

EXERCISE DIRECTIVE
VOLCEX 19/02 – VOLCANIC ASH EXERCISE IN ASIA-PACIFIC REGION

1. INTRODUCTION

- 1.1. “Volcanic ash exercises should be conducted by ICAO on a regional basis in order to practice and develop inter-agency response to volcanic activity, in order to maintain safety, regularity and efficiency of aviation in the event of a volcanic eruption”.¹
- 1.2 The ICAO APAC volcanic ash exercise to be conducted in 2019, named APAC VOLCEX 19/02, will involve the simulated eruption of Mt. Kanlaon volcano in the Philippines. The exercise will demonstrate the provision and exchange of volcanic ash information in support of flexible airspace management, improved situational awareness and collaborative decision making, and dynamically optimized flight trajectory planning.
- 1.3 There will be no operational impact in this exercise and dedicated staff is expected to be available for participation in the exercise.
- 1.4 Exercise Date and Time (UTC): 12 September 2019, 0000 UTC – 0400 UTC
- 1.5 Exercise Leader: Mr. Ferdinand A. Tienzo, Division Chief, Enroute Control Division, Air Traffic Service. The Exercise Leader is responsible for:
 - Reporting to the debriefing meetings for volcanic ash exercises in APAC Region (usually combined with the VOLCEX/SG meeting)
 - Publishing the exercise directive
 - Supervising the volcanic ash exercise
 - Reporting results of volcanic ash exercises including lessons learned, as well as recommended improvements to the regional volcanic ash ATM contingency plan and global ICAO provisions, to appropriate groups in APANPIRG
 - Conducting the volcanic ash exercise in coordination with directing staff
 - Making the GO/NO decision for the volcanic ash exercise (see 10.1 for more details)
- 1.6 Location of Exercise Leader, and Secretariat: The Exercise Leader will be at the Air Traffic Management Center, CAAP Philippines to co-conduct the volcanic ash exercise. The ICAO Secretariat will be at Bangkok, Thailand, remotely supporting the pre-exercise coordination meeting and the volcanic ash exercise. Coordination between the Exercise Leader, Secretariat and participants will be facilitated by the use of instant messaging applications, telephone and e-mail.
- 1.7 Pre-exercise coordination meeting: A series of pre-exercise coordination meetings will be scheduled. Notices for the meetings will be relayed thru email. Details of the pre-exercise coordination meetings are detailed under 10.3.
- 1.8 Debrief meeting: To be incorporated in the agenda of the volcanic ash exercises steering committee meeting, VOLCEX/SG/7, XX-XX July 2020 in Bangkok, Thailand.
- 1.9 Exercise website: A dedicated website for the exercise is not available. Other useful websites include:

¹ ICAO Doc 9766 – Handbook on the International Airways Volcano Watch, Appendix F- Guidance for Conducting Volcanic Ash Exercises in ICAO Regions

- VAAC Tokyo <https://ds.data.jma.go.jp/svd/vaac/data/index.html/> (for access to exercise VAA and VAG).
- VAAC Darwin <http://www.bom.gov.au/aviation/volcanic-ash/> (for access to exercise VAA and VAG).

2. PARTICIPATING AGENCIES

- 2.1. Agencies that have agreed to participate in the exercise are listed according to area of responsibility in **Appendix A**.
- 2.2. Additional agencies that have agreed to observe in the exercise and provide input to the exercise debrief meeting are listed according to area of responsibility in **Appendix B**.

3. AIMS AND OBJECTIVES

- 3.1 The volcanic ash exercise should demonstrate the practice of applicable global and regional procedures including the provision/exchange of volcanic ash information in support of flexible airspace management, improved situational awareness and collaborative decision making, and dynamically optimized flight trajectory planning. In particular, the exercise should demonstrate:
 - Distribution of alerts [(e.g., Volcano Observatory Notice to Aviation VONA)]
 - Distribution of AIS and MET information (e.g., VAA/VAG, SIGMET, NOTAM, special air-report)
 - Responses by operational units (e.g., air traffic flow management measures, safety risk assessments, tactical re-routes, aerodrome management)
- 3.2 The exercise shall be planned and conducted to ensure that detrimental effects on the aviation system performance are avoided, but that nevertheless useful experience and information is generated.

4. EXERCISE DURATION

- 4.1 The exercise shall be conducted over a period of approximately four (4) hours commencing at 0000 UTC 12 September 2019. The first VONA is expected to be issued within 10 minutes of the exercise start. The second VONA, to be issued nearing the exercise end time.

5. EXERCISE VOLCANO

- 5.1. Name: Kanlaon Volcano
 Number: 272020
 Position: 1025N 12308E
 Area: Philippines

6. EXERCISE SCENARIO

- 6.1 Simulated eruption with volcanic ash cloud up to FL350 moving south at 30 - 40 knots to impact ATS routes and airspace within Manila FIR (RPHI) and Ujung Pandang FIR (WAAZ). Volcanic ash deposition at Panglao (RPSP) and Dumaguete aerodromes (RPVD) in the Philippines, will impact operations and airport closure.

- 6.2 Schematics of the information flow between operational units in a volcanic ash exercise according to ICAO Doc 9766 Handbook on the International Airways Volcano Watch is provided in **Appendix C**.

7. EXERCISE SCHEDULE

- 7.1 Participating agencies have agreed to the chronological list of the actions to be undertaken before and during the exercise, as provided in **Appendix D**.
- 7.2 A diagram of actions to be taken during the exercise is provided in **Appendix E**.

8. EXERCISE MESSAGES AND COMMUNICATIONS

- 8.1 Exercise messages comprising VONA start with “VA EXERCISE APAC VOLCEX 19/02” and end with “EXERCISE EXERCISE EXERCISE”. They should be based on the agreed exercise scenario. Template for VONA exercise message and distribution lists are provided in **Appendix F**.
- 8.2 Exercise messages comprising VAA and VAG should include the use of “VA EXERCISE” and “APAC VOLCEX 19/02” (in accordance with ICAO Doc 9766, Part 4, 4.8) to highlight and emphasize that the advisory information refers to the volcanic ash exercise. They should be based on the agreed exercise scenario and the preceding exercise VONA messages. Template of VAA and VAG exercise messages and distribution lists are provided in **Appendix G**.
- 8.3 Exercise messages comprising SIGMET should include the use of “VA EXERCISE” and “APAC VOLCEX 19/02” (in accordance with ICAO Doc 9766, Part 4, 4.8) to highlight and emphasize that the SIGMET information refers to the volcanic ash exercise. They should be based on the preceding exercise VAA messages. Template of SIGMET exercise messages and distribution lists are provided in **Appendix H**.
- 8.4 Exercise messages comprising NOTAM start with “VA EXERCISE APAC VOLCEX 19/02” and end with “EXERCISE EXERCISE EXERCISE” (in Item E of NOTAM). Template of NOTAM/ASHTAM exercise messages and distribution lists are provided in **Appendix I**.
- 8.5 Exercise messages comprising special air-reports end with “VA EXERCISE APAC VOLCEX 19/02 EXERCISE EXERCISE EXERCISE”. Template of special air-report exercise messages and distribution lists are provided in **Appendix J**.
- 8.6 Other communications such as exercise tele-conferences/web-conferences, e-mail exchanges and instant messaging chats start with “VA EXERCISE APAC VOLCEX 19/02”.
- 8.7 Volcanic ash information is disseminated through e-mail (e.g. VONA, and Ground Observation report), AFTN (e.g. SIGMET, NOTAM/ASHTAM, VAA/VAG, special air-report, Aerodrome Warning), website (e.g. VAA/VAG, SIGMET) and phone.
- 8.8 During the exercise, tele-conference sessions involving all participating and observing agencies would be using WebEx.

