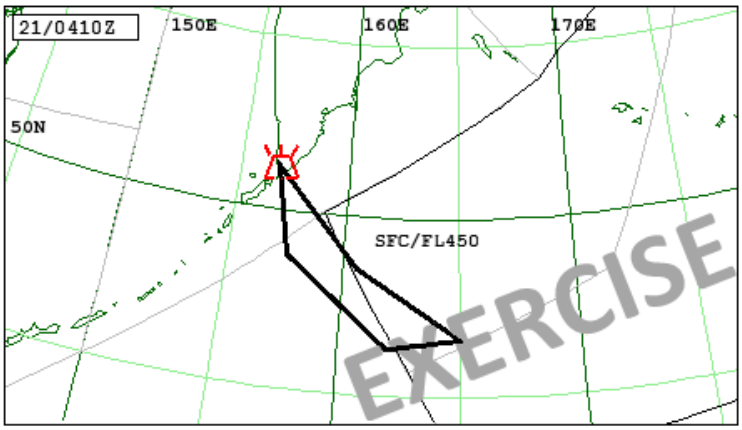
NXT ADVISORY: WILL BE ISSUED BY 20160422/0650Z

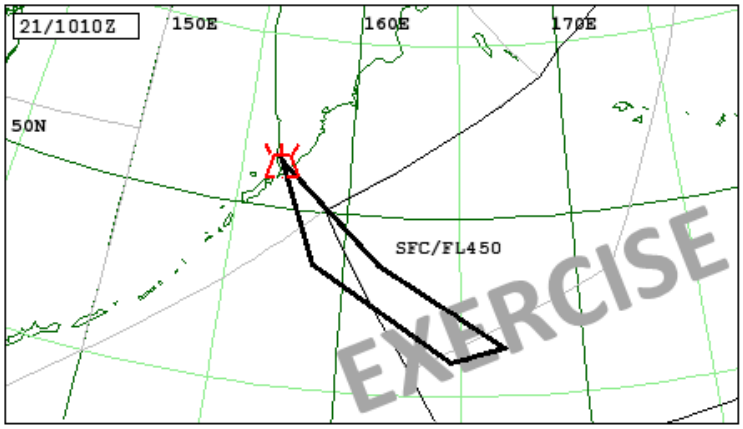
(**Second VAA from VAAC Anchorage and first VAA from VAAC Washington**)

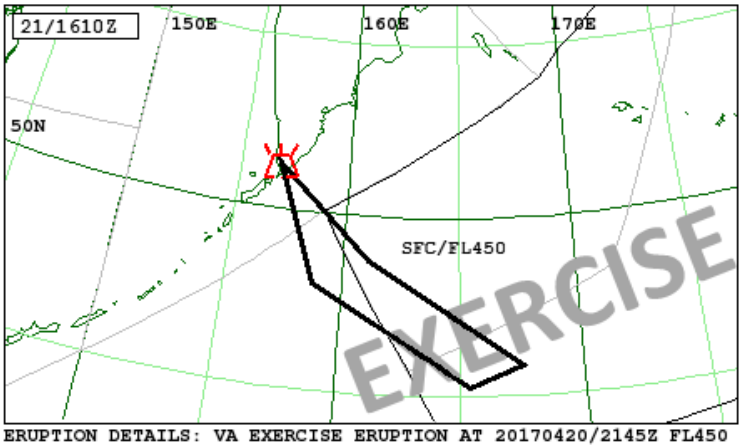
(update)

(First VAG Tokyo)





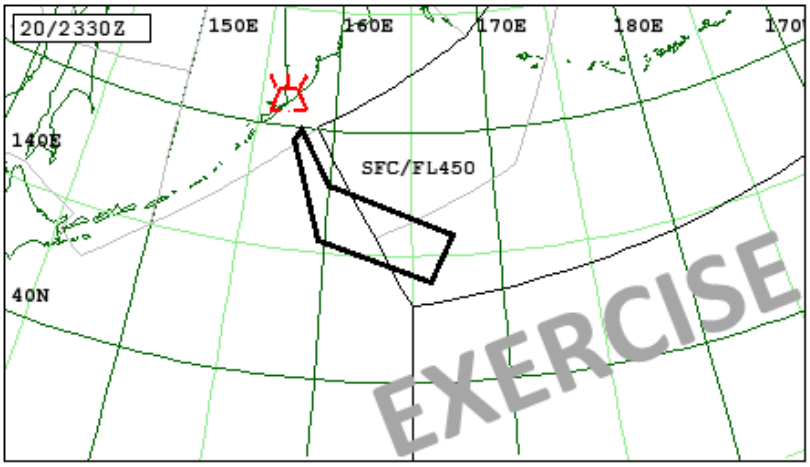


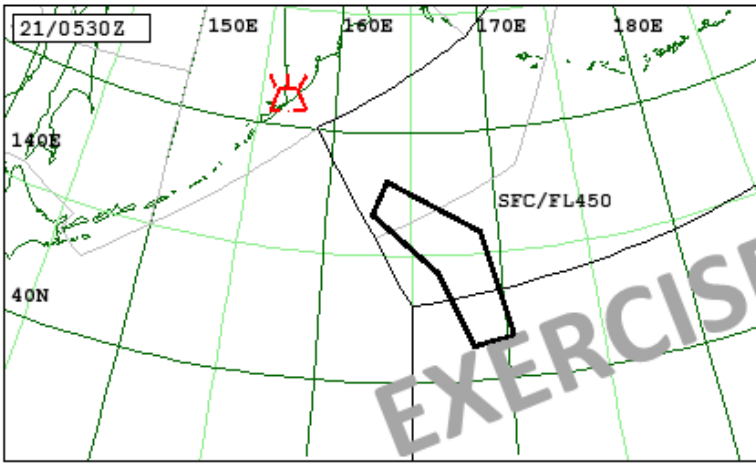


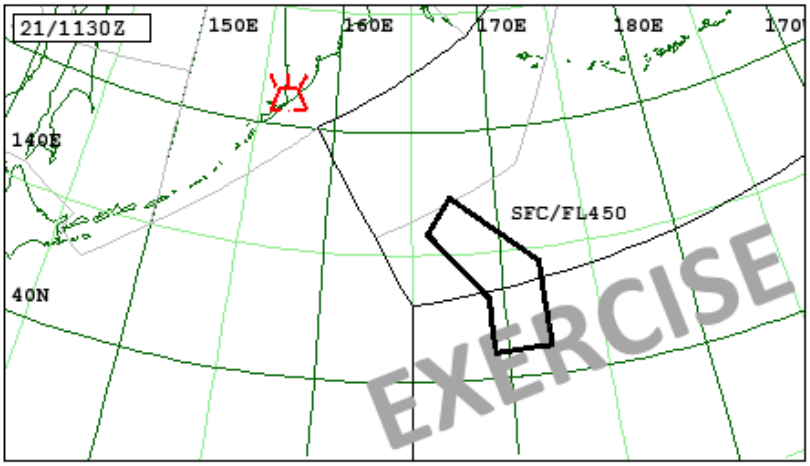
VA ADVISORY
DTG: 20170420/2240Z
VAAC: TOKYO
VOLCANO: KOSHELEV 300020
AREA: RUSSIA
SUMMIT ELEV: 1822M
ADVISORY NR: 9999/2
INFO SOURCE: VA EXERCISE VOLKAM17 HIMAWARI-8 KVERT UHPP
AVIATION COLOUR CODE: NIL

