

**Twenty-Sixth Meeting of the Cross Polar Trans East Air Traffic Management Providers'  
Work Group (CPWG/26)**

(Vancouver, Canada October 30-November 1, 2018)

**Agenda Item 6** : Update on CPWG Action Items

**VOLKAM Events**

**(Action Item #CP15-06, CP18-02)**

(Presented by State ATM Corporation of Russia)

**SUMMARY**

This paper presents a summary of the Volcanic Ash Exercises in the (far) Eastern part of the EUR Region.

**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 VOLKAM18 that simulated two volcano eruptions of Zheltovsky and Khangar in Kamchatka. VOLKAM18 took place from 2200 UTC on 19 April 2018 to 0200 UTC on 20 April 2017. The simulated volcanic ash cloud from Zheltovksy with height to FL450 moved to the southeast at 400 km/hr that impacted trans-east and Northern Pacific (NOPAC) routes as well as Pacific Organized Track System (PACOTS). The simulated volcanic ash cloud from Khangar with height to FL250 moved northwest at 250 km/hr that impacted trans-east routes.

2.2 The objectives of VOLKAM18 are provided in the bullets below as well as a brief summary of achievements in the sub-bullets.

- **Demonstrate coordination procedures between all participating parties (ANSPs, ATM Centres, AIS, VO, VAACs, MWO and users);**
  - Achieved, successful as demonstrated by information flow by respective participants. Teleconferences improved through the evening with 21 participants attending in the second teleconference. *Note, however, NOTAMs were not as timely likely due to the complication of managing two eruptions simultaneously (two eruptions simultaneously provided a challenging workload to many participants in general). In addition, ash cloud coordinates are not necessary in NOTAM since information is in VAA, VAG and SIGMET and the NOTAM points to these elements.*
- **Demonstrate coordination between Magadan and Petropavlovsk-Kamchatsky, Fukuoka, Anchorage and Oakland ACCs using exercise contingency Letter of Agreement;**
  - Coordination on simulated re-routes occurred between Anchorage and Oakland as many aircraft were swapped between Anchorage and Oakland. In addition, MATMC accepted many simulated re-reroutes into Russian Federation airspace which required coordination with ACCs Petropavlovsk-Kamchatsky, Magadan and Khabarovsk. Also, note that all twelve American Airlines' flights whose flight paths were impacted by the volcanic ash would have had to use Magadan FIR due to a strong jet stream to the South of Kamchatka.
- **Demonstrate tactical re-routes using available methods including DARP-like test using Controller-Pilot Data Link Communications (CPDLC) (re-routes to use existing route structure);**
  - United Airlines provided simulated re-route information using CPDLC, which was successfully communicated with ACC Magadan.
- **Demonstrate diversion to Petropavlovsk-Kamchatsky to test emergency procedures;**
  - American Airlines successfully simulated an emergency diversion to Petropavlovsk-Kamchatsky, which accepted the simulated diversion noting it would take an hour to manage the stop-over (e.g. refuel and departure coordination).
- **Demonstrate ATFM measures (informative and regulatory) in Magadan FIR;**
  - Successfully demonstrated ATFM coordination between ATMC Moscow and ACC Magadan. However, the ATFM concept was not clear enough. Specifically, based on information that Kamchatka-2 sector was going to be contaminated by volcanic ash, MATMC sent an AIM message to Magadan ACC containing a list of flights that were likely to be affected if Magadan were to set the capacity to 0. It was supposed that ATFM measures such as delayed departure would be applied to alleviate air traffic in Kamchatka Area 1 and Kamchatka Area 2. Meanwhile, the simulated delay was applied to the flight which was not to route through Kamchatka Area 1 or Kamchatka Area 2.
- **Demonstrate VAAC Tokyo / VAAC Anchorage / VAAC Washington handover;**
  - Successfully demonstrated VAAC Handovers from Tokyo to Anchorage to Washington.
- **Demonstrate transmission of air-reports on volcanic ash in accordance to Annex 3 (aircraft->ACC->MWO->VAAC) using CPDLC, VHF and HF;**

- Successfully demonstrated transmission of test special air-report on volcanic ash provided by United Airlines to ACC Petropavlovsk-Kamchatsky via HF. That information was sent from ACC PK to MWO Yelizovo for dissemination via AFTN allowing this message to be available on SADIS.
- **Demonstrate information sharing via teleconferences and website (KVERT website with PUFF and aeronautical information);**
  - Teleconferences successfully conducted noting at times participants should have only spoken when asked. Participation was significant (16 and 21 participants in teleconferences 1 and 2); *but fell short of full participation*;
  - PUFF model was successfully run and displayed on KVERT website;
  - VAAC Tokyo's website contained exercise VAA, VAG, SIGMET and NOTAM which assisted in obtaining volcanic ash information at one website

2.3 The VOLKAM18 debrief meeting was held in Paris on 22 May 2018 which developed recommendations that will be considered in the next exercises and where appropriate, for real-time events. The four main recommendations to consider in VOLKAM19 included: testing DARP-like procedure using ATS Interfacility Data Communication (AIDC) for reroute information starting with Edmonton who will coordinate with Anchorage who will coordinate with Magadan who will coordinate with Khabarovsk (ACCs Magadan and Khabarovsk use On-Line Data Interchange (OLDI)); finalize memorandum of understanding for contingency events between Magadan and Fukuoka FIRs; alleviate air traffic in the Anchorage Oceanic Airspace by utilizing high area over Edmonton and mid area over Alaska; and clarify ATFM measures.

2.4 As stated, the above recommendations were considered for the next exercise called VOLKAM19. A sketch of VOLKAM19 was developed at the EUR (EAST) VOLCEX/SG/13 meeting held in Magadan, Russian Federation from 7 to 9 August 2018. The objectives of the VOLKAM19 include the following:

- 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 agreed re-route scenarios published by NOTAMs);
  - DARP-like test between Magadan and Anchorage ACCs via AIDC;
  - DARP-like test between Magadan and Khabarovsk ACCs via OLDI;
  - DARP-like test between Anchorage and Edmonton ACCs via AIDC (*to be confirmed*);
- demonstrate diversion to Petropavlovsk-Kamchatsky to test emergency procedures (*check with AA and UA – to be confirmed*);
- demonstrate ATFM measures (informative and regulatory) if necessary in certain sectors of Magadan FIR and Anchorage Oceanic FIR;
- demonstrate VAAC Tokyo / VAAC Anchorage / VAAC Washington handover (*to be confirmed*);

- 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) (*need FIR boundary information from Oakland to include on PUFF display*).

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

2.5 To meet these objectives, a simulated eruption of a volcano named Opala in Kamchatka will produce a volcanic ash plume to FL450 moving SE at 400 km/hr to impact trans-east, NOPAC and PACOTS routes. In addition, a second simulated eruption of a volcano named Ushkovsky in Kamchatka will produce a volcanic ash plume to FL250 moving NW at 400 km/hr to impact trans-east routes (this will impact some aircraft due to decompression constraints). VOLKAM19 will take place from 2200 UTC on 18 April 2019 to 0200 UTC on 19 April 2019.



Opala



Ushkovsky

### 3. Action by the Meeting

3.1 The Meeting is invited to note the contents of this paper.