9. DIRECTING STAFF

- 9.1 A list of all Directing Staff is provided at **Appendix K**.
- 9.2 A list of contacts for agencies observing the exercise is provided at **Appendix L**.

10. SPECIAL INSTRUCTIONS

- 10.1 Exercise GO/NO decision shall be made by the Exercise Leader one day before the planned exercise commencement date and time. In case of unforeseen circumstances, such as a real volcanic eruption or other significant event affecting the air transport system, the Exercise Leader may decide to either postpone the exercise to a later date or to cancel the exercise. A decision not to proceed, i.e., to postpone or cancel the exercise, shall be communicated to all participants and observers as early as possible before the exercise is due to commence.
- 10.2 In case of real volcanic eruption or other unforeseen circumstances occur within the exercise period, Exercise Leader have to raise views from all participating agencies and postpone or abort the exercise if undergoing exercise is considered to potentially affect the operation of aviation system. According to ICAO Doc 9766 Handbook on the IAVW, Appendix F, paragraph 2.3., "Exercises can only simulate a real event, while operation of the aviation system must continue normally and be unaffected by the exercise. The planning of the exercise needs to ensure that detrimental effects on the system performance are avoided, but that nevertheless useful experience and information is generated."
- 10.3 Exercise teleconference/web-conference guidelines:
- a. JMA shall be the host of teleconference meetings and shall be assisted by the ICAO Secretariat.
 - b. Instant messaging and communication applications may be utilized as a supplementary means to share information among participants.
 - c. The use of English language is expected among participants during teleconference meetings.
 - d. The exercise leader shall instruct the participants on his/her turn to speak in order to manage the meeting in an orderly manner.

11. DEFINITION OF TERMS

- 11.1 A list of abbreviations, acronyms and definitions used in this directive is provided at ***Appendix M.***

APAC VOLCEX 19/02 EXERCISE DIRECTIVE**Appendix A**

List of Participants

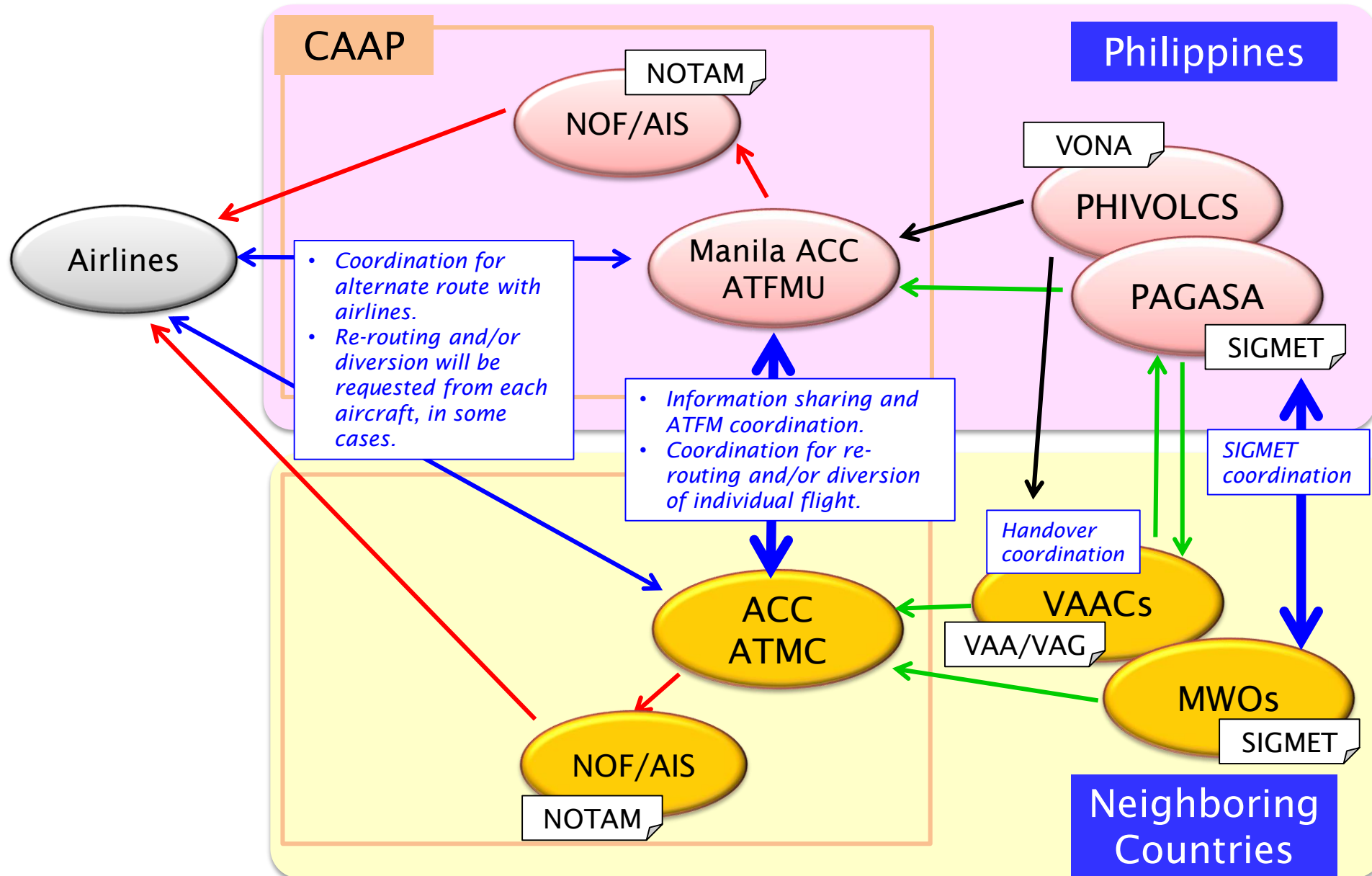
| Area of Responsibility | Agency | Unit/Division |
|--|----------------------|--|
| Volcanic activity alerting | PHIVOLCS | VO Kanlaon |
| Volcanic ash advisory information | JMA | VAAC Tokyo |
| | BoM | VAAC Darwin |
| SIGMET Information | PAGASA | MWO Manila |
| | BKMG | MWO Ujung Pandang |
| Air traffic control | CAAP | ACC Manila |
| | AirNav Indonesia | ACC Ujung Pandang |
| Air traffic flow and capacity management | CAAP | ACC Manila |
| Aeronautical information service | CAAP | AIS - Operations |
| Aircraft operator response | Philippines Airlines | Flight Dispatch |
| | TBD | TBD |
| | TBD | TBD |
| Regulation | CAAP | Aerodrome and Air Navigation Safety Oversight Office (AANSOO) |
| Exercise coordination | ICAO | Asia and Pacific Office |