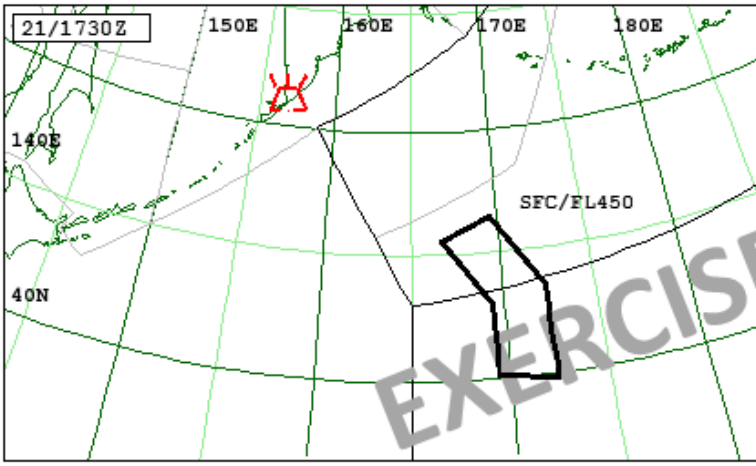
ERUPTION DETAILS: VA EXERCISE ERUPTION AT 20170420/2145Z FL450
EXTD SE MOV 270KT REPORTED
RMK: VA EXERCISE VOLKAM17 NIL EXERCISE EXERCISE EXERCISE
NXT ADVISORY: 20170421/0000Z

(Second VAG Tokyo)







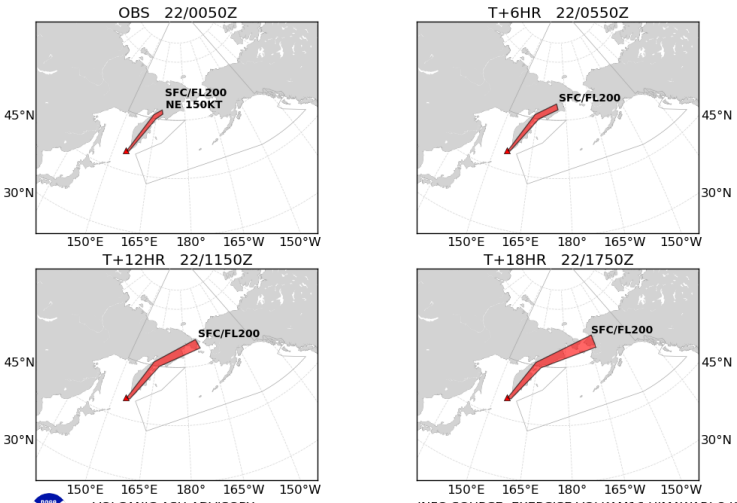


VA ADVISORY
DTG: 20170421/0000Z
VAAC: TOKYO
VOLCANO: KOSHELEV 300020
AREA: RUSSIA
SUMMIT ELEV: 1822M
ADVISORY NR: 9999/3
INFO SOURCE: VA EXERCISE VOLKAM17 HIMAWARI-8 AIREP
AVIATION COLOUR CODE: NIL

ERUPTION DETAILS: VA EXERCISE VA CONTINUOUSLY OBS ON SATELL IMAGERY
RMK: VA EXERCISE VOLKAM17 THE RESPONSIBILITY FOR THIS ASH EVENT IS BEING TRANSFERRED TO ANCHORAGE. THE NEXT ADVISORY WILL BE ISSUED BY ANCHORAGE BY 0100UTC UNDER HEADER FVAK21 PAWU. EXERCISE EXERCISE EXERCISE
NXT ADVISORY: NO FURTHER ADVISORIES

(First VAG from VAAC Anchorage) (update)

Correction to times below: OBS 22/0020Z ; T+6HR 22/0620Z ; T+12HR 22/1220Z ; T+18HR 22/1820Z



VOLCANIC ASH ADVISORY
DTG: 20160422/0050Z
VAAC: ANCHORAGE
VOLCANO: KARPINSKY GROUP 290350
AREA: KURIL ISLANDS
SUMMIT ELEV: 4413 FT (1345 M)
ADVISORY NUM: 2016/001

INFO SOURCE: EXERCISE VOLKAM16 HIMAWARI-8 KVERT
ERUPTION DETAILS: EXERCISE VA WELL OBSERVED IN SATELLITE IMAGERY.
REMARKS: EXERCISE VOLKAM16. VAAC TOKYO HAS TRANSFERED RESPONSIBILITY FOR A PORTION OF THE ASH PLUME TO VAAC ANCHORAGE. VAAC TOKYO HAS RESPONSIBILITY FOR THE REMAINDER OF THE ASH PLUME. SEE FVFE01 RJTD ISSUED BY VAAC TOKYO FOR CONDITIONS NEAR AND OVER VAAC ANCHORAGE AREA.
NEXT ADVISORY: WILL BE ISSUED BY 20160422/0550Z

(**First VAG from VAAC Washington**)

(update)

Routing of VAA:

VAA is sent to

- Appropriate Regional OPMET exchange hub (e.g. for VAAC Tokyo to Regional OPMET Data Bank Tokyo at AFTN RJTDYZYX which then through the APAC ROBEX scheme should be available at Inter-regional OPMET Gateway (IROG) Singapore which provides data to EUR via IROG London – also note that IROG Tokyo provides data to NAM via IROG Washington)
- SADIS at AFTN address **EGZZWPXX**
- WIFS at AFTN address **KWBCYMYX**
- MATMC at AFTN address **UUUWZDZX**

(lat/lon points maybe updated byYelizovo MWO based on VAA/VAG and special air-reports on volcanic ash) Template for **SIGMET** messages in exercise (these are examples, the speed for example may be different)

(update)

WVRA31 RUPK 212205

UHPP SIGMET 1 VALID 212205/212305 UHPP-

UHPP PETROPAVLOVSK-KAMCHATSKY FIR EXERCISE VOLKAM17 VA ERUPTION MT KARPINSKY PSN N5009 E15522 VA CLD OBS AT 2145Z SFC/FL400 MOV SE 110KMH INTSF AND SFC/FL200 MOV NE 500KMH INTSF EXERCISE EXERCISE EXERCISE=

WVRA31 RUPK 212243

UHPP SIGMET 2 VALID 212243/212305 UHPP-

UHPP PETROPAVLOVSK-KAMCHATSKY FIR EXERCISE VOLKAM17 CNL SIGMET 1 212205/212305 EXERCISE EXERCISE EXERCISE=

WVRA31 RUPK 212245

UHPP SIGMET 3 VALID 212245/220400 UHPP-

UHPP PETROPAVLOVSK-KAMCHATSKY FIR EXERCISE VOLKAM17 VA ERUPTION MT KARPINSKY PSN N5009 E15522 VA CLD OBS AT 2200Z WI N5010 E15531 - N4958 E15546 - N4943 E15542 - N4958 E15532 - N5010 E15531 SFC/FL400 MOV SE 110KMH NC AND WI N5027 E15520 - N5102 E15539 - N5055 E15600 - N5027 E15533 - N5027 E15520 SFC/FL200 MOV NE 500KMH NC FCST 0400Z VA CLD APRX N4824 E15603 - N4949 E15603 - N4908 E15720 - N4824 E15603 AND VA CLD APRX N6153 E17204 - N5735 E16222 - N5026 E15642 - N5033 E15528 - N5852 E16003 - N6158 E16808 - N6153 E17204 EXERCISE EXERCISE EXERCISE=

