



International Civil Aviation Organization

Eight Meeting of the Communications/Navigation/Surveillance and Meteorology Sub-Group (CNS/MET/SG/8) of APANPIRG

Bangkok, Thailand, 12 – 16 July 2004

Agenda Item 10: Review of the implementation of ICAO Warning Systems

SIGMET AND ADVISORIES TESTS

(Presented by the Rapporteur of the VA/TC Implementation TF)

SUMMARY

This paper discusses on the need for conducting regional tests on the issuance and exchange of SIGMET for volcanic ash and tropical cyclones. A draft test procedure developed by the VA/TC Implementation TF is presented for consideration by the meeting.

1 INTRODUCTION

1.1 The Meteorology (MET) Divisional Meeting (2002) reviewed the implementation of the provisions for issuance of volcanic ash (VA) and tropical cyclone (TC) advisories and SIGMETs and noted that some of the ICAO PIRGs had identified a serious problem that had arisen due to the lack of SIGMETs by MWOs in certain Contracting States. In view of this, the meeting adopted the following recommendation:

Recommendation 1/12 – Implementation of SIGMET requirements

That ICAO,

- a) conduct regional surveys of the issuance of SIGMET messages and particularly those for volcanic ash, in coordination with WMO, and list any deficiencies in accordance with regional procedures for the requisite follow-up measures;
- b) review the regional SIGMET guides to insure that all are up to date, and draw States/Members' attention to those guides, together with a request that States/Members review the operations of the MWOs they have designated for inclusion in the regional air navigation plans to ensure that SIGMET messages are being issued as required; and
- c) arrange for the relevant planning and implementation regional groups to conduct periodic tests of the issuance and reception of SIGMET messages for volcanic ash.

1.2 Action has been taken on sub-items a) and b) of the above Recommendation, as follows:

1.2.1 A questionnaire was sent to all ASIA/PAC States in order to collect information on the SIGMET bulletins issued by the respective MWOs. This survey was aimed at creating a list of WMO bulletin headings for ASIA/PAC SIGMETs, which is an important precondition for carrying out regular monitoring on SIGMET availability. Based on the results of this survey a new table was created for inclusion in the Regional SIGMET Guide and in the ROBEX Handbook. The OPMET/M TF/2 established a SIGMET team to continue studying the communication aspects related to SIGMET.

1.2.2 The ASIA/PAC Regional SIGMET Guide had been prepared by the ICAO Office, Bangkok and published in September 2003. The Guide was sent to all States in the Region and published on the ICAO web.

1.3 The follow-up action on the sub-item c) is yet to be taken. A proposal for development of procedures for conducting periodic tests of the issuance and reception of SIGMET messages for volcanic ash and tropical cyclones is presented in the discussion part of the paper.

2 DISCUSSION

2.1 The MWOs listed in FASID Table MET 3A under the area of responsibility of the TCACs, and in FASID Table MET 3B under the area of the responsibility of VAACs, should be prepared to issue SIGMET for TC and VA respectively, when necessary. In 2003 the VA Task Force undertook a survey with the MWOs in ASIA/PAC Regions regarding the issuance of VA SIGMET. The results showed that most of the MWOs issue such SIGMET very rarely, and some MWOs have never issued such a SIGMET since the IAVW was established some 10 years ago. The reason is that major volcanic eruptions that produce VA clouds to spread over large territories are very rare events. Similarly, some MWOs issue TC SIGMETs only once or twice per year.

2.2 In view of the above, the IAVW and the TC watch could seem as adequate systems in the sense that nothing had gone seriously wrong for a while. However, it may turn out that when the serious cases occur, like a major volcanic eruption with cross-boundary VA cloud, the expected product – timely SIGMET by a number of MWOs in the FIRs affected, would not be delivered at the required level of quality. That is why, in order to maintain the system in a ready-for-action shape, regular exercises should be performed, as recommended by the MET Divisional Meeting (2002).

2.3 The meeting may wish to note that SIGMET tests procedures have been developed in Europe and regular SIGMET tests have been carried out by the Bulletin Management Group (BMG) in Europe for a number of years now. In addition to these regular tests, the 13th meeting of the EUR METG in September 2003 adopted a conclusion for special tests for VA SIGMETs. The proposed EUR procedures are described in Attachment A to this paper.

2.4 The VA/TC Implementation Task Force, established by the 7th meeting of CNS/MET SG in July 2003, developed simple draft procedures for VA and TC SIGMET tests in the ASIA/PAC Regions, shown in Attachment B to this paper. It is felt that these procedures should be further developed and utilized for testing the VA and TC advisories and SIGMET issuance and dissemination. It should be noted that these tests are intended mainly to check the adequacy of the telecommunication procedures and the awareness of the participating MWOs and centres regarding the communication procedures. The validation of the content of the messages is not part of the tests and should be carried out by different procedures yet to be developed.