APAC VOLCEX 19/02 EXERCISE DIRECTIVE**Appendix B**

Observing Agencies Listed By Area of responsibility

| Area of Responsibility | Agency | Unit/Division |
|--|---------------|----------------------|
| Volcanic activity alerting | CVGHM | VO |
| Volcanic ash advisory information | Met Service | VAAC Washington |
| SIGMET Information | TMD | MWO Bangkok |
| | KMA | MWO Korea |
| | HKO | MWO Hong Kong |
| | BKMG | MWO Jakarta |
| | JMA | MWO Tokyo |
| Air traffic control | DCA | ACC Malaysia |
| | CAAS | ACC Singapore |
| | AirNav | ACC Jakarta |
| | JCAB | ACC Fukuoka |
| Air traffic flow and capacity management | DCA | ACC Malaysia |
| | CAAS | ACC Singapore |
| | AirNav | ACC Jakarta |
| | JCAB | ACC Fukuoka |
| Aeronautical information service | AirNav | NOF - Jakarta |
| | MSS | Singapore RODB |
| Aircraft operator response | TBD | TBD |
| | TBD | TBD |
| | TBD | TBD |

APAC VOLCEX 19/02 EXERCISE INFORMATION FLOW DIAGRAM



APAC VOLCEX 19/02 EXERCISE DIRECTIVE

Appendix D

Actions to be taken by participating agencies

| Date/Time UTC | Agency | Event/Action |
|--|---|---|
| 28 June 2019 | Exercise Leader | Request AIS OPS to publish Aeronautical Information Circular (AIC) |
| 16 July 2019 | AIS OPS (NOTAM Office) Philippines | Publish AIC |
| 30 August 2019 | Exercise Leader | Send exercise directive to ICAO Secretariat |
| 5 September 2019 | NOF Manila | Issue preparatory NOTAM to be used during the exercise |
| 11 September 2019 | Exercise Leader | GO/NO GO Decision, inform all participants |
| 12 September 2019 0000 UTC-0400 UTC | | Simulate Kanlaon eruption |
| | PHIVOLCS | Issue VONA, twice during the exercise <ul style="list-style-type: none"> • 1st VONA for volcano eruption • 2nd VONA for volcanic activity to have ceased |
| | VAAC Tokyo, MWO Manila, ACC Manila/NOF Manila | Issue 1 st exercise VAA, SIGMET and NOTAMN based on VONA |
| | VAAC Tokyo | Issue VAAs/VAG <ul style="list-style-type: none"> • 1st VAG based on observations/reports • Succeeding VAAs with ash at F350 moving south • <i>Handover Procedures with VAAC Darwin</i> |
| | VAAC Darwin | <ul style="list-style-type: none"> • <i>Rebroadcast VAA</i> • Issue VAAs/VAG |
| | MWO Philippines | Issue SIGMET based on VONA |
| | ACC Manila/ATFMU Manila | <ul style="list-style-type: none"> • Issue ATFM measures, re-routes • Transmit special air-report • Coordinate with adjacent ACC |
| | Airline Operators | <ul style="list-style-type: none"> • Transmit special air-report • Flight planning measures |
| | MWO Philippines | • Issue METAR/SPECI and/or Aerodrome warning |
| | Airport Authority | • CDM (airport closure) |
| 12 September 2019 0400 UTC – 0430 UTC | All participants | Teleconference (Initial evaluation) |

