



International Civil Aviation Organization

**FOURTEENTH MEETING OF THE ASIA/PACIFIC
METEOROLOGICAL INFORMATION EXCHANGE WORKING GROUP
(MET/IE WG/14)**

Bangkok, Thailand, 7 – 9 March 2016

Agenda Item Conjoint C1: Review and optimization of VAAC Backup Tests

MUTUAL BACK-UP OPERATIONS BETWEEN VAACS TOKYO AND DARWIN

(Presented by Australia and Japan)

SUMMARY

This paper presents the aims and outcomes from a mutual backup test conducted between the VAAC Darwin and VAAC Tokyo on 25 November 2015 and 27 January 2016.

1. INTRODUCTION

1.1 Australia and Japan provide Volcanic Ash Advisory Centres (VAAC) within the framework of the International Airways Volcano Watch (IAVW). The relevant responsibilities are set out in Annex 3 – Meteorological Service for International Air Navigation, Chapter 3, Section 3.5. Of note subsection 3.5.3 states that: “*In the case of interruption of the operation of a VAAC, its function shall be carried out by another VAAC or another meteorological centre, as designated by the VAAC Provider State concerned.*”

1.2 Backup procedures to be used in case of interruption to the operation of a VAAC are included in the Handbook of the International Airways Volcano Watch (IAVW) – Appendix D (ICAO Doc 9766). The document also notes that the “*backup site may be another meteorological centre in the same Contracting State or it may be another VAAC*”.

1.3 Appendix D of ICAO Doc 9766 also states that: “*The backup arrangements should be tested at least annually*”

2. DISCUSSION

2.1 Procedures for conducting a backup test were developed jointly by VAACs Darwin and Tokyo. These procedures included nominating a mutually-agreed date and time on which test Volcanic Ash Advisories (VAA) would be issued, developing the necessary AFTN address lists and deciding on an appropriate format for the test VAA. Recipients of the test VAA were requested to respond by email to the VAAC that the advisory had been received and these responses were collated for the analysis of the test.

2.2 Instead of a State Letter from ICAO APAC Office, VAACs Darwin and Tokyo sent out an e-mail to recipients announcing the schedule of the test and requesting their participation.

2.3 Both VAACs have updated their systems since the last backup test in 2014; VAAC Tokyo updated its system in March 2015 and VAAC Darwin updated theirs in August 2015. Therefore, it was the first test to check if the new systems would work in an appropriate manner during backup operations.

2.4 In addition, accompanying the system update, both VAACs added a new function to create volcanic ash advisory graphics (VAG) under backup operations. The VAACs issued not only VAA but also VAG (just for trial) during the test to check the function and received feedback from some airlines.

2.5 The test was conducted on 25 November 2015 with VAAC Tokyo activating backup procedures for VAAC Darwin area of responsibility at 0100 UTC, and on 27 January 2016 with VAAC Darwin activating backup procedures for VAAC Tokyo area of responsibility at 0100 UTC. The full procedures (see **Attachment 1**) were detailed in the e-mail and the list of AFTN addresses were updated before/after the test and are shown in **Attachment 2**.

2.6 VAAs were disseminated via AFTN in a timely manner, however, acknowledgements of receipt were not sufficient; more participation of related units is still required. VAG was created successfully and feedback from some airlines for VAG provision enables the VAACs to move onto the next step to enhance their backup performance.

3. RECOMMENDATIONS

3.1 Recommendations arising from the backup operations:

- a) That VAACs Darwin and Tokyo continue to promote the implementation and understanding of the IAVW, through active engagement with regional MWOs.
- b) That VAACs use test results to identify the necessity to update the AFTN addresses for its VAA provision, as well as airlines' feedback for VAG provision to enhance its backup performance.
- c) That the VAACs continue to conduct annual back-up testing.

4. ACTION BY THE MEETING

4.1 The meeting is invited to note the information and recommendations contained in this paper and provide comment.

ATTACHMENT 1

VAAC DARWIN – VAAC TOKYO BACK-UP TEST PROCEDURES

November 25 - backup test of Darwin VAAC by Tokyo VAAC -

0100 UTC VAAC Darwin requests backup services from VAAC Tokyo according to internal procedures and using the operational VAAC contact details contained within the IAWW Handbook (Doc 9766) Table 4-2.

