Twenty Seventh Meeting of the Cross Polar Trans East Air Traffic Management Providers’ Work Group (CPWG/27)

(Singapore October 22-24, 2019)

Agenda 7: CPWG/26 Action Item Update

VOLKAM Events
(Action Item #CP15-06 and CP18-02)

(Presented by State ATM Corporation)

SUMMARY
A summary of the Volcanic Ash Exercises in the (far) Eastern part of the EUR Region is provided.

1. Introduction

1.1 The meeting may recall that the European Air Navigation Planning Group (EANPG) Programme Coordinating Group (COG) and North Atlantic Implementation Management Group (NAT/IMG) established the Volcanic Ash Exercises Steering Groups for the EUR and NAT Regions (VOLCEX/SG) and for the Volcanic Ash Exercises Steering Group for the (far) Eastern part of the EUR Region (EUR (EAST) VOLCEX/SG) in order to initiate and maintain a programme of regular volcanic ash exercises in the EUR/NAT Regions. One of the main goals of these exercises is to exercise the volcanic ash contingency plan for the EUR and NAT Regions (EUR Doc 019, NAT Doc 006, Part II) which was recently merged (July 2016). Typically, one exercise called VOLKAM is planned and conducted by EUR (EAST) VOLCEX/SG each year.

1.2 The objectives of the exercises is to improve the response to volcanic eruptions and volcanic ash contamination by the relevant national supervisory authorities, service providers (ATS, AIS, ATFM, MET, VAAC(s) and VO(s)) and airspace users as well as improve the common volcanic ash contingency plan for the EUR and NAT Regions (EUR Doc 019, NAT Doc 006, Part II). The Main ATM Centre in Moscow plays an active role in VOLKAM in coordinating with ANSPs and operators on accepting re-routes into Russian Federation airspace based on exercise contingency routes and operators’ needs.

2. Discussion

2.1 The meeting may wish to recall that the EUR (EAST) VOLCEX/SG planned and conducted a volcanic ash exercise called VOLKAM19. This exercise involved a simulated eruption of Opala, Kamchatka in the Russian Federation that produced a simulated volcanic ash cloud to FL450 which moved SE that impacted trans-east, NOPAC and PACOTS routes. In addition, a simulated eruption of Ushkovsky, Kamchatka produced a simulated volcanic ash cloud to FL250 that moved NW to impact trans-east route and some cross-polar routes (this impacted some aircraft due to decompression constraints). VOLKAM19 took place from 2200 UTC on 18 April 2019 to 0200 UTC on 19 April 2019. This scenario left a corridor of ash free airspace of several hundred kilometers width in south-central
Kamchatka. This exercise allowed national supervisory authorities, service providers and airspace users to practice their response to volcanic eruptions. The complete list of aims and objectives of VOLKAM19 are provided at Appendix A.

2.2 This was the second year of practicing two volcano eruptions simultaneously. This year the volcanic ash information (Volcanic Ash Advisories, SIGMETs, NOTAMs and special air-report on volcanic ash) was timely and in accordance to provisions as well as routed correctly through the AFTN network.

2.3 Approximately 50 reroute requests by six airlines were received at Main Air Traffic Management Centre in Moscow and most were accepted. Those that were not originally accepted were adapted and sent to the airlines for final acceptance. A diversion to Magadan was also conducted by American Airlines in order to consider this as an alternate aerodrome in the future. This test was part of American Airlines annual FAA required Polar Diversion Recover Audit.

2.4 One reroute request was provided via Controller Pilot Data Link Communications (CPDLC) to ACC Anchorage (PAZN). The message was successfully retransmitted via ATS Interfacility Data Communication (AIDC) to Magadan ACC noting there were procedural issues. That is, Advanced Technologies & Oceanic Procedures (ATOP) system can only send a Current Flight Plan (CPL) based upon aircraft’s cleared profile (unable to send CPL on proposed profile). Anchorage is studying the results to determine next steps forward for a possible resolution.

2.5 In general, passing reroute information via CPDLC from pilot to ACC and then from ACC to ACC via AIDC was the most significant challenge in this exercise. This was due to the following reasons: limited number of airlines that were capable of conducting this test (e.g. American Airlines does not practice this procedure yet, but training expected by VOLKAM20); the location of aircraft were not favourable to conduct the Dynamic Airborne Reroute Procedure (DARP)-like procedure (e.g. Delta had aircraft in the part of Anchorage airspace where these procedures are not practiced – PAZA FIR); and there was difficulty sending CPDLC reroute information to ACC Magadan (United attempted, but could not login to their system). Nevertheless, this procedure will be practiced in future exercises as more airlines will be in a position to participate. Other glitches can be remedied in the meantime and this procedure can be practiced in real-time events, where capabilities allow.

2.6 The VOLKAM19 Debrief Meeting was held in Paris from 20-21 May 2019 and developed recommendations to be considered in future exercises and/or real-time volcanic ash events. The list of VOLKAM19 recommendations modified or created is provided at Appendix B. Mainly, passing reroute information from one ACC to another is essential in future events to reduce the chance of misreading an updated flight plan, reducing the work load for many stakeholders as well as reducing flight delays, diversions and cancellations. To achieve this, American Airlines plans to conduct a Controller Pilot Data Link Communications (CPDLC) test. Furthermore, some procedural issues related to passing reroute information from Anchorage to ACC Magadan will be examined. Lastly, an action to consider real-time coordination for a catastrophic volcanic ash event will be examined by the concerned States.