WVRA31 RUPK 220003

UHPP SIGMET 1 VALID 220003/220400 UHPP-

UHPP PETROPAVLOVSK-KAMCHATSKY FIR EXERCISE VOLKAM17 CNL SIGMET 3 212245/220400 EXERCISE EXERCISE EXERCISE=

WVRA31 RUPK 220005

UHPP SIGMET 2 VALID 220005/220530 UHPP-

UHPP PETROPAVLOVSK-KAMCHATSKY FIR EXERCISE VOLKAM17 VA ERUPTION MT KARPINSKY PSN N5009 E15522 VA CLD OBS AT 2330Z WI N4818 E15552 - N4958 E15558 - N4936 E15719 - N4915 E15732 - N4818 E15552 SFC/FL400 MOV SE 110KMH NC AND WI N5850 E16024 - N5830 E16412 - N5035 E15626 - N5035 E15538 - N5850 E16024 SFC/FL200 MOV NE 500KMH NC FCST 0530Z VA CLD APRX N4832 E15615 - N4929 E15537 - N4955 E15709 - N4922 E15745 - N4832 E15615 AND VA CLD APRX N6153 E17204 - N5735 E16222 - N5026 E15642 - N5033 E15528 - N5852 E16003 - N6158 E16808 - N6153 E17204 EXERCISE EXERCISE EXERCISE=

WVRA31 RUPK 220053

UHPP SIGMET 3 VALID 220053/220530 UHPP-

UHPP PETROPAVLOVSK-KAMCHATSKY FIR EXERCISE VOLKAM17 CNL SIGMET 2 220005/220530 EXERCISE EXERCISE EXERCISE=

WVRA31 RUPK 220055

UHPP SIGMET 4 VALID 220055/220620 UHPP-

UHPP PETROPAVLOVSK-KAMCHATSKY FIR EXERCISE VOLKAM17 VA ERUPTION MT KARPINSKY PSN N5009 E15522 VA CLD OBS AT 0020Z WI N4818 E15552 - N4958 E15558 - N4936 E15719 - N4914 E15731 - N4818 E15552 SFC/FL400 MOV SE 110KMH WKN FCST 0620Z VA CLD APRX N4832 E15615 - N4929 E15537 - N4955 E15709 - N4922 E15745 - N4832 E15615 EXERCISE EXERCISE EXERCISE=

WVRA31 RUPK 220058

UHPP SIGMET 5 VALID 220058/220620 UHPP-

UHPP PETROPAVLOVSK-KAMCHATSKY FIR EXERCISE VOLKAM17 VA ERUPTION MT KARPINSKY PSN N5009 E15522 VA CLD OBS AT 0020Z WI N5015 E15517 - N5014 E15608 - N5956 E16451 - N6055 E16324 - N6204 E16630 - N6200 E16750 - N6124 E16806 - N5015 15517 SFC/FL200 MOV NE 280KMH WKN FCST 0620Z VA CLD APRX N6058 E16331 - N6204 E16630 - N6200 E17210 - N6000 E16552 - N5016 E15610 - N5017 E15519 - N6058 E16331 EXERCISE EXERCISE EXERCISE=

WVRA31 RUPK 220130

UHPP SIGMET 6 VALID 220130/220620 UHPP-

UHPP PETROPAVLOVSK-KAMCHATSKY FIR EXERCISE VOLKAM17 CNL SIGMET 4 220055/220620 EXERCISE EXERCISE EXERCISE=

WVRA31 RUPK 220132

UHPP SIGMET 7 VALID 220132/220620 UHPP-

UHPP PETROPAVLOVSK-KAMCHATSKY FIR EXERCISE VOLKAM17 CNL SIGMET 5 220058/220620 EXERCISE EXERCISE EXERCISE=

UARA71 RUPK 212320

ARS UA322 VA CLD FL350/400 OBS AT 2315Z N5000E15600 EXERCISE VOLKAM17 EXERCISE EXERCISE EXERCISE=

SIGMET 12 to be added, if necessary, based on VAA for CLD to FL200 from VAAC Anchorage

When exercise ends:
WVRA31 RUPK 220130
UHPP SIGMET 13 VALID 220130/220600 UHPP-
UHPP PETROPAVLOVSK-KAMCHATSKY FIR CNL SIGMET 11 220055/220600 UHPP=

WVRA31 RUPK 220130
UHPP SIGMET 14 VALID 220130/220600 UHPP-
UHPP PETROPAVLOVSK-KAMCHATSKY FIR CNL SIGMET 12 220055/220600 UHPP=

Coordination with adjacent FIRs
Coordination on issuance of SIGMET between Yelizovo MWO, Magadan MWO and MWO responsible for Anchorage FIR and MWO responsible for Oakland FIR should be done to be sure information does not conflict on the FIR boundary.

Routing of SIGMET:
SIGMET is sent to

- Appropriate ROC – in this case, ROC Vienna at AFTN address **LOWMMMXX**
- SADIS at AFTN address **EGZZWPXX**
- WIFS at AFTN address **KWBCYMYX**
- VAAC Tokyo at AFTN address **RJTDYMYX**
- MATMC at AFTN address **UUUWZDZX**
- Petropavlovsk-Kamchatsky ACC at AFTN address **UHPPZRZX**

Note: ICAO RO MET verifies that this information is available on SADIS and WIFS.

NOTAM to be promulgated seven days prior to the exercise by Russian Federationand United States:
(Pxxxx/17 NOTAMN
Q) UHPP/QWWXX/IV/NBO/W/000/999/5121N15645E999
A) UHPP B) 1704202200 C) 1704210130
D)
E) EXERCISE VOLKAM17
VOLCANIC ASH EXERCISE TAKES PLACE 20 APRIL FROM 22:00 TO 21 APRIL APPROX. 01:30UTC.
EXERCISE NAME: VOLKAM17 EXERCISE VOLCANO: KOSHELEV 300020 N51 21 E156 45 RUSSIAN FEDERATION-KAMCHATKA
FREE TEXT OF PROMULGATED EXERCISE MESSAGES STARTS WITH:
EXERCISE VOLKAM17. FREE TEXT OF EXERCISE MESSAGES ENDS WITH:
EXERCISE EXERCISE EXERCISE
F) SFC
G) UNL)

(Pxxxx/17 NOTAMN
Q) PAZA/QWWXX/IV/NBO/W /000/999/5009N15522E999
A) PAZA PAZNB) 1704202200 C) 1704210130
D)
E) EXERCISE VOLKAM17
VOLCANIC ASH EXERCISE TAKES PLACE 20 APRIL FROM 22:00 TO 21 APRIL APPROX. 01:30UTC.
EXERCISE NAME: VOLKAM17
EXERCISE VOLCANO: KOSHELEV 300020 N51 21 E156 45 RUSSIAN FEDERATION-KAMCHATKA
FREE TEXT OF PROMULGATED EXERCISE MESSAGES STARTS WITH:
EXERCISE VOLKAM17.
FREE TEXT OF EXERCISE MESSAGES ENDS WITH:
EXERCISE EXERCISE EXERCISE
F) SFC
G) UNL)

