International Civil Aviation Organization

THE THIRTEENTH MEETING OF ASIA/PACIFIC ROBEX WORKING GROUP (ROBEX WG/13) and FIFTH MEETING OF METEOROLOGICAL HAZARDS TASK FORCE (MET/H TF/5)

Seoul, Republic of Korea, 18 March 2015

Agenda Item (conjoint session) 2: SIGMET and advisory information

ENHANCEMENT IN HANDOVER PROCEDURES AND COLLABORATIVE DECISION ANALYSES AND FORECAST (CDAF) WITH VAAC ANCHORAGE

(Presented by Japan)

SUMMARY

This paper presents ongoing efforts for enhancement in handover procedures as well as collaborative decision analyses and forecast (CDAF) between the VAAC Anchorage and VAAC Tokyo.

1. INTRODUCTION

1.1 Volcanic ash clouds flow regardless of borders. When an ash cloud flows from the Area of Responsibility (AOR) of a certain VAAC to another, the responsibility to issue Volcanic Ash Advisories (VAAs) is to be handed over.

1.2 When a handover between two VAACs is conducted, contents of VAAs from each VAAC should be consistent to avoid users' confusion.

1.3 The necessity of handover often occurs between the VAACs Anchorage and Tokyo: when a volcano in Kamchatka or Kuril Islands located in the AOR of the VAAC Tokyo erupts, the volcanic ash often migrates into the AOR of the VAAC Anchorage and the VAAC Tokyo hands its responsibility over to the VAAC Anchorage.

1.4 Handover procedures were tested in a Volcanic Ash Exercise in Kamchatka in 2014 called VOLKAM14 as shown in ROBEX WG/13 MET/H TF/5 – IP/C2. It took 22 minutes to complete the handover from the VAAC Tokyo to the VAAC Anchorage, which revealed the necessity to review clearer handover confirmation methods and to reduce the time for the procedures: the report of VOLKAM14 recommended that the two VAACs should improve handover procedures.

1.5 In Appendix D to the report of the eighth meeting of the International Airways Volcano Watch Operations Group (IAVWOPSG/8), CDAF adding to handover procedures is regarded as a critical process to improve the quality of information in VAAs. In this report, the lead VAAC is expected to initiate collaboration with the adjoining VAACs by Internet chat or telephone.

2. DISCUSSION

2.1 Considering the frequent occurrence of handovers due to active volcanoes in Kamchatka Peninsula as well as the necessity of providing consistent advisories between the VAACs Anchorage and Tokyo, particular challenges and coordination are being held.

2.2 The two VAACs have prepared a specific sheet called "Handover Request Sheet (HRS)" in which necessary items are already included. In a case where a handover is required, the VAACs fill necessary items on the sheet and exchange it to simplify and speedup the procedures. Additionally, based on the outcome of VOLKAM14 noted in ROBEX WG/13 MET/H TF/5 – IP/C2, the VAACs started to make a confirmation phone call right after sending a HRS via e-mail to let the other VAAC be aware of the receipt of the sheet, which is intended to reduce further the time for handover procedures.

2.3 It is also necessary to make the timing of handover be consistent between them under various situations considering users' convenience; therefore, the VAACs created a guideline, in which the information about decision-making criteria on how and when to conduct a handover are described. Figure 1 shows a part of the guideline. The criteria have been coordinated so that both VAACs can expect in advance how the other VAAC will act against ash clouds moving towards the border of their AORs.

2.4 To provide consistent advisories before and after the handover, it is definitely effective to share forecasters' views before ash clouds actually cross the border of the AORs, especially for a complicated or an exceptional situation. Therefore, the VAACs have started testing a CDAF process with a chat system provided by the National Oceanic and Atmospheric Administration (NOAA), for closer and more flexible communication. Figure 2 shows the example of CDAF chat test.