2.5 Consultation with RODB Tokyo regarding the draft test procedures was carried out and some concerns were raised regarding possible disruptions of the normal SIGMET dissemination during the tests, as follows:

- The test SIGMET bulletin could over-write an actual valid SIGMET from the same MWO
- RODB Tokyo when requested for SIGMET replies with the latest SIGMET bulletin, thus, a test SIGMET could be sent to the user, instead of a valid SIGMET;
- Same may happen with the advisories – a test VAA or TCA could over-write a valid advisory;
- User software processing is another concern. Some users in Japan decode SIGMET and draw a picture. Hopefully, a test SIGMET is rejected as an invalid format. But the worst case will be an abnormal termination of the software caused by the test SIGMET.

2.6 All these concerns should be addressed in preparing the test procedures. Ideally, the tests should be performed in a situation when there are no valid advisories and SIGMETs in the area, however, since the tests require a lot of preliminary coordination and planning, it is not likely that such a period could be chosen in advance. Therefore, the test procedures should include measures to avoid loss of valid SIGMET or advisory information. In this regard, the procedures used in Europe during the SIGMET tests could be adapted for the VA and TC tests in ASIA/PAC.

2.7 Finally, in the developed draft it is proposed that the ASIA/PAC RODBs should be actively involved in the tests. They should file the received test bulletins and prepare tables containing the required information (time of arrival of messages, WMO headings, etc.). These results should be forwarded to the VA/TC Implementation Task force for final processing and presentation at the CNS/MET SG/9 meeting in 2005.

2.8 In order for the tests to be successful it is extremely important that all TCAC and VAAC Provider States and all MWOs concerned in the ASIA/PAC Regions contribute actively to their implementation. Therefore, the meeting may wish to formulate the following draft conclusion:

Draft Conclusion 8/xx – Implementation of SIGMET tests in the ASIA/PAC Regions

That, ICAO invite all TCAC and VAAC Provider States in ASIA/PAC Regions, and all ASIA/PAC States with MWOs responsible for issuance of SIGMET for volcanic ash and/or tropical cyclones, take active part in the regular SIGMET tests to be carried out according to the agreed procedures.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) discuss on the proposal for advisories and SIGMET tests;
- b) review and comment on the proposed test procedures in Appendix A; and
- c) agree on the proposed draft conclusion in para 2.8.

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Format for SIGMET test message transmission in EUR

It is proposed that the transmission of SIGMET test messages as described below shall be carried out at 1000 UTC all 3 month on 11 days after an AIRAC date.

In order to prevent that a test-SIGMET overwrites an operational SIGMET, the following procedure has to be used:

1. If there is no valid SIGMET for the FIR then a test SIGMET shall be transmitted with the next consecutive sequence number e.g.:

WSOS31 LOWM 131000
LOVV SIGMET (n) VALID 131000/131005 LOWW-
TEST SIGMET PLEASE DISREGARD =

2. If there is a valid SIGMET at the time a test-SIGMET should be transmitted the original SIGMET shall be repeated with the next consecutive sequence number e.g.:

WSUK31 EGGY 130800
EGTT SIGMET 2 VALID 130800/131200
TEXT =

A test SIGMET is scheduled for 1000 UTC on the 13th :

WSUK31 EGGY 131000
EGTT SIGMET 3 VALID 131000/131005
TEST SIGMET PLEASE DISREGARD =

The original SIGMET is then retransmitted immediately with the next consecutive sequence number. The SIGMET is issued as a Correction and the start of validity is at 1000 UTC. So the message looks as follows:

WSUK31 EGGY 131000 CCA
EGTT SIGMET 4 VALID 131000/131200
TEXT =

Special tests for VA SIGMETs in EUR

1. The goal of the tests:
 - to check that all MWOs concerned by a volcanic eruption do produce appropriate information concerning en-route volcanic activity which may affect the safety of aircraft operations (SIGMET);
 - that the corresponding SIGMETs are adequately disseminated (which is also a regular task of BMG);
 - to confirm that each MWO has a procedure in force for the issuance of SIGMETs related to volcanic ash (in accordance with Chapter 7 of Annex 3 and the operational procedures contained in the Handbook on the IAVW, Doc 9766).

Attachment A

2. Procedure for the tests in the EUR region :

- a test should be launched once a year in coordination with tests conducted by BMG; in particular, the BMG will be requested to indicate the appropriate format of the test-SIGMET and to propose a date for the first test;
- the test will be conducted by VAACs London and Toulouse for their area of responsibility within the EUR Region;
- the assumption could be made that the State in which a volcano eruption occurs does issue a SIGMET reporting it; as a consequence, the test will start with the production of test-Volcanic Ash Advisories (VAAs) by the relevant Volcanic Ash Advisory Centres (VAACs);
- the test-VAAs will be issued for an existing volcano;
- the test-VAAs will be sent to all MWOs in the area of the test;
- in the test-VAA(s), the VAAC will have to define scenario(s) for the test so that MWOs will be able to identify if they are concerned or not for the issuance of corresponding test-SIGMET; the VAAC will then have to define which test-SIGMETs should normally be issued by the MWOs for each scenario; for each yearly test, approximately one half of the MWOs should issue a corresponding test-SIGMET;
- in the framework of BMG, the distribution of these test-SIGMET will be checked;
- the VAAC will make a comparison between test-SIGMETs emitted and/or received and test-SIGMETs which should have been received and the time between the issuance of test-VAA(s) and the test-SIGMETs received ; the results will be sent to ICAO Paris Office for presentation to METG/14;
- The ICAO Paris Office will inform States about the test, once the plan is agreed with the parties concerned.