Example NOTAM to be provided by NOF Moscow at approximately **2205 UTC**

(Pxxxx/17 NOTAMN
Q) UUXX/QWWXX/IV/NBO/W/000/400/5121N15645E999
A) UHPP UHHH UHMM B) 1704202205 C) 1704202305EST
D)
E) EXERCISE VOLKAM17 EXPLOSIVE ERUPTION OF VOLCANO KOSHELEV 300020 N51 21 E156 45 RUSSIAN FEDERATION-KAMCHATKA AS REPORTED BY VOLCANO OBSERVATORY AT 22:00 UTC WITH COLOUR CODE RED. VOLCANIC ASH PLUME IS AT FL450 MOVING SE
EXERCISE EXERCISE EXERCISE

F) SFC
G) FL450)

Example NOTAM to be provided by NOF Moscow at approximately **2240UTC**

(Pxxxx/17 NOTAMR Pxxxx/17
Q) UUXX/QWWXX/IV/NBO/W/000/400/5121N15645E999
A) UHPP UHHH UHMM B) 1704202240 C) 1604220040EST
D)
E) EXERCISE VOLKAM17 EXPLOSIVE ERUPTION OF VOLCANO KOSHELEV IN PROGRESS 300020 N51 21 E156 45 RUSSIAN FEDERATION-KAMCHATKA AS REPORTED BY VOLCANO OBSERVATORY AT 22:00 UTC WITH COLOUR CODE RED. VOLCANIC ASH PLUME IS AT FL450 MOVING SE
REFERENCE VOLCANIC ASH ADVISORIES (VAA) AND VOLCANIC ASH ADVISORY INFORMATION IN GRAPHICAL FORM (VAG) PROVIDED BY VOLCANIC ASH ADVISORY CENTRE (VAAC) TOKYO AS WELL AS SIGMET ISSUED BY RESPECTIVE METEOROLOGICAL WATCH OFFICES
EXERCISE EXERCISE EXERCISE
F) SFC
G) FL450)

Example NOTAM to be provided by NOF Moscow at approximately **2300UTC**

(Pxxxx/17 NOTAMR Pxxxx/17
Q) UUXX/QWWXX/IV/NBO/W/000/400/5121N15645E999
A) UHPP UHHH UHMM B) 1704202300 C) 1704210130
D)
E) EXERCISE VOLKAM17 END OF VOLCANIC ERUPTION OF VOLCANO KOSHELEV 300020 N51 21 E156 45 RUSSIAN FEDERATION-KAMCHATKA AS REPORTED BY VOLCANO OBSERVATORY AT 23:00 UTC WITH COLOUR CODE ORANGE. VOLCANIC ASH PLUME IS AT FL450 MOVING SE
VOLCANIC ASH STILL PRESENT DOWNSTREAM OF VOLCANO
REFERENCE VOLCANIC ASH ADVISORIES (VAA) AND VOLCANIC ASH ADVISORY INFORMATION IN GRAPHICAL FORM (VAG) PROVIDED BY VOLCANIC ASH ADVISORY CENTRE (VAAC) TOKYO OR VAAC ANCHORAGE OR VAAC WASHINGTON AS WELL AS SIGMET ISSUED BY RESPECTIVE METEOROLOGICAL WATCH OFFICES
EXERCISE EXERCISE EXERCISE
F) SFC
G) FL450)

Routing of NOTAM

NOTAM is sent to SADIS/WIFS Gateway at **EGZZVANW**

Example - Special air-report on volcanic ash

- **pilot to ACC Petropovlovsk-Kamchatsky**

    - A pilot provides a special air-report on volcanic ash via voice communications to ACC. In this exercise, simulated reports will be sent from dispatch to PK ACC via AFTN (**UHPPZRZX**) for reports in the **PK FIR**. In this exercise, simulated reports will be sent to Fukuoka ATMC (**RJJJZOZO**) and Tokyo Radio (**RJAAYSYX**) for reports in the **Fukuoka FIR**. Referencing PANS-ATM Appendix 1, Part 1 – Reporting instructions sections 1-4 and 9, the following example is provided.

‘**AIREP SPECIAL UNITED AIRLINES TREE TOO TOO POSITION FIFE ZERO ZERO ZERO NORTH WUN FIFE FIFE TOO TOO EAST FLIGHT LEVEL TREE FIFE ZERO CLIMBING TO FLIGHT LEVEL FOWer ZERO ZERO VOLCANIC ASH CLOUD EXERCISE VOLKAM17 EXERCISE EXERCISE EXERCISE**‘

- **ACC Petropovlovsk-Kamchatsky (PKK) to MWO Yelizovo**

There are different arrangements between ACC and MWO (e.g. information provided by fax or phone vs. AFTN). The following is an example of providing a special air-report from the ACC to the MWO via AFTN.

    - The format used for forwarding of meteorological information received by voice communications to the associated meteorological watch office (MWO) is provided in subtitle 3 of Appendix 1 of PANS-ATM. An example is provided based on the information given by the pilot or dispatch.

    - **ARS UAL322 5000N15600E 2315 F350 ASC F400 VA CLD=**

- **MWO Yelizovo to VAAC Tokyo, Regional OPMET Centre-ROC Vienna, SADIS, WIFS**

    - The format used for forwarding of a special air-report from the MWO to VAAC, ROC, SADIS and WIFS is in accordance to Annex 3, Appendix 6, Table A6-1 (**uplink**). An example is provided based on the informaton given by the ACC.

ARS UA322 VA CLD FL350/400 OBS AT 2315Z N5000E15600=

    - The MWO should send this information using the World Meteorological Organization Abbreviated Header Line (WMO AHL) of **UARA71 RUPK** to:

        - Appropriate VAAC – in this case, VAAC Tokyo (fax: +81 (3) 3212 6446; email vaac@eqvol2.kishou.go.jp; AFTN address **RJTDYMYX**)
        - Appropriate ROC – in this case, ROC Vienna at AFTN address **LOWMMMXX**
        - SADIS at AFTN address **EGZZWPXX**
        - WIFS at AFTN address **KWBCYMYX**
        - MATMC at AFTN address **UUUWZDZX**

When absence of visible ash is observed by pilots, follow procedures in section 4.7 of the Handbook on the International Airways Volcano Watch (IAVW) that is reproduced here within.

In the event of an eruption, operators should request their pilots to report, when appropriate, any observation related to a volcanic ash cloud including the absence of visible ash and all other relevant

information such as observational conditions. The operator should then forward this information to the associated VAAC in a timely manner.

Note. – Visible ash is defined in the Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds *(Doc 9691).*

Case example on re-routing

Example provided by American Airlines with input by United Airlines and Delta Airlines

AAL procedures used to route around areas of known, or forecast, volcanic ash are similar to those used for any other type of weather (i.e. turbulence, thunderstorms, etc.). Avoidance during pre-flight planning is straightforward since well established procedures are in place with both the aircraft operators and air traffic service providers for filing, cancelling and re-filing flight plans prior to departure. The operators also have much more flexibility at this stage since the fuel load can still be adjusted.