2.7 The Fifteenth Meeting of the Volcanic Ash Exercises Steering Group for the (far) Eastern part of the EUR Region (EUR (EAST) VOLCEX/SG/15) was held in Magadan, Russian Federation from 23-25 July 2019 which developed VOLKAM20 objectives as provided at Appendix C and associated scenario.

2.8 VOLKAM20 will take place from 2200 UTC on 16 April 2020 to 0200 UTC on 17 April 2020. VOLKAM20 will simulate a volcano eruption of Khodutka, Kamchatka in the Russian Federation
that will produce a simulated volcanic ash cloud to FL450 moving SE to impact trans-east, NOPAC and PACOTS routes. In addition, a simulated eruption of Ichinsky, Kamchatka will produce a simulated volcanic ash cloud to FL250 moving NW to impact trans-east route and some cross-polar routes.

2.9 The main objective will be to demonstrate Dynamic Airborne Reroute Procedure (DARP). At least one airline will pass reroute information automatically to Area Control Centre (ACC) Magadan using Controller-Pilot Data Link Communication (CPDLC) and then passed to Main ATM Centre in Moscow for approval. The cleared reroute is then transferred to ACC Magadan for uplink to the pilot via CPDLC. The pilot then accepts this reroute information in the Flight Management System onboard the aircraft. This procedure may also be tested in the Anchorage Flight Information Region and passed from ACC Anchorage to ACC Magadan via Air Traffic System Interfacility Data Communication (AIDC). This exercise will assist in real-time events by reducing the workload of operators and air traffic services.

3. Action by the CPWG

3.1 The CPWG is invited to

a) note the contents of this paper; and

b) continue supporting the volcanic ash exercises in the EUR/NAT Regions.

– END –
Appendix A

VOLKAM19 Objectives

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

- demonstrate coordination between Magadan and Fukuoka ACCs using contingency Memorandum of Understanding;

- demonstrate tactical re-routes using available methods including DARP-like test using CPDLC (re-routes to use existing route structure);
  - DARP-like test between Magadan and Anchorage ACCs via AIDC;
  - DARP-like test between Magadan and Khabarovsk ACCs via OLDI;

- demonstrate diversion to Magadan to test emergency procedures;

- 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) using CPDLC, VHF and HF; and

- 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)
Appendix B

**VOLKAM19 Recommendations**
Recommendations were formulated based on reports and presentations or briefings provided by MATMC of Russia (Exercise Leader), Japan Civil Aviation Bureau (JCAB), Volcanic Ash Advisory Centre (VAAC) Tokyo, U.S. Federal Aviation Administration (FAA) Oakland and Anchorage Air Route Traffic Control Centre (ARTCC), and American Airlines. Some of the recommendations *(text in italics)* were absorbed in existing actions from previous VOLKAMs such as reroute procedures being shared amongst ACCs while 2 new recommendations were created *(text in italics)*.

- **Continue work on sharing reroute information amongst ACCs:**
  - Test DARP-like procedure using ATS Interfacility Data Communication (AIDC) for reroute information starting with Edmonton who coordinates with Anchorage who coordinates with Magadan who coordinates with Khabarovsk;
  - *American Airlines to conduct a CPDLC test;*
  - *Anchorage to determine next steps forward for a possible resolution to sending CPL on proposed profile from Anchorage to Magadan (currently ATOP system can only send a CPL based upon aircraft’s cleared profile);*
  - *Consider a way to pass reroute information that would not be rejected in order not to conflict with the actual flight plan; and*
  - *Consider conducting this test in real-time events.*

- **Finalize agreement for contingency events between Magadan and Fukuoka FIRs:**
  - *Consider changing airspace classification from Class G to A in Magadan ACC (for area North of NOPAC route).*

- **Consider conducting teleconferences for real volcanic ash events:**
  - *Who would take the lead (will investigate facilities at US Command Centre & consider setting up a CADENA-like (operational information system) - CPWG); and*
  - *Note that this is intended to be for a catastrophic event that has a significant impact to air traffic.*

- **Consider generic VOLKAM email address for real volcanic ash events:**
  - *Add contacts where necessary; and*
  - *Noting security concerns.*
Appendix C

VOLKAM20 Objectives

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

• demonstrate coordination between Magadan and Fukuoka ACCs using contingency Memorandum of Understanding;

• demonstrate tactical re-routes using available methods including DARP test using CPDLC (re-routes to use existing route structure);
  o DARP test initiated in Magadan;
  o DARP test initiated in Anchorage and sent to Magadan via AIDC (tbc);

Develop procedure for inclusion in this Directive between ACCs and airlines (e.g. AA and UA)

Determine candidate flights (e.g. AA and UA) at the end of March 2020

• demonstrate diversion to Anadyr to test emergency procedures;

• demonstrate VAAC Tokyo / VAAC Anchorage / VAAC Washington handover;

• demonstrate issuance of SIGMET by MWOs in new area of VAAC Tokyo and disseminate to ROC Vienna and VAAC Tokyo via AFTN;
  to be confirmed with consent from MWO Yakutsk

• demonstrate transmission of air-reports on volcanic ash in accordance to Annex 3 (aircraft->ACC->MWO->VAAC) using CPDLC, VHF and HF; and

• demonstrate information sharing via teleconferences (as well as pre-exercise teleconference test) 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)