APAC VOLCEX 19/02

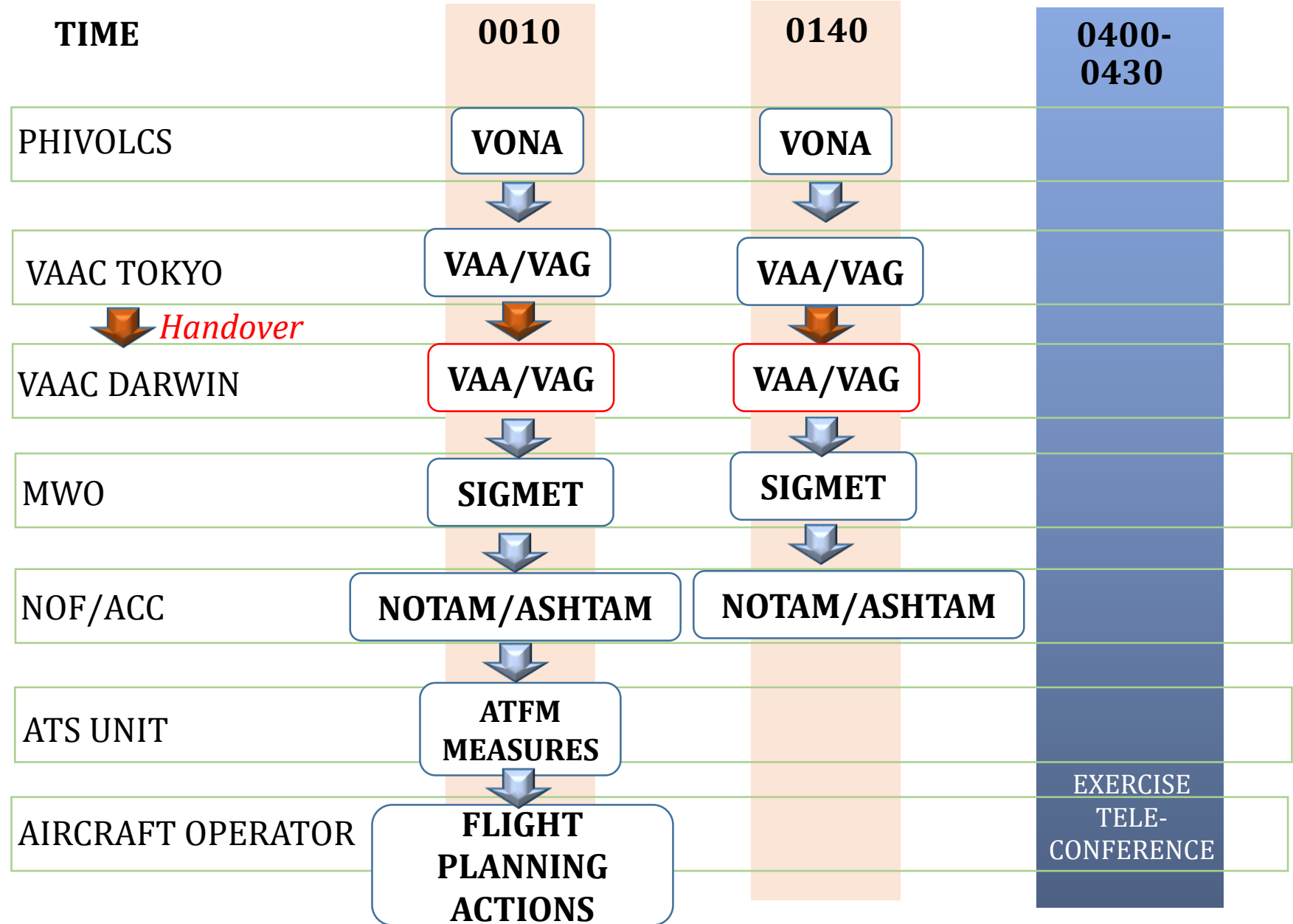


Table 1. VONA Template

| | |
|---|--|
| VA EXERCISE APAC VOLCEX 19/02 | |
| (1) VOLCANO OBSERVATORY NOTICE FOR AVIATION (VONA) | |
| (2) Issued: | (20190912/0010Z) |
| (3) Volcano: | Kanlaon (272020) |
| (4) Current Aviation Color Code: | |
| (5) Previous Aviation Color Code: | |
| (6) Source: | Kanlaon Volcano Observatory (PHIVOLCS) |
| (7) Notice Number: | PIVS-VONA-KV-20190912-1 |
| (8) Volcano Location: | 1025N 12308E |
| (9) Area: | Philippines |
| (10) Summit Elevation: | 7989 ft (2435 m) |
| (11) Volcanic Activity Summary: | Eruption with volcanic ash cloud at 0000 UTC (0800 local) |
| (12) Volcanic Cloud Height: | 35000 ft (10668 m) |
| (13) Other volcanic cloud information: | The ash cloud reached 10668 meters above the summit and drifting S (South). |
| (14) Remarks: | VOLCEX 19/02 EXERCISE |
| (15) Contacts: | Philippine Institute of Volcanology and Seismology Volcano Monitoring and Eruption Prediction Division vmepd@phivolcs.dost.gov.ph (632) 927-1095; (632) 426-1468 loc 127 |
| (16) Next Notice: | A new VONA will be issued if conditions change significantly. While a VONA is in effect, regularly scheduled updates are posted at http://www.phivolcs.dost.gov.ph |
| EXERCISE EXERCISE EXERCISE | |

Table 2. VONA Distribution List

| Name | Telefax/Telephone number | E-mail | Alternate e-mail |
|-------------------------------------|--------------------------|---------------------------------|------------------------------------|
| CAAP | 672-7780 | phil.aisops@gmail.com | |
| CAAP Admin and Operations | | opcencaap@gmail.com | |
| Darwin Volcano Ash Advisory Center | (00)61-3-9662-1222 | darwin.vaac@bom.gov.au | |
| Manila Area Control Center (ACC) | 672-7774 | macc.supervisors@gmail.com | |
| PHIVOLCS - Office of the Director | 929-8366 | od.phivolcs@gmail.com | |
| PAGASA | 832-3023 | hannacristi@yahoo.com | |
| Raquel Abrantes (Cabinet Secretary) | | raquelabrantes.cabsec@gmail.com | |
| Tokyo Volcano Ash Advisory Center | (00)81-3-3212-6446 | vaac.tokyo@volash.kishou.go.jp | vaac.tokyo-adm@volash.kishou.go.jp |
| | | | |

Table 1: Exercise VAA template

| |
|---|
| FVFE01 RJTD <i>or</i> FVAU0n ADRM nnnnnn |
| VA ADVISORY |
| DTG: 20190912/nnnnZ |
| VAAC: TOKYO <i>or</i> DARWIN |
| VOLCANO: KANLAON 272020 |
| PSN: N1025 E12308 |
| AREA: PHILIPPINES |
| SUMMIT ELEV: 2435M |
| ADVISORY NR: nnnn/n |
| INFO SOURCE: VA EXERCISE APAC VOLCEX 19/02 <i>Free text up to 64 characters</i> |
| AVIATION COLOUR CODE: NIL |
| ERUPTION DETAILS: VA EXERCISE VA EXERCISE APAC VOLCEX 19/02 <i>Free text up to 64 characters</i> |
| OBS VA DTG: nn/nnnnZ |
| OBS VA CLD: "Position of a non-real volcanic ash cloud will be placed" |
| FCST VA CLD +6 HR: "Position of a non-real volcanic ash cloud will be placed" |
| FCST VA CLD +12 HR: "Position of a non-real volcanic ash cloud will be placed" |
| FCST VA CLD +18 HR: "Position of a non-real volcanic ash cloud will be placed" |
| RMK: EXERCISE EXERCISE EXERCISE VA EXERCISE APAC VOLCEX 19/02 <i>Free text up to 256 characters</i> |
| NXT ADVISORY: nnnnnnnn/nnnnZ <i>or</i> NO LATER THAN nnnnnnnn/nnnnZ <i>or</i> NO FURTHER ADVISORIES <i>or</i> WILL BE ISSUED BY nnnnnnnn/nnnnZ= |

Table 2: Exercise VAG template

| | |
|---|---|
| <p style="text-align: center;">EXERCISE</p> <p style="text-align: center;">OBS polygon</p> | <p style="text-align: center;">EXERCISE</p> <p style="text-align: center;">+ 6 HR polygon</p> |
| <p style="text-align: center;">EXERCISE</p> <p style="text-align: center;">+ 12 HR polygon</p> | <p style="text-align: center;">EXERCISE</p> <p style="text-align: center;">+ 18 HR polygon</p> |

VA ADVISORY
DTG: 20190912/nnnnZ
VAAC: TOKYO or DARWIN
VOLCANO: KANLAON 272020
PSN: N1025 E12308
AREA: PHILIPPINES
SUMMIT ELEV: 2435M
ADVISORY NR: nnnn/n
INFO SOURCE: VA EXERCISE APAC VOLCEX 19/02 Free text up
to 64 characters
AVIATION COLOUR CODE: NIL

ERUPTION DETAILS: VA EXERCISE VA EXERCISE APAC VOLCEX 19/02
OBS VA DTG: nn/nnnnZ
OBS VA CLD: "Position of a non-real volcanic ash cloud will be
placed"
FCST VA CLD +6 HR: "Position of a non-real volcanic ash cloud
will be placed"
FCST VA CLD +12 HR: "Position of a non-real volcanic ash cloud
will be placed"
FCST VA CLD +18 HR: "Position of a non-real volcanic ash cloud
will be placed"
RMK: EXERCISE EXERCISE EXERCISE VA EXERCISE APAC VOLCEX 19/02
NXT ADVISORY: nnnnnnnn/nnnnZ or NO LATER THAN nnnnnnnn/nnnnZ or
NO FURTHER ADVISORIES or WILL BE ISSUED BY nnnnnnnn/nnnnZ

Notes:

1. A Volcanic Ash Advisory Centre (VAAC) is responsible for issuing advisory information regarding the extent and forecast movement of the volcanic ash "cloud" to:
 - a. MWOs, ACCs and FICs serving FIRs in its area of responsibility which may be affected;
 - b. other VAACs whose areas of responsibility may be affected;
 - c. WAFCs, international OPMET databanks, international NOTAM offices, and centres designated by regional air navigation agreement for the operation of aeronautical fixed service Internet-based services; and
 - d. airlines requiring the advisory information through the AFTN address provided specifically for this purpose. [Annex 3, Chapter 3, 3.5.1 c)]
2. All VAA/VAG from VAAC Tokyo will be available VAAC Tokyo webpage:
VAAC
<http://vaac.metservice.com/>

Distribution list:

VAA (via AFTN) and VAG (via WIFS) to usual recipients.