Once a flight has departed, options become much more limited, and coordination between the dispatcher, flight crew and air traffic control become much more complicated and time consuming. What is outlined below is what we do at AAL. However, the procedures at other operators should be similar.

Once the notification of an eruption is received by the Dispatcher (usually via the first volcanic ash advisory), its potential impact is immediately evaluated with respect to flights that are already en-route. Impacted flights are provided with all pertinent information. ACARS is the primary means of relaying this information; however SATCOM voice is also available. HF phone patch and relay through ATC are used as a last resort. Flights whose routes will be impacted in the near term (usually within a couple of hours), are dealt with first. If, based on the initial information, the eruption looks to be major (ash extending into the upper atmosphere, or affecting a destination) we will consult with our meteorologists to further evaluate the impact.

Our procedures indicate that we must avoid known, or forecast, areas of visible and discernable volcanic ash. Our weather services provider (WSI) provides custom SIGMET products for these areas, which are controlling for our operation. All other available information (government issued SIGMETs, VAAs, VAGs, etc.) is evaluated, but is considered advisory for our operation. Visible and discernable volcanicash areas must be avoided by at least 60nm laterally (Weather Services International SIGMETS include the 60nm buffer). We also have procedures that allow us to overfly these areas in some situations. There are very specific conditions that must be met. These overflight procedures essentially treat the ash area as mountainous terrain for engine failure and depressurization situations.

Once it is determined which, if any, flights are impacted, they are worked starting with those closest to the eruption. Possible reroutes are evaluated by the Dispatcher that would allow flights to avoid the impacted areas. Fuel is the prime consideration. If it is determined that the impacted area cannot be avoided, and still arrive at the scheduled destination with the required fuel reserves, an enroute landing (or return to the point of origin) is planned. The Dispatcher will then coordinate the diversion with the flight crew.

If a possible alternate route is an option with the fuel remaining, the Dispatcher will contact the flight for concurrence and coordination. Once the Dispatcher and Captain agree on a course of action, the Dispatcher will create the new flight plan and provide the details to the crew (usually via ACARS). At this point coordination with ATC will begin.

Providing the new/requested flight plan information to Air Traffic Control once a flight has departed, can be the most difficult, confusing and time consuming step in the process. Anything that can be done to streamline the process will be of immense help to the operators. Dispatchers are often dealing with several impacted flights simultaneously in these types of situations. Most of the time, this

coordination involves the crew reading the entire new route to the controller working them at the time. (Consider use of SATCOM voice between the flight and Anchorage center, if not in VHF coverage) This both ties up the frequency in use, and distracts the flight crew and controller from their primary duties which has an impact on flight safety. A better solution may be for Air Traffic to be able to accept a revised FPL after departure. The revised FPL could include some type of remark in Field 18 like 'INFLIGHT REROUTE REQUEST DUE VOLCANIC ASH'. A procedure like this could also be used in the case of other types of contingencies.

Once the affected flights have been handled for the near term, the situation is continuously monitored for changes. If needed, plans are re-evaluated and the process above repeats itself until the situation improves.

Note from UAL:

Part of the complexity with a Russian re-route is that Moscow wants to review the re-route prior to the FIRs accepting it rather than the FIRs just accepting a new FPL and coordinating the transfer of control from Anchorage or the JCAB (eastbound). You may want to point this out in your procedures.

EXERCISE LETTER OF AGREEMENT

(update – to add Magadan)

(update – any waypoints used need to be available in current navigation databases in order to be used by AOs)

AMONG
PETROPAVLOVSK-KAMCHATSKY AREA CONTROL CENTER (PK ACC)
OF THE RUSSIAN FEDERATION
AND
ANCHORAGE AIR ROUTE TRAFFIC CONTROL CENTER
OF FEDERAL AVIATION ADMINISTRATION (FAA)
AND
THE AIR TRAFFIC MANAGEMENT CENTER (FUKUOKA ATMC)
OF JAPAN CIVIL AVIATION BUREAU (JCAB)

EFFECTIVE: Apr 15, 2017

SUBJECT: PROCEDURES OF COORDINATION AMONG PK ACC, ANCHORAGE ARTCC AND FUKUOKA ATMC IN VOLKAM17 EXERCISE

1. PURPOSE:
The purpose of this EXERCISE LOA is to establish procedure of coordination among PK ACC, Anchorage ARTCC and Fukuoka ATMC (hereinafter referred to as Centers) in VOLKAM16 EXERCISE.

2. SCOPE:
This agreement is supplemental to the procedures contained in ICAO Annex 2, Annex 10, Annex 11, PANS-ATM (Document 4444), Regional Supplementary Procedures (Document 7030), and local AIP and ATS instructions.

3. DURATION:
This agreement will remain in effect from 2200UTC April 21, 2017 through 0130UTC April 22, 2017.

4. PROCEDURE:
a) The Transfer of control point (TCP) shall be the common FIR boundary, which shall also be the point of acceptance of primary communication guard and point of assuming responsibility of alerting services. Control for clearance is also relinquished to the receiving facility at the TCP unless otherwise coordinated.

b) In VOLKAM16 EXERCISE, simulated airway (OLGAR-HALBT-ALEXY-HARAD) shall be utilized for detoured route. This simulated airway shall be dealt as Fixed ATS route. The TCP sets to KOKES, ABACH and shall be used in the reroute coordination among Centers. (See attachment A)

c) Transfer of control messages shall be completed at least 30 minutes prior to the TCP and shall contain the following information:

[*Begin with the phrase* "EXERCISE VOLKAM17"]

(1) Reason (contingency, urgent avoid VA, etc.)
(2) Aircraft Information
(a) call sign
(b) aircraft type
(c) departure and destination airport
(d) original flight planned route
(e) estimated time of crossing the TCP
(f) altitude