0115 UTC VAAC Tokyo issues a test VAA for VOLCANO: NOTICE to external users as per the VAA Example in A (i).

0145 UTC VAAC Tokyo issues a test VAA/VAG for VOLCANO: TEST. The VAA is disseminated to external users as per the VAA Example in A (ii). All recipients (MWOs, WAFCs and RODBs) of this VAA are requested to respond to VAAC Darwin using the email address vaac.darwin@bom.gov.au and the subject 'VAA TEST' with an affirmative or negative response regarding the receipt of the test VAA. The test VAG is for a trial this time.

0155 UTC VAAC Darwin notifies of intent to resume normal operations to VAAC Tokyo and issues a test VAA for VOLCANO: NOTICE to external users as per the VAA Example in A (iii).

January 27 - backup test of Tokyo VAAC by Darwin VAAC -

0100 UTC VAAC Tokyo requests backup services from VAAC Darwin according to international procedures and using the operational VAAC contact details contained within the IAWW Handbook (Doc 9766) Table 4-2.

0115 UTC VAAC Darwin issues a test VAA VOLCANO: NOTICE to external users as per the VAA Example in B (i).

0145 UTC VAAC Darwin issues a test VAA/VAG for VOLCANO: TEST. The VAA is disseminated to external users as per the VAA Example in B (ii). All recipients (MWOs, WAFCs and RODBs) of this VAA are requested to respond to VAAC Tokyo using the email address vaac@eqvol2.kishou.go.jp and the subject 'VAA TEST' with an affirmative or negative response regarding the receipt of the test VAA. The test VAG is for a trial this time.

0155 UTC VAAC Tokyo notifies of intent to resume normal operations to VAAC Darwin and issues a test VAA for VOLCANO: NOTICE to external users as per the VAA Example in B (iii).

**A (i) VAA Back-up Commencement AFTN message to external clients -
VAAC Tokyo to VAAC Darwin Area:**

GG *****
DDHHMM RJTDYMYX
FVAU01 ADRM DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: DARWIN
VOLCANO: NOTICE 999999
PSN: S8959 E09959
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: NIL

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OBS VA CLD: NIL
FCST VA CLD +6HR: NO VA EXP
FCST VA CLD +12HR: NO VA EXP
FCST VA CLD +18HR: NO VA EXP
RMK: VAAC DARWIN AND VAAC TOKYO ARE CONDUCTING A BACK UP TEST NOW.
THIS IS A TEST NOTICE ISSUED BY VAAC TOKYO FOR THE VAAC DARWIN AREA
OF RESPONSIBILITY ANNOUNCING THE START OF BACK UP TEST FOR VAAC
DARWIN BY VAAC TOKYO.
NXT ADVISORY: NO FURTHER ADVISORIES.

**A (ii) VAA Back-up Test AFTN message to external clients –
VAAC Tokyo to VAAC Darwin Area:**

GG *****
DDHHMM RJTDYMYX
FVAU01 ADRM DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: DARWIN
VOLCANO: TEST 999999
PSN: S8959 E09959
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: NIL
OBS VA CLD: *“... Position of a (non-real) volcanic ash cloud will be placed ...”*
FCST VA CLD +6HR: *“... Position of a (non-real) volcanic ash cloud will be placed ...”*
FCST VA CLD +12HR: *“... Position of a (non-real) volcanic ash cloud will be placed ...”*
FCST VA CLD +18HR: *“... Position of a (non-real) volcanic ash cloud will be placed ...”*
RMK: THIS IS A TEST ADVISORY ISSUED BY TOKYO
VAAC FOR THE VAAC DARWIN AREA OF RESPONSIBILITY. PLEASE
ACKNOWLEDGE RECEIPT OF THIS ADVISORY BY SENDING AN EMAIL TO
DARWIN.VAAC AT BOM.GOV.AU
NXT ADVISORY: NO FURTHER ADVISORIES.

**A (iii) VAA Back-up Cessation AFTN message to external clients:
VAAC Darwin to VAAC Darwin Area:**

GG *****
DDHHMM YMMCYMYX
FVAU01 ADRM DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: DARWIN
VOLCANO: NOTICE 999999
PSN: S8959 E09959
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: NIL
OBS VA CLD: NIL
FCST VA CLD +6HR: NO VA EXP

FCST VA CLD +12HR: NO VA EXP
FCST VA CLD +18HR: NO VA EXP
RMK: VAAC DARWIN AND VAAC TOKYO ARE CONDUCTING A BACK UP TEST NOW.
THIS IS A TEST NOTICE ISSUED BY VAAC DARWIN FOR THE VAAC DARWIN AREA
OF RESPONSIBILITY ANNOUNCING THE END OF BACK UP TEST FOR VAAC DARWIN
BY VAAC TOKYO.
NXT ADVISORY: NO FURTHER ADVISORIES.