Table 3: Exercise VAA Distribution list from VAAC Tokyo

| | | | | | |
|----------|----------|----------|----------|----------|----------|
| CWAOYMYU | EGKKVIRW | EGLLSITV | EGRRYMYX | EGZZMASI | EGZZVANW |
| EHAMKLM | EHAMKLMK | EHAMKLMW | KWBCYMYX | NFFNYPYX | NZAAANZO |
| NZKLYMYX | PANCYMYX | RCTPYMYX | RCTPZQZX | RKRRZQZX | RKSIYMYX |
| RPHIZRZX | RPLLYMYV | RPLLYMYX | SAZZMAMX | UEEEYMYX | UEEEZRZX |
| UELLYMYX | UELLZRZX | UERRYMYX | UERRZRZX | UHBBYMYX | UHBIYMYX |
| UHHHYMYX | UHHHZRZX | UHMMYMYX | UHMMZRZX | UHNMYMYX | UHOYMYX |
| UHPPYMYX | UHPPZRZX | UHSYMYX | UHSSYMYX | UHWYMYX | UIAAYMYX |
| UIAAZRZX | UIBBYMYX | UIIIYMYX | UIIIZRZX | UIKKYMYX | ULMMYMYX |
| ULMMZRZX | UNKLYMYX | UNKLZRZX | UUUUYNYX | UUWZDZX | VDPPYFYX |
| VDPPYMYX | VDPPZRZX | VDPPZTZ | VHHHYMYX | VLVTYMYX | VTBBYPYX |
| VTBDYMYX | VTBSYMYX | VVGLYMYX | VVNBZRZX | VVTSZRZX | VYYYMYX |
| VYYYZQZX | WSJCZRZX | WSSSYMYX | WSSSYZYX | YBBYPYX | YBZZSQJX |
| YMLJSTX | YPDYMYX | ZBAAYMYX | ZBBYPYX | ZGGGYMYX | ZHHHYMYX |
| ZJHKYMYX | ZKPYMYX | ZLXYMYX | ZMUBYMYX | ZSSSYMYX | ZUUUYMYX |
| ZWWYMYX | ZYTXMYX | | | | |

Table 4: Exercise VAA Distribution list from VAAC Darwin

| | | | | | |
|-----------|-----------|----------|----------|----------|----------|
| AGGGZQZX | AGGHYMYX | AYPMZQZX | AYPYANGM | AYPYANGO | AYPYMYX |
| EGLLSITV | EGZZMASI | EGZZMPAC | EGZZVANW | KLGBPACO | KWBCYMYX |
| LSZHSWRW | NFFNYPYX | NZAAANZO | NZKLYMYX | RJAAJALO | RJAANCAO |
| RJTDYMYX | RKSIYPYX | RPHIZQZX | RPLLYMYX | VHHHCPAO | VHHHYMYX |
| VOMFZQZX | VOMMYMYX | VOMMZQZQ | VTBBYPYX | VTBBZQZX | VTBDYMYX |
| VTBSYMYX | VVGLYMYX | VVNBZQZX | VVTSZQZX | VVTSZRZX | VYYFZQZX |
| VYYVYMYX | VYYYMYX | VYYYZQZX | WAAAYMYX | WAAAZQZX | WAAFZQZX |
| WADDYMYF | WADDYMYX | WADDYOYX | WBFCZQZX | WBKKYMYX | WBKKZQZQ |
| WIIIFZQZX | WIIIIYMYX | WMFCZQZX | WMKKMASD | WMKKYMYX | WMKKZQZX |
| WRRRYNYX | WSJCZQZX | WSSSSIAO | WSSSYMYX | WSSSYZYK | YAMBZAZX |
| YAMBZGZA | YAMBZTZ | YBBBVOZM | YBBBZRZA | YBBBZRZB | YBBBZRZG |
| YBBBZRZX | YBRFYMYX | YMHFYMYX | YMLJSTX | YMMZRZA | YMMZRZB |
| YMMZRZG | YMMZRZX | YMRFYMYX | YPDNZAZX | YPDNZGZA | YPDNZTZ |
| YPRFYMYX | YPRMYMYX | YPTNZAZX | YPTNZGZA | YPTNZTZ | YSRFYMYX |
| YSSYQFAM | YSSYWZAX | | | | |

Table 1. SIGMET based on VONA:

WVPH31 RPLL nnnnnn
 RPHI SIGMET nn VALID nnnnnn/nnnnnn RPLL-
 RPHI MANILA FIR VA EXERCISE APAC VOLCEX 19/02 VA ERUPTION MT KANLAON PSN N1041
 E12313 VA CLD OBS AT nnnnZ SFC/FL350 MOV S INTSF EXERCISE EXERCISE EXERCISE=

Table 2. SIGMET based on VAA when VA is not identifiable from satellite but with wind speed at significant FL:

WVPH31 RPLL nnnnnn
 RPHI SIGMET nn VALID nnnnnn/nnnnnn RPLL-
 RPHI MANILA FIR VA EXERCISE APAC VOLCEX 19/02 VA ERUPTION MT KANLAON PSN N1041
 E12313 VA CLD OBS AT nnnnZ SFC/FL350 MOV S nnKT INTSF EXERCISE EXERCISE EXERCISE=

Table 3. SIGMET based on 1st VAA when VA is identifiable from satellite:

WVPH31 RPLL nnnnnn
 RPHI SIGMET nn VALID nnnnnn/nnnnnn RPLL-
 RPHI MANILA FIR VA EXERCISE APAC VOLCEX 19/02 VA ERUPTION MT KANLAON PSN N1041
 E12313 VA CLD OBS AT nnnnZ WI Nnnnn Ennnnn - Nnnnn Ennnnn - Nnnnn Ennnnn - Nnnnn
 Ennnnn SFC/FL350 MOV S nnKT NC FCST nnnnZ VA CLD WI Nnnnn Ennnnn - Nnnnn Ennnnn -
 Nnnnn Ennnnn - Nnnnn Ennnnn - Nnnnn Ennnnn SFC/FL350 MOV S nnKT INTSF EXERCISE
 EXERCISE EXERCISE=

Table 4. SIGMET based on 2nd VAA when VA is identifiable from satellite:

WVPH31 RPLL nnnnnn
 RPHI SIGMET nn VALID nnnnnn/nnnnnn RPLL-
 RPHI MANILA FIR VA EXERCISE APAC VOLCEX 19/02 VA ERUPTION MT KANLAON PSN N1041
 E12313 VA CLD OBS AT nnnnZ WI Nnnnn Ennnnn - Nnnnn Ennnnn - Nnnnn Ennnnn - Nnnnn
 Ennnnn SFC/FL350 MOV S nnKT NC FCST nnnnZ VA CLD WI Nnnnn Ennnnn - Nnnnn Ennnnn -
 Nnnnn Ennnnn - Nnnnn Ennnnn - Nnnnn Ennnnn SFC/FL350 MOV S nnKT NC EXERCISE
 EXERCISE EXERCISE=

Table 5. SIGMET based on succeeding VAA (source: VAAC T or VAAC D) when VA is identifiable from satellite:

WVPH31 RPLL nnnnnn
 RPHI SIGMET nn VALID nnnnnn/nnnnnn RPLL-
 RPHI MANILA FIR VA EXERCISE APAC VOLCEX 19/02 VA ERUPTION MT KANLAON PSN N1041
 E12313 VA CLD OBS AT nnnnZ WI Nnnnn Ennnnn - Nnnnn Ennnnn - Nnnnn Ennnnn - Nnnnn
 Ennnnn SFC/FL350 MOV S nnKT NC FCST nnnnZ VA CLD WI Nnnnn Ennnnn - Nnnnn Ennnnn -
 Nnnnn Ennnnn - Nnnnn Ennnnn - Nnnnn Ennnnn SFC/FL350 MOV S nnKT NC EXERCISE
 EXERCISE EXERCISE=

Table 6. SIGMET cancellation:

WVPH31 RPLL nnnnnn
 RPHI SIGMET nn VALID nnnnnn/nnnnnn RPLL-
 RPHI MANILA FIR VA EXERCISE APAC VOLCEX 19/02 CANCEL SIGMET nn nnnnnn/nnnnnn
 EXERCISE EXERCISE EXERCISE=

Table 7. Distribution List for SIGMET

| | | | | | |
|----------|----------|----------|----------|----------|----------|
| VHHHYMYX | KWBCYMYX | EGZZMASI | YBBBYPYX | VTBBYPYX | WSSSYZYX |
| RJTDYPYX | PTROYMYX | PHNLYMYX | WAAAYMYX | WABBYMYX | WIIHYMYX |
| VVNBYSYX | PGUMCOAX | RJAAYPYX | WBKKYMYX | NFZZRFXX | WBSBYMYX |
| YBBBYPYX | RJTDYMYX | WMKKYMYX | NFFNYPYX | RCTPYMYX | WSSSYMYX |
| WSSSYZYX | ROAHYMYX | VVTSYMYX | PGSNYMYX | EGRRYMYX | RPLLYOYX |
| RPLLYRYX | RPLLYIYX | RPLLYMYX | RPHIZRZX | | |

APAC VOLCEX 19/02 EXERCISE DIRECTIVE

Appendix I

NOTAM Template and Distribution List

NOTE:

THE TEXT IN ITEM E) OF THE FOLLOWING NOTAMs MAY BE AMENDED TO INCLUDE STANDARD ICAO ABBREVIATIONS

Table 1: Preparatory NOTAM (issued 1 week prior to exercise)

| |
|--|
| (Bxxxx/19 NOTAMN Q) RPHI/QWWWXX/IV/NBO/W/000/999/1025N12308E999 A) RPHI B) 1909120000 C) 1909120400 D) E) VA EXERCISE APAC VOLCEX 19/02 VOLCANIC ASH EXERCISE TAKES PLACE 12 SEPTEMBER FROM 00:00 TO APPROX. 4:00 UTC. EXERCISE NAME: VOLCEX19/02. EXERCISE VOLCANO: KANLAON N10 25 E123 08 PHILIPPINES. FREE TEXT OF PROMULGATED EXERCISE MESSAGES START WITH: VA EXERCISE APAC VOLCEX19/02. FREE TEXT OF EXERCISE MESSAGES END WITH: EXERCISE EXERCISE EXERCISE. F) SFC G) UNL) |
|--|

Table 2: 1ST exercise NOTAM

| |
|--|
| (Bxxxx/19 NOTAMN Q) RPHI/QWWWXX/IV/NBO/W/000/999/1025N12308E999 A) RPHI B) 190912XXXX C) 190912XXXXEST (24hr) D) E) VA EXERCISE APAC VOLCEX 19/02. ERUPTION OF VOLCANO KANLAON 272070 N10 25 E123 08 PHILIPPINES AS REPORTED BY VOLCANO OBSERVATORY AT 0000 UTC. VOLCANO ASH CLOUD REPORTED BY GROUND OBSERVER. EXERCISE EXERCISE EXERCISE. F) SFC G) 35000FT AMSL) |
|--|

Table 3: 1ST exercise ASHTAM

| |
|---|
| (Bxxxx/19 NOTAMN Q) RPHI/QWWWXX/IV/NBO/W/000/999/1025N12308E999 A) RPHI B) (date/time of eruption) C) KANLAON D) N10 25 E123 08 E) (volcano level of alert color code) F) VA EXERCISE APAC VOLCEX 19/02. (existence and horizontal/vertical extent of volcanic ash cloud) G) (direction of movement of ash cloud) H) (air routes or portions of air routes and flight levels affected) I) (closure of airspace and/or air routes or portions of air routes, and alternative air routes available) J) VA EXERCISE APAC VOLCEX 19/02 (source of information) K) VA EXERCISE APAC VOLCEX 19/02 (plain language remarks) EXERCISE EXERCISE EXERCISE |
|---|

APAC VOLCEX 19/02 EXERCISE DIRECTIVE

Appendix I

NOTAM Exercise Template

Table 4: Final exercise NOTAM

(Bxxxx/19 NOTAMC Q) RPHI/QWWWXX/IV/NBO/W/000/999/1025N12308E999

A) RPHI

B) 190912XXXX

C)

D)

E) VA EXERCISE APAC VOLCEX 19/02. ERUPTION OF VOLCANO KANLAON 272070 N10 25 E123 08 PHILIPPINES HAS CEASED AS REPORTED BY VOLCANO OBSERVATORY AT 0400 UTC. VOLCANIC ASH CLOUD HAS DISSIPATED. VOLCANIC ASH CLOUD NO LONGER VISIBLE. EXERCISE EXERCISE EXERCISE.