(3) Any pertinent remarks

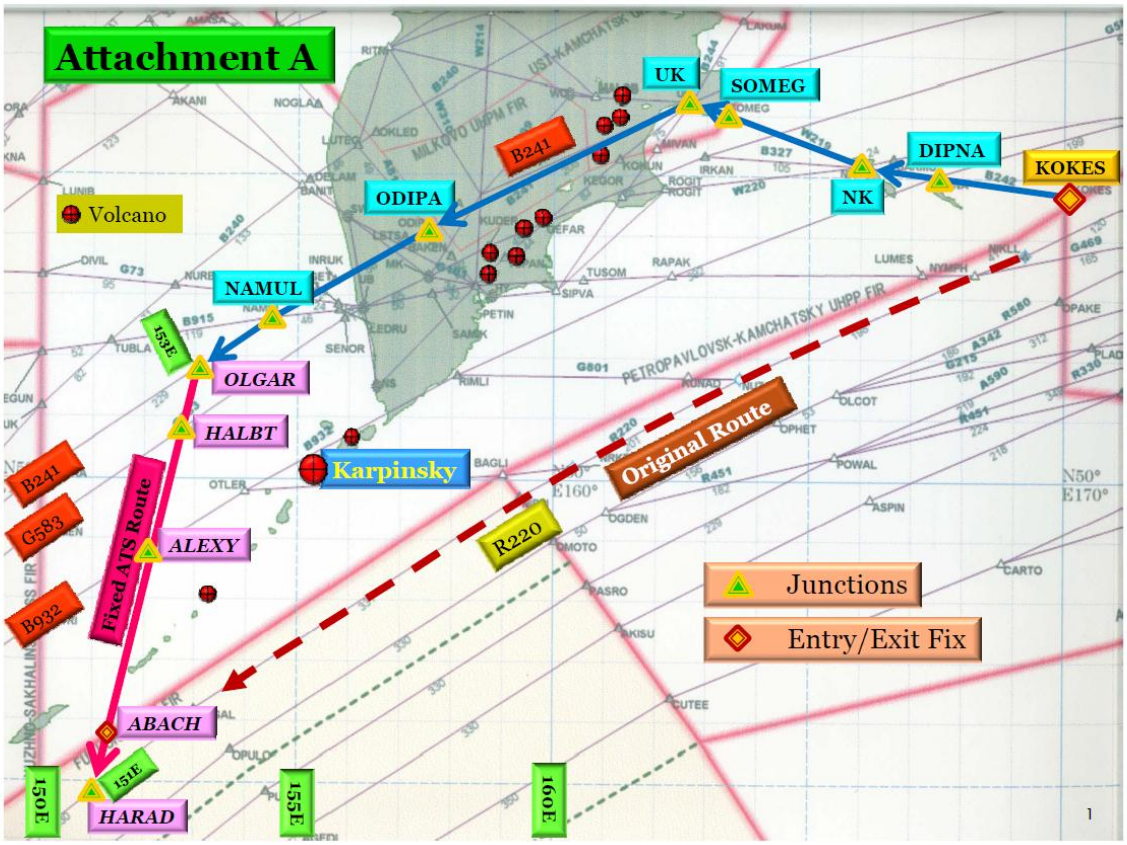
d) After receiving information, if necessary, the Centers shall coordinate the way how to transfer the frequency (transfer point, frequency).

e) In the case of an emergency, the controlling facility shall advise the receiving facility of any action(s) taken as soon as possible.

5. COMMUNICATION MEANS:
a) The means of communication among Centers shall be commercial phone. The telephone number of each facility for coordination is shown on attachment B.

b) The Centers shall advise each other of any changes in telephone numbers.

6. REVIEW AND MODIFICATION:
This agreement will be reviewed as necessary. Modifications to this agreement may be accomplished anytime by mutual consent of three parties concerned, except Attachment B, which will be updated as necessary.



Attachment B:

B1. Communications

a) PETROPAVLOVSK-KAMCHATSKY ACC of Russia

Commercial telephone number: + 7 415 31 6 26 01 (H24)

b) ANCHORAGE ARTCC

Commercial telephone number: +1-907-269-1408

c) FUKUOKA ATMC

Commercial telephone number: +81-92-608-8891(H24)

B2. All coordinations by telephone-communication are carried out in English.

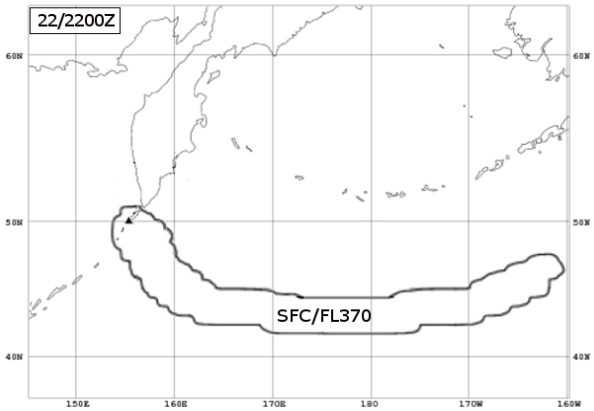
----------End of LOA----------

Other NOTES

Trial T+24 VAG will be provided for VOLKAM17 from VAAC Tokyo to assist operators in planning long-haul flights as well as assist in establishing PACOTS and west bound tracks. Feedback from airlines can be relayed to appropriate working groups of the MET Panel which is expected to assess the usefulness of trial T+24 VAG. Therefore, feedback from airlines on this matter is strongly encouraged. Also, please note the format of the trial T+24 VAG appears different from operational VAGs. For reference, trial T+24 VAGs are available on VAAC Tokyo‘s website:http://ds.data.jma.go.jp/svd/vaac/data/T24/vaac_list_T24.html), while the trial T+24 VAG for VOLKAM17 will be available only on its website for VOLKAM17 listed below on this page.

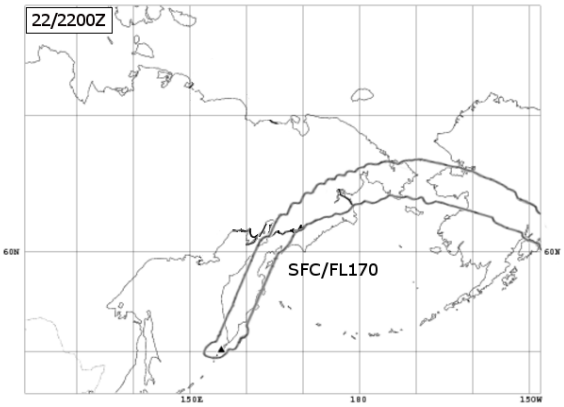
Trial T+24 VAGs from VAAC Tokyo related to the second, third and fourth VAAs

Trial T+24 VAGs for the second VAAs from VAAC Tokyo (**update**)



VA ADVISORY
DTG: 20160421/2200Z
VAAC: TOKYO
VOLCANO: KARPINSKY GROUP 290350
AREA: KURIL ISLANDS
SUMMIT ELEV: 1326M
ADVISORY NR: 9999/2

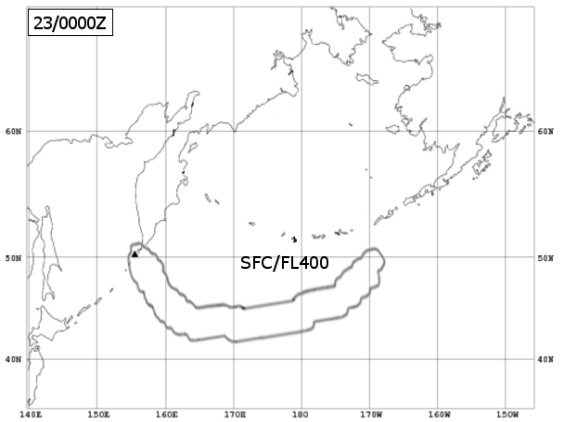
INFO SOURCE: EXERCISE VOLKAM16 HIMAWARI-8 KVERT UHPP
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: EXERCISE ERUPTION AT 20160421/2145Z FL400
EXTD SE MOV 60KT REPORTED
RMK: EXERCISE VOLKAM16 NIL EXERCISE EXERCISE EXERCISE
NXT ADVISORY: 20160422/0030Z=



VA ADVISORY
DTG: 20160421/2200Z
VAAC: TOKYO
VOLCANO: KARPINSKY GROUP 290350
AREA: KURIL ISLANDS
SUMMIT ELEV: 1326M
ADVISORY NR: 9999/2