**B (i) VAA Back-up Commencement AFTN message to external clients -
VAAC Darwin to VAAC Tokyo Area:**

GG *****
DDHHMM YMMCYMYX
FVFE01 RJTD DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: TOKYO
VOLCANO: NOTICE 999999
PSN: N3000 E15000
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: NIL
OBS VA CLD: NIL
FCST VA CLD +6HR: NO VA EXP
FCST VA CLD +12HR: NO VA EXP
FCST VA CLD +18HR: NO VA EXP
RMK: VAAC DARWIN AND VAAC TOKYO ARE CONDUCTING A BACK UP TEST NOW.
THIS IS A TEST NOTICE ISSUED BY VAAC DARWIN FOR THE VAAC TOKYO AREA
OF RESPONSIBILITY ANNOUNCING THE START OF BACK UP TEST FOR VAAC
TOKYO BY VAAC DARWIN.
NXT ADVISORY: NO FURTHER ADVISORIES.

**B (ii) VAA Back-up Test AFTN message to external clients -
VAAC Darwin to VAAC Tokyo Area:**

GG *****
DDHHMM YMMCYMYX
FVFE01 RJTD DDHHMM
VA ADVISORY
DTG: YYYYMMDD/HHMMZ
VAAC: TOKYO
VOLCANO: TEST 999999
PSN: N3000 E15000
AREA: UNKNOWN
SUMMIT ELEV: 9999M
ADVISORY NR: YYYY/N
INFO SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS: NIL
OBS VA DTG: NIL
OBS VA CLD: "... Position of a (non-real) volcanic ash cloud will be placed ..."
FCST VA CLD +6HR: "... Position of a (non-real) volcanic ash cloud will be placed ..."
FCST VA CLD +12HR: "... Position of a (non-real) volcanic ash cloud will be placed ..."

04/03/16

FCST VA CLD +18HR: "... *Position of a (non-real) volcanic ash cloud will be placed ...*"

RMK: THIS IS A TEST ADVISORY ISSUED BY DARWIN

VAAC FOR THE VAAC TOKYO AREA OF RESPONSIBILITY. PLEASE

ACKNOWLEDGE RECEIPT OF THIS ADVISORY BY SENDING AN EMAIL TO

VAAC AT EQVOL2.KISHOU.GO.JP

NXT ADVISORY: NO FURTHER ADVISORIES.

**B (iii) VAA Back-up Cessation AFTN message to external clients:
VAAC Tokyo to VAAC Tokyo Area:**

GG *****

DDHHMM RJTDYMYX

FVFE01 RJTD DDHHMM

VA ADVISORY

DTG: YYYYMMDD/HHMMZ

VAAC: TOKYO

VOLCANO: NOTICE 999999

PSN: N3000 E15000

AREA: UNKNOWN

SUMMIT ELEV: 9999M

ADVISORY NR: YYYY/N

INFO SOURCE: NIL

AVIATION COLOUR CODE: NIL

ERUPTION DETAILS: NIL

OBS VA DTG: NIL

OBS VA CLD: NIL

FCST VA CLD +6HR: NO VA EXP

FCST VA CLD +12HR: NO VA EXP

FCST VA CLD +18HR: NO VA EXP

RMK: VAAC DARWIN AND VAAC TOKYO ARE CONDUCTING A BACK UP TEST NOW.

THIS IS A TEST NOTICE ISSUED BY VAAC TOKYO FOR THE VAAC TOKYO AREA

OF RESPONSIBILITY ANNOUNCING THE END OF TEST FOR VAAC TOKYO BY VAAC

DARWIN.

NXT ADVISORY: NO FURTHER ADVISORIES.

ATTACHMENT 2

AFTN ADDRESSES USED FOR VAAC BACKUP TESTS

A) AFTN addresses for exchange of VAAC back-up test VAA messages in the VAAC Darwin area of Responsibility.