F)

G)

APAC VOLCEX 19/02 EXERCISE DIRECTIVE**Appendix I****NOTAM Exercise Template****Table 5. NOTAM Distribution List**

| | | | | | |
|----------|----------|----------|----------|----------|----------|
| ANAUYFYX | LEZZNARP | OOZZNDNX | UGGGYNYX | VIDPYNXX | WMZZNAXX |
| AYPMYNYX | LGZZNAXX | OPKCYNYD | UKKRYNYX | VMMCYNXX | WMZZNBXX |
| AYPYNYX | LIZZNARP | OPZZNAXX | UMMDYOYX | VOMMYNYE | WRRRYNYX |
| CYKFXNSD | LLBGELXX | OTZZNAZX | UTTTYNYX | VOMMYNYX | WSARYOYX |
| CYZZNPRN | LOWWYNYX | RCAAZQZX | UTTTYOYX | VTZZNAAX | WSJCZQZX |
| EDDFDLHX | LSZZNARP | RCZZNMXX | UUUUYNYX | VVTSZQZX | WSSSYNYX |
| EGNNYNYX | NWWWYOYX | RJTDYMYX | UUZZNHXX | VVZZNAXX | YBBBZEZX |
| EGZZNRPL | NZZZNEUR | RJZZNLXX | UUZZNLNX | VYZZNAXX | YBZZNDMX |
| EHZZNTXX | OAKBYNYX | RKZZNKXX | VABBSVAO | WAAZZQZX | ZBBBYXX |
| HLZZNLNL | OBZZNAXX | RPLLPALD | VABBSVAX | WADDYOYE | ZBZZNHXX |
| HSSSYNYX | OEDRZPZX | RPLLYRYA | VABBYNYE | WAMMYOYX | ZJSCZQZX |
| KCNFYNYX | OEJDYNYX | RPNLUZON | VAZZNARP | WBFCZQZX | ZMUBYNYX |
| KCOSXHJP | OERKZPZX | RPNVIMIN | VCZZNOAX | WBSBYOYX | ZSFZOIXX |
| KDCAYNYX | OKNOYNYX | SCSCYNYS | VECCYNYX | WIIHYOYW | ZSJNOIXX |
| KDENXHJP | OMZZNEXX | UAAKYNXX | VHHHZQZX | WIZZNRPL | |
| KDZZNAXX | OOMSYNYX | UBBUYNYX | VHZZNMXX | WMKKYNYX | |

Table 6. ASHTAM Distribution List

| | | | | | |
|----------|----------|----------|----------|----------|----------|
| ANAUYFYX | LGZZNAXX | OPZZNAXX | UTTTYNYX | VTZZNAAX | WSSSYNYX |
| AYPMYNYX | LIZZNARP | OTZZNAZX | UTTTYOYX | VVTSZQZX | YBBBZEZX |
| AYPYNYX | LLBGELXX | RCAAZQZX | UUUUYNYX | VVZZNAXX | YBZZNDMX |
| CYKFXNSD | LOWWYNYX | RCZZNMXX | UUZZNHXX | VYZZNAXX | ZBBBYXX |
| CYZZNPRN | LSZZNARP | RJTDYMYX | UUZZNLNX | WAAZZQZX | ZBZZNHXX |
| EDDFDLHX | NWWWYOYX | RJZZNLXX | VABBSVAO | WADDYOYE | ZJSCZQZX |
| EGNNYNYX | NZZZNEUR | RKZZNKXX | VABBSVAX | WAMMYOYX | ZMUBYNYX |
| EGZZNRPL | OAKBYNYX | RPLLPALD | VABBYNYE | WBFCZQZX | ZSFZOIXX |
| EHZZNTXX | OBZZNAXX | RPLLYRYA | VAZZNARP | WBSBYOYX | ZSJNOIXX |
| HLZZNLNL | OEDRZPZX | RPNLUZON | VCZZNOAX | WIIHYOYW | RJTDYMYX |
| HSSSYNYX | OEJDYNYX | RPNVIMIN | VECCYNYX | WIZZNRPL | YPDMYMYX |
| KCNFYNYX | OERKZPZX | SCSCYNYS | VHHHZQZX | WMKKYNYX | EGZZVANW |
| KCOSXHJP | OKNOYNYX | UAAKYNXX | VHZZNMXX | WMZZNAXX | |
| KDCAYNYX | OMZZNEXX | UBBUYNYX | VIDPYNXX | WMZZNBXX | |
| KDENXHJP | OOMSYNYX | UGGGYNYX | VMMCYNXX | WRRRYNYX | |
| KDZZNAXX | OOZZNDNX | UKKRYNYX | VOMMYNYE | WSARYOYX | |
| LEZZNARP | OPKCYNYD | UMMDYOYX | VOMMYNYX | WSJCZQZX | |

APAC VOLCEX 19/02 EXERCISE DIRECTIVE

Appendix J

Special air-report

Table 1. Special air-report as spoken in radiotelephony

| |
|--|
| AIREP SPECIAL <i>aircraft identification</i> POSITION <i>latitude and longitude</i> <i>time</i> FLIGHT LEVEL <i>number</i> CLIMBING [DESCENDING] TO FLIGHT LEVEL <i>number</i> ASH CLOUD VA EXERCISE APAC VOLCEX19/02 EXERCISE EXERCISE EXERCISE |
|--|

Table 2. Special air-report as recorded by the ATS unit and forwarded to the MET office concerned

| |
|---|
| ARS <i>nnnnnn</i> <i>nnnn</i> <i>Nnnnnn</i> <i>E hhmm</i> <i>Fnnn</i> ASC [DES] <i>Fnnn</i> VA CLD VA EXERCISE APAC VOLCEX19/02 EXERCISE EXERCISE EXERCISE |
|---|

APAC VOLCEX 19/02 EXERCISE DIRECTIVE**Appendix K**

List of Directing Staff

| Area of Responsibility | State and Organization | Contact Name | Contact Position | Telephone/Fax Numbers | Email address/es |
|------------------------|---------------------------------------|------------------------------|---|-----------------------|--|
| Exercise Leader | Philippines CAAP | Ferdinand A. TIENZO | Division Chief Enroute Control Division, Air Traffic Service | +639226480891 | tienzoda@yahoo.com |
| VO | Philippines PHIVOLCS | Dr. Winchelle Ian SEVILLA | Supervising Science Research Specialist | +63 2 4261468 | winch.sevilla@phivolcs.dost.gov.ph |
| VAAC | Japan JMA (VAAC Tokyo) | Yuichi YMAMURA | | +81 3 3212 6203 | y_ymamura@met.kishou.go.jp vaac.tokyo@volash.kishou.go.jp |
| | Australia BoM (VAAC Darwin) | Dr. Jarrad DENMAN | En Route Aviation Services Manager | | jarrad.denman@bom.gov.au |
| MWO | Philippines PAGASA (MWO Manila) | Hannagrace F. CRISTI | Chief, Aeronautical Meteorology Services Section Weather Division, PAGASA-DOST | +63 2 8522927 | hannacristi@yahoo.com |
| | | | | +63 2 8323023 | piias@pagasa.dost.gov.ph |