2.5 As part of the test, the VAACs are aiming at finding necessary specific patterns of phenomena as well as phrases of questions and answers corresponding to them, and creating a template like a FAQ sheet so that the communication will be smooth between members including non-native English speakers. Tests were held twice in July and December 2014 for scenarios based on past eruptions. The VAACs will conduct similar tests a few more times for other scenarios that will require coordination to brush-up the template and to find out the way to make this system most effective for operations.

2.6 If it proves to be successful and becomes operational in the two VAACs, it could be a model case and could be applied to coordination/communication not only between the VAAC Tokyo and related organizations but between other VAACs and volcano observatories particularly in the area where English is not the mother tongue.

2.7 In parallel, VAAC Tokyo has started a unique effort to improve the English communication skill. With a cooperation of native English speakers who kindly read the template described above, the centre recorded their voice and is using it as English training materials. It has been taking effect little by little, and VAAC Tokyo is aiming at providing more flexible communication with neighbouring VAACs as well as more user-friendly international services.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information provided in this paper.

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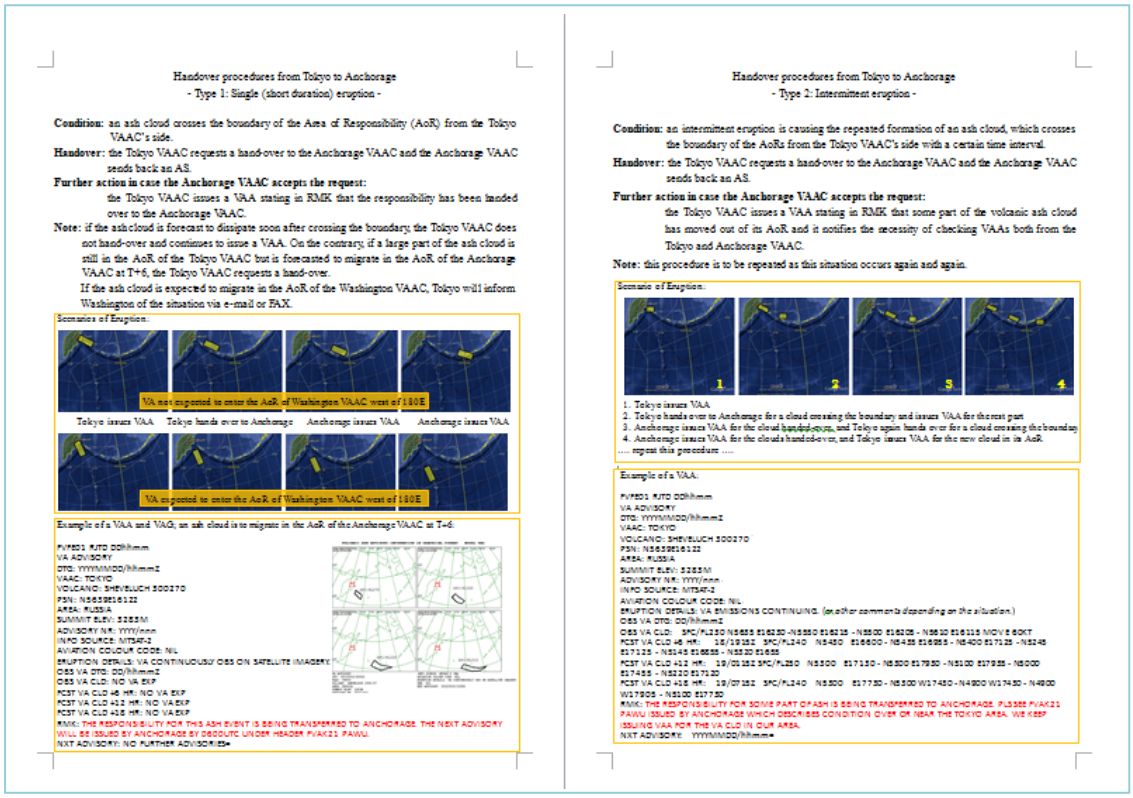

Handover procedures from Tokyo to Anchorage
- Type 1: Single (short duration) eruption -