YPDMYMYX (VAAC Darwin)							
AGGHYMYX	ANYNYOYX	AYPMYMYX	AYPMYSYX	AYPMZGZX	AYPYANGM	AYPYANGO	
EGKKVIRW	EGLLSITV	EGZZMASI	EGZZMPAC	EGZZVANW	EHAMKLM D	EHAMKLMK	
EHAMKLMW	ELLXCLXB	KDENXLDW	KJFKGTIW	KWBCYMYX	LOZZMMSS	LSZHSWRW	
NFFNYPYX	NZAAANZO	NZKLYMYX	RJAAANAO	RJAAJALO	RJAANCAO	RJAAYMYX	
RKSIYPYX	RPHIZRZX	RPLLYMYX	VCBIYMYX	VCBIZQZX	VHHHCPAO	VHHHYMYX	
VOMFZQZX	VOMMYMYX	VTBBYPYX	VTBDYMYX	VTBSYMYX	VVGLYMYX	VVNBZRZX	
VVTSYMYX	VVTSZRZX	VYYYYMYX	VYYYYZQZX	WAAAYMYX	WAAAZQZX	WABBYMYX	
WADDYMYF	WADDYMYX	WADDYOYX	WBFCZQZX	WBKKYMYX	WBKKZQZQ	WBSBYMYX	
WII IYMYX	WIHHYMYX	WII IZQZX	WMFCZQZX	WMKBYMYX	WMKBYWYX	WMKKMASD	
WMKKYMYX	WPD LZTZX	WNKKZQZX	WRRRYNYX	WSATYMYX	WSJCZQZX	WSSSSIAO	
WSSSYMYW	WSSSYMYX	WSZZMYR	YAMBZAZX	YAMBZGZA	YAMBZTZX	YBBBNCYM	
YBBBVOZM	YBBBZRZA	YBBBZRZB	YBBBZRZG	YBBBZRZX	YMMLJSTX	YMMMZRZA	
YMMMZRZB	YMMMZRZG	YMMMZRZX	YPDNZAZX	YPDNZGZA	YPDNZTZX	YPTNZAZX	
YPTNZGZA	YPTNZTZX	YSSYQFAM					

Note: the above list is subject to validation and updates by States/units concerned.

B) AFTN addresses for exchange of VAAC back-up test VAA messages in the VAAC Tokyo area of responsibility (to be updated in March 2016 as shown in the following table).

RJTDYMYX (VAAC Tokyo)							
KWBCYMYX	SAZZMAMX	YPDMYMYX	CWAOYMYU	LFPWYMYX	NZKLYMYX	EGZZVANW	
EGRRYMYX	EGZZMASI	VTBBYPYX	WSSSYZYX	YBZZSQJX	YBBBYPYX	NFFNYPYX	
EGLLSITV	EHAMKLMK	EHAMKLM D	EHAMKLMW	EGKKVIRW	NZAAANZO		
PANCYMYX	PAWUYMYX	UHHHYMYX	UHMMYMYX	UHPPYMYX	UELLYMYX	UIIIYMYX	
UHBIYMYX	UIBBYMYX	UIKKYMYX	UHNNYMYX	UHSHYMYX	UHOOYMYX	UEEEYMYX	
UHWYMYX	UHSSYMYX	UHBBYMYX	UIAAYMYX	ZMUBYMYX	ZKPYYMYX	RKSIYMYX	
ZBAAAYMYX	ZGGGYMYX	ZHHHYMYX	ZLLLYMYX	ZPPPYMYX	ZSSSYMYX	ZJSYYMYX	
ZYTXYMYX	RCTPYMYX	VHHHYMYX	ZWWWYMYX	RPLLYMYX	VVGLYMYX	VVLLYMYX	
VLVTYMYX	VYYYYMYX	VDPPYMYX	VTBDYMYX	VTBSYMYX	WSSSYMYX	SAEZYMYZ	
UHHHRZX	UHMMZRZX	UHPPZRZX	UELLZRZX	UIIIZRZX	UIAAZRZX	UUUWZDZX	
UUUUYNYX	RKRRZQZX	RCTPZQZX	RPHIZRZX	VVNBZRZX	VVTSZRZX	VYYYYZQZX	
VDPPYFYX	VDPPZRZX	VDPPZTZX	WSJCZRZX				

Note: the above list is subject to validation and updates by States/units concerned.