3. The IAVWOPSG is invited to consider the relevance of the content of the produced test-SIGMET based on VAAC scenarios in order to identify possible need for improvement.

4. The implementation of these tests will be first coordinated with States by ICAO Secretariat in order to set up national procedures for the tests and to formally announce them in order to avoid possible mistakes with real events.

5. The ICAO Paris Office will coordinate with the other Regions concerned with the aim to establish test procedures covering also the eastern part of Russian Federation in the areas of responsibility of the VAACs in Anchorage and Tokyo.

Draft Procedures for conducting SIGMET test in ASIA/PAC

1. Each VAAC and TCAC prepares a simple TEST message in the form of VA or TC advisory. The format of this TEST message should be developed by the VA/TC Task Force.
2. On a certain agreed date and time, the information about which should be sent to all States concerned by a State letter issued by ICAO regional Office, the test VAA or TCA is sent by the VAAC or TCAC to all MWOs in the area of responsibility and to the Regional OPMET Data Banks (RODB) Bangkok, Brisbane, Singapore and Tokyo. The format of the test VAA and TCA is as follows:

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VOLCANIC ASH ADVISORY
ISSUED:                20041001/0200Z
VAAC:                 (name of VAAC)
VOLCANO:              TEST
LOCATION:              NIL
AREA:                 (name of VAAC) VAAC AREA
SUMMIT ELEVATION:     NIL
ADVISORY NUMBER:     NIL
INFORMATION SOURCE:  NIL
AVIATION CLOR CODE:  NIL
ERUPTION DETAILS:    NIL
OBS ASH DATE/TIME:   NIL
OBS ASH CLD:         NIL
FCST ASH CLD +6 HR:  NIL
FCST ASH CLD +12 HR: NIL
FCST ASH CLD +18 HR: NIL
NEXT ADVISORY:       NO FURTHER ADVISORIES
REMARKS:
  THIS IS A TEST VA ADVISORY.
  MWO SHOULD ISSUE TEST VA SIGMET UPON RECEIPT OF THIS.
  THE TEST SIGMET SHOULD CONTAIN A STANDARD WMO HEADING AND A
  VALID FIRST LINE WITH VALIDITY OF ONE HOUR.
  THE SIGMET SHOULD CONTAIN ONLY THE FOLLOWING TEXT

      THIS IS A TEST SIGMET, PLEASE DISREGARD.

  SEND THE SIGMET TO (address of the data banks)
  CAUTION -- IF THERE IS A VALID VA SIGMET, THE TEST SIGMET SHALL
  NOT BE ISSUED.
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TC ADVISORY
DTG:                20041001/0200Z
TCAC:              (name of TCAC)
TC:                TEST
NR:                NIL
PSN:               NIL
MOV:               NIL
C:                 NIL
MAX WIND:           NIL
FCST PSN +12HR:     NIL
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Attachment B

FCST MAX WIND +12HR: NIL
 FCST PSN +18HR: NIL
 FCST MAX WIND +18HR: NIL
 FCST PSN +24HR: NIL
 FCST MAX WIND +24HR: NIL
 NXT MSG: NIL

REMARKS:

THIS IS A TEST TC ADVISORY.

MWO SHOULD ISSUE TEST TC SIGMET UPON RECEIPT OF THIS TEST TCA.

THE TEST SIGMET SHOULD CONTAIN A STANDARD WMO HEADING AND A
 VALID FIRST LINE WITH VALIDITY OF ONE HOUR.

THE SIGMET SHOULD CONTAIN ONLY THE FOLLOWING TEXT

THIS IS A TEST SIGMET, PLEASE DISREGARD.

SEND THE SIGMET TO (address of the data banks)

CAUTION -- IF THERE IS A VALID TC SIGMET, THE TEST SIGMET SHALL
 NOT BE ISSUED.

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3. The MWOs, upon receipt of the VAA or TCA should prepare a TEST VA or TC SIGMET and send to the RODBs. The WMO heading and the first line of the SIGMET should be valid ones, while in the body of the message there will be a simple text. The sequential number of the test SIGMET should be indicated as "X". A sample of the test SIGMETs is as follows:

WVJP31 RJAA 010210
 RJTG SIGMET X VALID 010210/010310 RJAA-
 THIS IS A TEST SIGMET, PLEASE DISREGARD =

4. To avoid over-writing of a valid SIGMET, the test VA SIGMET shall not be sent if there is a valid VA SIGMET for the responsible area of the MWO. In the same manner, the test TC SIGMET shall not be sent if there is a valid TC SIGMET.

5. The RODBs will be requested to file all incoming TEST advisories and SIGMETs and perform an analysis of the availability, timeliness of arrival and the correctness of the headers.

6. This exercise could be performed on a regular basis, once or twice per year.