Condition: an ash cloud crosses the boundary of the Area of Responsibility (AoR) from the Tokyo VAAC's side.
Handover: the Tokyo VAAC requests a hand-over to the Anchorage VAAC and the Anchorage VAAC sends back an AS.
Further action in case the Anchorage VAAC accepts the request:
the Tokyo VAAC issues a VAA stating in RMK that the responsibility has been handed over to the Anchorage VAAC.
Note: if the ash cloud is forecast to dissipate soon after crossing the boundary, the Tokyo VAAC does not hand-over and continues to issue a VAA. On the contrary, if a large part of the ash cloud is still in the AoR of the Tokyo VAAC but is forecasted to migrate in the AoR of the Anchorage VAAC at T+6, the Tokyo VAAC requests a hand-over.
If the ash cloud is expected to migrate in the AoR of the Washington VAAC, Tokyo will inform Washington of the situation via e-mail or FAX.

Scenario of Eruption:

VA not expected to enter the AoR of Washington VAAC west of 180E

Tokyo issues VAA | Tokyo hands over to Anchorage | Anchorage issues VAA | Anchorage issues VAA

VA expected to enter the AoR of Washington VAAC west of 180E

Example of a VAA and VAG; an ash cloud is to migrate in the AoR of the Anchorage VAAC at T+6.

FVFE01 RJTD DDhhmm
VA ADVISORY
DTG: YYYYMMDD/hhmmZ
VAAC: TOKYO
VOLCANO: SHEVELUCH 300270
PSN: N5639E16122
AREA: RUSSIA
SUMMIT ELEV: 3283M
ADVISORY NR: YYYY/nnn
INFO SOURCE: MTSAT-2
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: VA CONTINUOUSLY OBS ON SATELLITE IMAGERY
OBS VA DTG: DD/hhmmZ
OBS VA CLD: NO VA EXP
FCST VA CLD +6 HR: NO VA EXP
FCST VA CLD +12 HR: NO VA EXP
FCST VA CLD +18 HR: NO VA EXP
RMK: THE RESPONSIBILITY FOR THIS ASH EVENT IS BEING TRANSFERRED TO ANCHORAGE. THE NEXT ADVISORY WILL BE ISSUED BY ANCHORAGE BY 0600UTC UNDER HEADER FVAK21 PAWU.
NXT ADVISORY: NO FURTHER ADVISORIES=

Handover procedures from Tokyo to Anchorage
- Type 2: Intermittent eruption -

Condition: an intermittent eruption is causing the repeated formation of an ash cloud, which crosses the boundary of the AoRs from the Tokyo VAAC's side with a certain time interval.
Handover: the Tokyo VAAC requests a hand-over to the Anchorage VAAC and the Anchorage VAAC sends back an AS.
Further action in case the Anchorage VAAC accepts the request:
the Tokyo VAAC issues a VAA stating in RMK that some part of the volcanic ash cloud has moved out of its AoR and it notifies the necessity of checking VAAs both from the Tokyo and Anchorage VAAC.
Note: this procedure is to be repeated as this situation occurs again and again.

Scenario of Eruption:

1. Tokyo issues VAA.
2. Tokyo hands over to Anchorage for a cloud crossing the boundary and issues VAA for the next part.
3. Anchorage issues VAA for the cloud handed-over, and Tokyo again hands over for a cloud crossing the boundary.
4. Anchorage issues VAA for the clouds handed-over, and Tokyo issues VAA for the new cloud in its AoR.

.... repeat this procedure ....

