International Civil Aviation Organization

AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG)
METEOROLOGY SUB-GROUP EIGHTH MEETING

(Nairobi, Kenya, 25-27 June 2007)

Agenda Item 5: Provision of Tropical Cyclone and Volcanic Ash Advisories

Routing of Volcanic Ash Advisory Messages in the AFI Region

(Presented by France)

SUMMARY

A correct and right routing of the volcanic ash advisory messages in the AFI Region is an important element for the efficiency of the international airways volcano watch. This working paper describes the preliminary requirements for a volcanic ash advisory reception test that was carried out jointly by the ICAO Regional Offices in the AFI Region and the Volcanic Ash Advisory Centre (VAAC) in Toulouse, France.

1. Framework

1.1 The appearance of volcanic ash in the atmosphere constitutes a real danger for aviation. Several encounters with volcanic ash have, in the past, led to a complete loss of thrust on medium and big sized commercial aircraft.

1.2 In addition to the above-mentioned security problem, damages and attrition caused to those aircraft having crossed though volcanic ash clouds have generated maintenance costs amounting up to more than 250,000.000 Euros.

1.3 As a feedback to this dangerous situation, the international airways volcano watch **(IAVW)** was established and nine associated volcanic ash advisory centers **(VAAC)** were designated by the International Civil Aviation Organization (ICAO) for the provision of advisories on appearances and displacement of ash clouds.

1.4 The volcanic ash advisories (in graphic format) are meant to assist in the development of the volcanic ash SIGMET-related by the meteorological watch offices **(MWO)** in the adversely affected flight information regions **(FIR).** The advisories are also transmitted to interested area control centers **(ACC)** and airlines.

2. Introduction

2.1 As far as volcanic ash eruptions do not (luckily!!) occur so often, it is not always easy to preserve efficient and updated operational procedures.

2.2 Some technical staff members involved in procedures used in area control centers (ACC), meteorological watch offices (MWO), volcanic ash advisory centers (VAAC) may not be able to participate in real events for many years due to working in shifts (especially for those staff members who are always on duty).

2.3 This requires international simulated exercises to be carried out and in which a big number of acting members from the international airways volcano watch (IAVW) have to keep the real timing in the same way as in case of real eruptions, and to strictly adhere to the procedures contained in the ICAO reference material such as Annex 3 to the Convention on International Civil Aviation - **Meteorological Service for International Air Navigation** and Doc 9766 - **Handbook on the International Airways Volcano Watch** (Operational Procedures and IAVW Contact List).

2.4 Experience acquired at the volcanic ash advisory centre (VAAC) of Toulouse during tests that were conducted in the European Region showed that such training tests and exercises must be performed in several stages, the first of which should be geared to the routing of messages.

3. Discussion

3.1 Tests relating to the routing of messages consist in resending and receiving those volcanic ash advisories (VAA) emanating from the volcanic ash advisory centers (VAAC) and intended for meteorological watch office (MWO) centres and area control centres (ACC). The tests consist also in the volcanic ash advisories related to SIGMET and transmitted by the meteorological watch offices (MWO) in the flight information centres (FIR) concerned.

3.2 Similarly, experience has demonstrated that it was useful to separate the problems by testing, as a preliminary step, the reception of the volcanic ash advisory (VAA) alone

3.3 The AFI Planning and Implementation Regional Group **(APIRG)** Conclusion 15/90, when reviewed in May 2006 by the Air Navigation Commission (ANC), gave rise to a State Letter addressed by the Secretary General of the International Civil Aviation Organization to the Volcanic Ash Advisory Centre (VAAC) in Toulouse with a request to assist the Organization (i.e. the Nairobi and Dakar Regional Ofiices) in carrying out a test for the reception of volcanic ash advisories (VAA) in the AFI Region.

3.4 Transmission of the volcanic ash advisories, when transmitted on test basis from the Volcanic Ash Advisory Centre (VAAC) in Toulouse, should be done in the same way as for volcanic ash advisories related to a real case of volcanic eruption when transmitted

on the aviation dedicated network: **the aeronauticale fixed telecommunication network (AFTN).**

3.5 AFTN messages must use clearly the addresses of all message addressees.

3.6 A restriction in the number of the addressees as appearing in the message requires the establishment of routing strategies that make use of either

i) the relaying centers to new addresses, or
ii) one common addressee.

3.7 Before testing the reception of a volcanic ash advisory (VAA) and in order to avoid a well-known defeat, it is necessary to be aware of the required aeronautical fixed telecommunication network (AFTN) addressees for the AFI Region concerning the transmission of the volcanic ash advisories (VAA).

3.8 The addressee system of the volcanic ash advisories is not, in actual fact, covered in the AMBEX scheme whereas the Volcanic Ash Advisory Centre (VAAC) in Toulouse, in its capacity as **IROG** in the European Region for AFI, is responsible for the transmission of all OPMET data originating from the European Region and intended for the AFI Region, namely, the volcanic ash advisories (VAA). Transmission of these messages, however, is required by Annex 3 to the Convention on International Civil Aviation and by the Handbook on the International Airways Volcano Watch (IAVW).

3.9 It is desirable therefore for the AFI Region to communicate, to IROG Toulouse through the ICAO European Regional Office, the needed addressees that IROG Toulouse may wish to introduce for use by the Volcanic Ash Advisory Centre (VAAC), Toulouse.

3.10 As soon as the addressee system for Toulouse will be developed, the relevant volcanic ash advisory centre (VAAC) will be in position to suggest a VAA transmission/reception test procedure.

3.11 IROG Toulouse is purposing to ensure monitoring of acknowledgements by different addressees laid down in the provisions of Annex 3 to the Convention on International Civil Aviation and in the Handbook on the International Airways Volcano Watch (IAVW). IROG is intending also to suggest, if deemed necessary, for the AFI Region a scheme that would assist in eliminating any identified deficiencies.

3.12 In view of the preparation of a further step concerning the transmission trial of volcanic ash related to SIGMET from the AFI Region Meteorological Watch Offices (MWOs), it would be useful if the list of headings could also be determined for the volcanic ash advisory SIGMET-related which are exchanged in AFI Region and make sure that they are retransmitted to the European Region using the address **LFZZMAFI** which is utilized to send out all AFI OPMET data to the European Region via IROG Toulouse.

Draft Conclusion 8/...:

That all the ICAO Regional Offices in the AFI Region:

a) assume the responsibility for the development of addressees related to the volcanic ash advisories (VAA) coming from the Volcanic Ash Advosory Centre (VAAC), Toulouse and intended for the AFI Region;

b) make available to IROG Toulouse a scheme of addressees that would facilitate the establishment of a reception test for volcanic ash advisories (VAA) within reasonable time limits;

c) request those States keeping up a Meteorological Watch Office (MWO) in the AFI Region to designate the headings for the volcanic ash advisories which are SIGMET-related and transmitted by those MWOs;

d) make available to IROG Toulouse a list of those headings.

4. Conclusion

4.1 The Sub-Group is requested:

i) to note the content of this working paper; and
ii) to endorse the above draft conclusion submitted to the meeting for comments.

END