| | | | | | |
|-----------|--|---------------------------------|--|----------------|---|
| | Indonesia BMKG | Purwanto | Head of Data and Information Section, MWO Ujung Pandang | +628195523339 | poer_11_to@yahoo.com poer17to@gmail.com |
| | | M. Fikri FANSYURI | Forecaster of MWO Ujung Pandang | +6281244746839 | ffansyuri@gmail.com |
| | | Dofiali Dwi TRISNAKUSUMAWATI | Forecaster of MWO Ujung Pandang | +6281236830131 | dofiali@gmail.com |
| ACC, ANSP | Philippines CAAP (Manila ACC) | Ruby Anna T. LALUGAN | Supervisor, Manila ACC | +639228597605 | rubyanna1221@gmail.com |
| | | | | +63 2 6727774 | macc.supervisors@gmail.com |
| | Philippines CAAP (Dumaguete Tower) | Bernardo Elmerito F. ABLIR | Facility-In-Charge Dumaguete Aerodrome Control Tower | +639178244647 | bernardoem@yahoo.com |
| | Philippines CAAP (Panglao Tower) | Dennis AURES | FIC, Panglao Aerodrome Control Tower | +639958092330 | dennis_aures@yahoo.com caap.panglaotower@gmail.com |
| | Philippines CAAP (ATFMU, Manila) | Roger ISON | Chief, Air Traffic Flow Management Unit, Air Traffic Service | +63 2 9442239 | atfmph@gmail.com |
| | Indonesia AirNav (Ujung Pandang ACC) | Adwan LAMUDJI | Operation Deputy | | adwan.lamudjidi@gmail.com |
| | | Agung Dwi HANGGORO | Operation Manager | | bonte_cogant@yahoo.com |

| | | | | | |
|--|---------------------------|--------------------------------|---|----------------------------------|---|
| | | Akhmad ABDILLAH | First ATC | | abdee_lah@hotmail.com |
| | | Riswan RUDYARTHA | First ATC | | riswanrudyartha@gmail.com |
| NOF, ANSP | Philippines CAAP (NOF) | Alice C. BAGOT | | +63 2 6727785 | phil.aisops@gmail.com ais@ats.caap.gov.ph |
| Operations & rescue coordination | Philippines CAAP | Braulio I. MENESES | | +63 2 672 7705 +63 2 672 7706 | caaphil.rcc@gmail.com |
| Airport Operations | Philippines CAAP | ATTY. Rafael A. TATLONGHARI | Acting Area Center Manager, Area VII | +639224647599 | rfkingstm@yahoo.com |
| | | Mark M.A.P. DIAMAODEN | Manager, Dumaguete Airport | +639171582318 | m_diamaoeden@yahoo.com |
| | | Dennis AURES | Acting Assistant Airport Manager, Panglao Airport | +639958092330 | dennis_aures@yahoo.com caap.panglaotower@gmail.com |
| Airline, airspace user | Philippine Airlines | Eugenio B. RAYMUNDO | Central Flight Dispatch, Integrated Operations Control Center | | jennyb_raymundo@pal.com.ph |
| | TBD | | | | |
| | TBD | | | | |
| Regulation | Philippines CAAP | Jose V. FESTEJO | Supervising MET Inspectorate | +63 2 9442288 | jadper_fr@yahoo.com |
| Exercise coordination | ICAO APAC Office | Peter C. DUNDA | Regional Officer MET | | PDunda@icao.int |

APAC VOLCEX 19/02 EXERCISE DIRECTIVE

Appendix L

List of Observing Staff

| Area of Responsibility | State | Organization | Contact Name | Contact Position | Telephone/Fax Numbers | Email address/es |
|------------------------|-------------------|-----------------|--------------------------------|---|---------------------------|---------------------------|
| VO | Indonesia | CVGHM | | | | |
| VAAC | New Zealand | VAAC Wellington | Mr. Marcel ROUX | Manager | | |
| MWO | Thailand | TMD | Ms. Rassmee DAMRONGKIETWATTANA | Director of Aeronautical Weather Monitoring SubDivision | +66(2)134001 1 ext.213 | rassmee@hotmail.com |
| | Republic of Korea | KMA | Ms. Yeji PARK | Assistant Director | +82 (32) 740 2812 | yeji@korea.kr |
| | Japan | JMA | Mr. Jun RYUZAKI | Senior Coordinator for International Aeronautical Meteorology | +81-3-3212-8341(ext.2298) | jryuzaki@met.kishou.go.jp |
| | | | | | | |
| ACC, ANSP | Malaysia | | | | | |
| | Singapore | CAAS | Mr. Michael SHEE | Senior Air Traffic Control Manager | | michael_shee@caas.gov.sg |
| | Thailand | | | | | |
| | New Zealand | | | | | |
| | USA | | | | | |
| | Japan(Kobe) | | | | | |
| | Japan(Fukuoka) | | | | | |
| | Hong Kong China | | | | | |

| | | | | | | |
|-------------------|-------------|--------------------|-----------------------------|--|-------------------|------------------------------|
| | Vietnam | | | | | |
| NOF, ANSP | Japan | | | | | |
| REGULATORY | Australia | CASA | Mr. Ashley McALPINE | Safety Management & Performance Specialist | | |
| | Indonesia | DGCA | Mrs. Sri Lestari Yuni CATUR | Air Navigation Inspector | +62 812 1212 9864 | sri_lestari0406@depbuh.go.id |
| | | DGCA | Mrs. Dina YUNITA | Air Navigation Inspector | +62 812 9607 5249 | Dina_yunita@dephub.go.id |
| | New Zealand | CAA of New Zealand | Ms Paula ACETHORP | Chief Meteorological Officer | | paula.acethorp@caa.govt.nz |
| AO, Airspace user | | | | | | |
| | | | | | | |
| | | | | | | |

APAC VOLCEX 19/02 EXERCISE DIRECTIVE**Appendix M**

List of abbreviations, acronyms and definition of terms

| Abbreviation or acronym | Definition |
|------------------------------------|--|
| ACC | Area control centre |
| AIC | Aeronautical Information Circular. A notice containing information that does not qualify for the origination of a NOTAM or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters. |
| AIS | Aeronautical information service |
| AO | Aircraft operator |
| ATFMU | Air traffic flow management unit |
| ATM | Air traffic management |
| ATS | Air traffic service |
| BMKG | Badan Meteorologi, Klimatologi, dan Geofisika (Indonesian agency for meteorology, climatology and geophysics) |
| BoM | Bureau of meteorology (Australian Government) |
| CAAP | Civil Aviation Authority of the Philippines |
| CDM | Collaborative Decision Making |
| FIR | Flight Information Region |
| FL | Flight Level |
| JMA | Japan Meteorological Agency |
| MWO | Meteorological Watch Office |
| NOF | International NOTAM Office |
| NOTAM | A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations |
| PAGASA | Philippine Atmospheric, Geophysical and Astronomical Services Administration |
| PHIVOLCS | Philippine Institute of Volcanology and Seismology |
| SIGMET | Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of aircraft operations |
| UTC | Coordinated universal time |
| VA | Volcanic Ash |
| VAA | Volcanic ash advisory information – issued in abbreviated plain language |
| VAAC | Volcanic ash advisory center |
| VAG | Volcanic ash advisory information – issued in graphical format |
| VO | Volcano observatory |
| VONA | Volcano observatory notice for aviation |