Example of a VAA:

FVFE01 RJTD DDhhmm
VA ADVISORY
DTG: YYYYMMDD/hhmmZ
VAAC: TOKYO
VOLCANO: SHEVELUCH 300270
PSN: N5639E16122
AREA: RUSSIA
SUMMIT ELEV: 3283M
ADVISORY NR: YYYY/nnn
INFO SOURCE: MTSAT-2
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: VA EMISSIONS CONTINUING. (or other comments depending on the situation.)
OBS VA DTG: DD/hhmmZ
OBS VA CLD: SFC/FL250 N5655 E16230 - N5550 E16215 - N5500 E16225 - N5610 E16115 MOV E 60KT
FCST VA CLD +6 HR: 18/1915Z SFC/FL240 N5450 E16600 - N5435 E16955 - N5400 E17125 - N5345 E17125 - N5520 E16655
FCST VA CLD +12 HR: 19/0515Z SFC/FL250 N5500 E17150 - N5500 E17950 - N5100 E17955 - N5000 E17455 - N5220 E17120
FCST VA CLD +18 HR: 19/0715Z SFC/FL240 N5300 E17750 - N5300 W17450 - N4900 W17450 - N4900 W17905 - N5100 E17750
RMK: THE RESPONSIBILITY FOR SOME PART OF ASH IS BEING TRANSFERRED TO ANCHORAGE. FL335 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.
NXT ADVISORY: YYYYMMDD/hhmmZ

Figure 1. Part of the guideline created between VAAC Anchorage and Tokyo

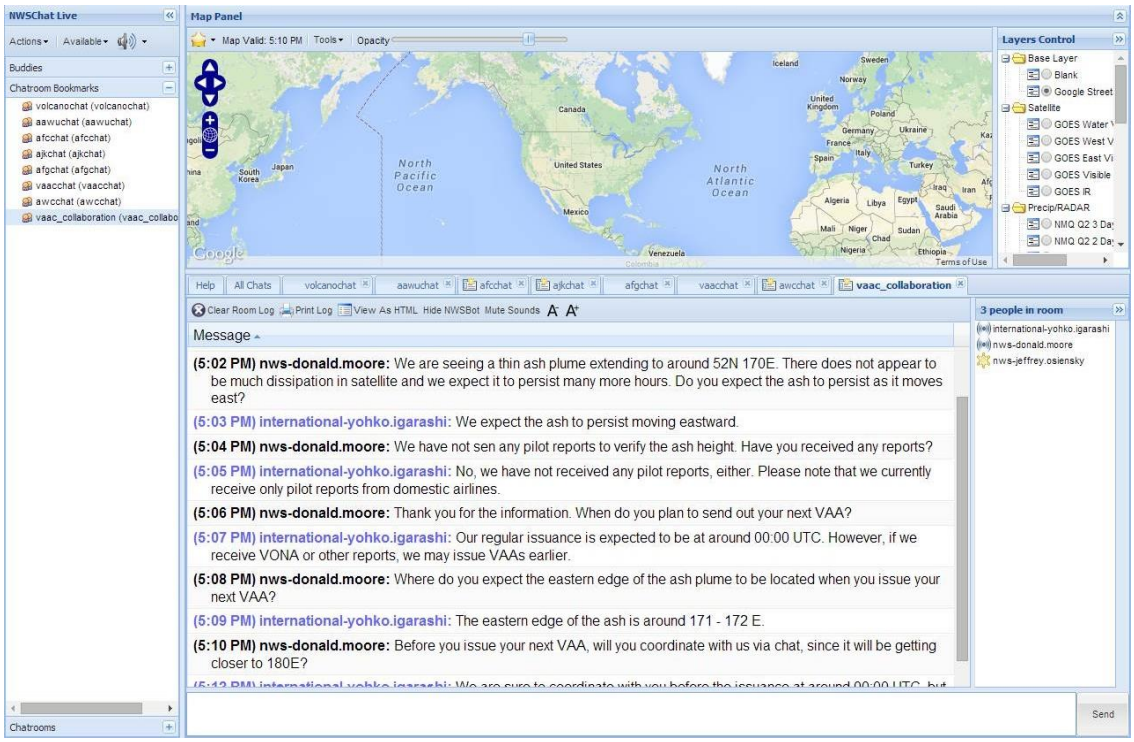

Figure 2. Example of CDAF chat test