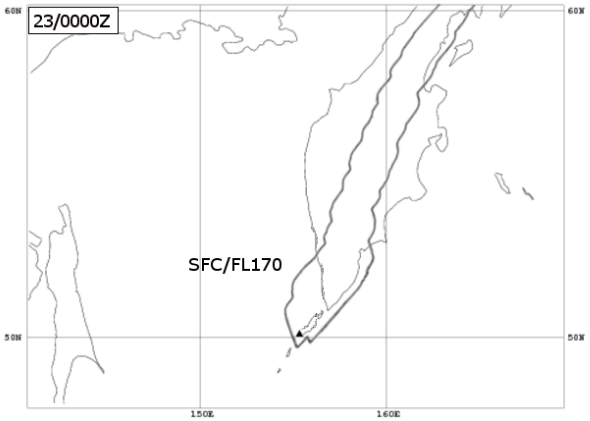
INFO SOURCE: EXERCISE VOLKAM16 HIMAWARI-8 KVERT UHPP
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: EXERCISE ERUPTION AT 20160421/2145Z FL400
EXTD SE MOV 60KT REPORTED
RMK: EXERCISE VOLKAM16 NIL EXERCISE EXERCISE EXERCISE
NXT ADVISORY: 20160422/0030Z=

Trial T+24 VAGs for the third VAAs from VAAC Tokyo **(update)**



VA ADVISORY
DTG: 20160422/0030Z
VAAC: TOKYO
VOLCANO: KARPINSKY GROUP 290350
AREA: KURIL ISLANDS
SUMMIT ELEV: 1326M
ADVISORY NR: 9999/3

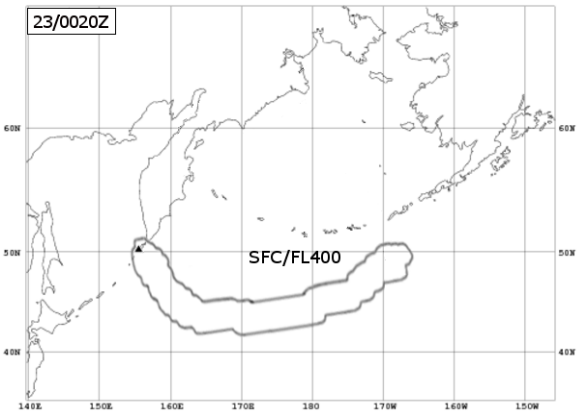
INFO SOURCE: EXERCISE VOLKAM16 HIMAWARI-8
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: EXERCISE VA CONTINUOUSLY OBS ON SATELLITE IMAGERY
RMK: EXERCISE VOLKAM16 THE RESPONSIBILITY FOR SOME PART OF ASH (FL200) IS BEING TRANSFERRED TO ANCHORAGE. PLS SEE ALSO FVAK21 PAWU ISSUED BY ANCHORAGE WHICH DESCRIBES CONDITION OVER OR NEAR THE TOKYO AREA. WE KEEP ISSUING VAA FOR THE VA CLD IN OUR AREA. EXERCISE EXERCISE EXERCISE
NXT ADVISORY: 20160422/0300Z=



VA ADVISORY
DTG: 20160422/0030Z
VAAC: TOKYO
VOLCANO: KARPINSKY GROUP 290350
AREA: KURIL ISLANDS
SUMMIT ELEV: 1326M
ADVISORY NR: 9999/3

INFO SOURCE: EXERCISE VOLKAM16 HIMAWARI-8
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: EXERCISE VA CONTINUOUSLY OBS ON SATELLITE IMAGERY
RMK: EXERCISE VOLKAM16 THE RESPONSIBILITY FOR SOME PART OF ASH (FL200) IS BEING TRANSFERRED TO ANCHORAGE. PLS SEE ALSO FVAK21 PAWU ISSUED BY ANCHORAGE WHICH DESCRIBES CONDITION OVER OR NEAR THE TOKYO AREA. WE KEEP ISSUING VAA FOR THE VA CLD IN OUR AREA. EXERCISE EXERCISE EXERCISE
NXT ADVISORY: 20160422/0300Z=

Trial T+24 VAG for the fourth VAA from VAAC Tokyo **(update)**

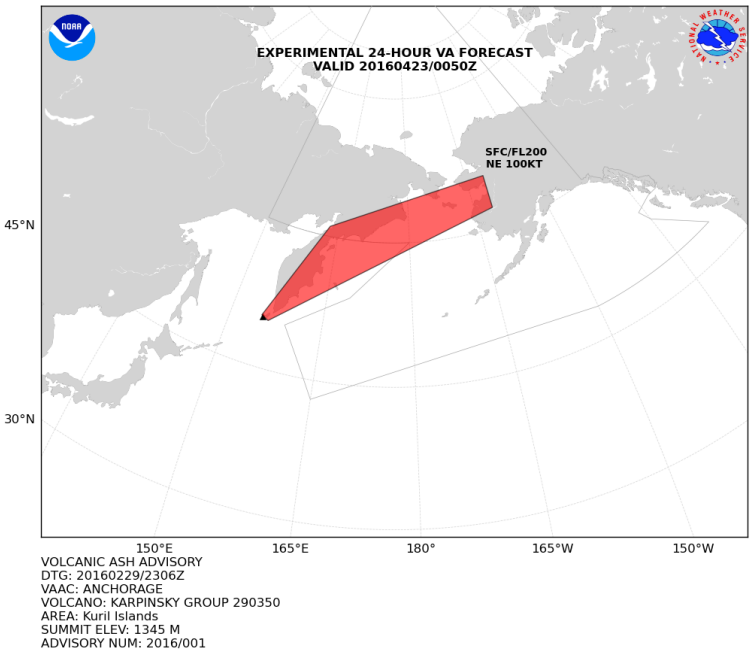


VA ADVISORY
DTG: 20160422/0020Z
VAAC: TOKYO
VOLCANO: KARPINSKY GROUP 290350
AREA: KURIL ISLANDS
SUMMIT ELEV: 1326M
ADVISORY NR: 9999/4

INFO SOURCE: EXERCISE VOLKAM16 HIMAWARI-8
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: EXERCISE VA CONTINUOUSLY OBS ON SATELLITE IMAGERY
RMK: EXERCISE VOLKAM16 PLS SEE ALSO FVAK21 PAWU ISSUED BY ANCHORAGE WHICH DESCRIBES CONDITION OVER OR NEAR THE TOKYO AREA. WE KEEP ISSUING VAA FOR THE VA CLD IN OUR AREA. EXERCISE EXERCISE EXERCISE
NXT ADVISORY: 20160422/0300Z=

Trial T+24 VAG from VAAC Anchorage **(update)**

Correction to time below: 20160423/0020Z



Note that VAAC Tokyo uses the maximum height of volcanic ash reported if differences in volcanic ash height are reported from various sources (satellite, aircraft report, VAA).

Useful websites:

VAAC Tokyo http://ds.data.jma.go.jp/svd/vaac/data/VOLKAM17/index.html

VAAC Anchorage http://vaac.arh.noaa.gov/

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

KVERT http://www.kscnet.ru/ivs/kvert/van/

Alaska Volcano Observatory (AVO) https://www.avo.alaska.edu/

SADIS ftp://username:password@sadisftp.metoffice.gov.uk (note that access to SADIS requires a user name and password)

WIFS http://aviationweather.gov/wifs/ (note that access to WIFS requires a user name and password)

9. COMMUNICATIONS

The free text of all exercise messages starts with:EXERCISE VOLKAM17 and ends with: EXERCISE EXERCISE EXERCISE

Telcons start with:
EXERCISE VOLKAM17

10. DIRECTING STAFF

Role	Name	Agency	Email
Exercise Leader & ATMC leader	Alexey Buevich	State ATM Corporation of Russia	alexey@matfmc.ru
National Supervisory Authorities	Elena Glukhovskaya	FATA	Gluhovskaya_ep@scaa.ru
	Toshiyuki Masuda Tomoko Ishikawa	JCAB	Masuda-t46qd@mlit.go.jp Ishikawa-t07p2@mlit.go.jp
Lead VAAC	Kazuki Ito	JMA, VAAC Tokyo	kazuki.ito@met.kishou.go.jp
Lead VO	Olga Girina	KVERT, IVS FEB RAS	girina@kscnet.ru
Lead ACC	Mikhail Solntsev	Magadan ACC	acc@sv.gkovd.ru
Lead ACC	Vladimir Fedulov	Petropavlovsk Kamchatsky ACC	VAF@kam.gkovd.ru
Lead ACC	Roman Tkachenko	Khabarovsk ACC	trg@dv.gkovd.ru
Lead NOF	Galena Kotova	NOF Moscow	kotova@caica.ru
Lead Roshydromet	Yuliya Naryshkina	Roshydromet	juliaavia@mail.ru
Lead MWO	Irina Veretennikova	Yelizovo MWO	arrow.ir@mail.ru
Airlines	Dmitry Kosolapov	IATA – Russian Feder	kosolapoval@iata.org

11. VOLCANIC ASH TELECONFERENCE INSTRUCTIONS

Lead: The lead of teleconference calls should be the ATMC of the State where the volcano is erupting (e.g. a volcano eruption in Kamchatka – MATMC Moscow; volcano eruption in Japan – Fukuoka ATMC; volcano eruption in Alaska – US ATCSCC)

Expected participants and general information expected from each:
VO – brief update on eruption status, latest height information, source of height information; duration of event, expected activity
VAAC – brief update on VAA/VAG (are observations such as aircraft reports being used to update products)
MWO – brief update on SIGMET (if different from VAA/VAG, briefly explain why)
NOF – brief update on NOTAM and published reroutes
ACC – brief update on reroutes and coordination with ACCs and ATMCs
ATMC – brief update on overall strategy (coordination with other ATMCs and ACCs)
Airlines – brief update on tactical reroutes, flight plan changes and satisfaction with reroutes
ATMC – response, if necessary, to airlines
ACC – response, if necessary, to ATMCs and airlines

Information sharing: With reference to information sharing, a web portal (like that at Eurocontrol) is not yet available; however, links provided in the other notes section allows the user to access VAA/VAG from VAACs, VONA from VOs,special air-reports on volcanic ash and relevant SIGMETs and NOTAMs on SADIS and WIFS.

In the future, a web portal may be considered useful to obtain volcanic ash related products and information.

Language: Each State should arrange to have participants speak English during the teleconferences.

Microphones: Each participant should mute microphones to reduce background noise. The Leader of the teleconference will instruct the participant when to speak. When other features are available, Leader would mute and controls when participants speak.

VOLKAM17: (update)
Dial: **+44 (0) 3306 068934**
Conference code: **4184173645** (followed by **#**)

All participants will be muted in the beginning of the teleconference by the Leader.

The Leader will ask individual participants to speak by unmuting their own line by dialing ***6**. After that individual has spoken, they need to mute their own line by dialing again ***6**.

Userguide: http://www.intercalleurope.com/files/ResPlusUserGuide_eng.pdf

Email list for VOLKAM17:

girina@kscnet.ru; kazuki.ito@met.kishou.go.jp; vaac@eqvol2.kishou.go.jp; donald.moore@noaa.gov; a-vaac@noaa.gov; Jamie.Kibler@noaa.gov; w-vaac@noaa.gov; alexey@matfmc.ru; sakurai-a07xr@mlit.go.jp; Joseph.Varrati@faa.gov; Franklin.Mcintosh@faa.gov; Lenard.l.carter@faa.gov; Steve.Kessler@faa.gov; ukida-h076k@mlit.go.jp; trg@dv.gkovd.ru; acc@sv.gkovd.ru; john.j.taggart@faa.gov; Dustin.M.Byerly@faa.gov; zoa.all.hands@noaa.gov; sbutakov@kamaero.ru; satoh-f05tv@mlit.go.jp; Anik.Bertrand@navcanada.ca; FiegeR@navcanada.ca; DanseGr@navcanada.ca; Dawn.Whyte@navcanada.ca; Gluhovskaya_ep@scaa.ru; juliaavia@mail.ru; masuda-t46qd@mlit.go.jp; ishikawa-t07p2@mlit.go.jp; Steven.Albersheim@faa.gov; mochiduki-k4634@mlit.go.jp; Jerry.Torres@faa.gov; arrow.ir@mail.ru; meteo_sokol@mail.ru; Gail.Weaver@noaa.gov; Carrie.Haisley@noaa.gov; cimbal@matfmc.ru; kosolapovd@iata.org; gene.cameron@united.com; gen.schnee@united.com; mike.stills@united.com; satoshi.shindo@jal.com; ts.yoshino@ana.co.jp; allan_tang@cathaypacific.com; julian_fung@cathaypacific.com; kffoster@ups.com; ATL019.SASINT@delta.com; Gregg.Scott@delta.com; greg.ginrich@delta.com; Stephen.smith@aa.com; Tobin.Miller@aa.com; Robert.Giangiulio@aa.com; elizabeth.krajewski@weather.com; ckeohan@paris.icao.int;

Glossary of Acronyms

ACARS – Aircraft Communications Addressing and Reporting System

ACC – Area Control Centre

AIREP SPECIAL – special air-reports

AIS – Aeronautical Information Services

ANA – All Nippon Airways

ANSP – Air Navigation Service Provider

ATCSCC – Air Traffic Control System Command Center

ARTCC – Air Route Traffic Control Center

ATFM – Air Traffic Flow Management

ATM – Air Traffic Management

ATMC – Air Traffic Management Centre

AVO – Alaska Volcano Observatory

CPWG – Cross Polar Working Group

FPL – Flight Plan

IATA – International Air Transport Association

ICAO RO – International Civil Aviation Organisation Regional Officer

JAL – Japan Airlines

KVERT – Kamchatka Volcanic Eruption Response Team

MATMC – Main Air Traffic Management Center (of State ATM Corporation of Russia)

MWO – Meteorological Watch Office

NOAA – National Oceanic and Atmospheric Administration (of the United States)

NOF – International NOTAM Office

NOPAC – North Pacific (referencing air-routes)

PACOTS – Pacific Organised Track System (referencing air-routes)

ROC – Regional OPMET Centre

RODB – Regional OPMET Data Bank

SADIS – Satellite Distribution System

UPS – United Parcel Service

VAA – Volcanic Ash Advisory

VAAC – Volcanic Ash Advisory Centre

VAG – Volcanic ash advisory information in graphical format

VO – Volcano Observatory

VOLKAM17 – name of volcano exercise in far Eastern EUR in 2017

VONA – Volcano Observatory Notice for Aviation

WIFS – World Area Forecast System (WAFS) Internet File Service (WIFS)

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