



*International Civil Aviation Organization*

**FOURTEENTH MEETING OF THE  
COMMUNICATIONS/NAVIGATION/SURVEILLANCE  
AND METEOROLOGY SUB-GROUP OF  
APANPIRG (CNS/MET SG/14)**



Jakarta, Indonesia, 19 – 22 July 2010

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**Agenda Item 11: Implementation of SIGMET and warnings**

**3) review METWSG SIGMET advisory**

**SIGMET ADVISORY**

(Presented by Rapporteur METWSG SIGMET Advisory Ad Hoc Group)

**SUMMARY**

This paper presents a summary of the work of the ICAO METWSG SIGMET Advisory ad hoc group.

This papers relates to:

**Strategic Objectives:**

- A. Safety – Enhance global civil aviation safety
- D. Efficiency – Enhance the efficiency of aviation operations

**Global Plan Initiatives:**

- GPI-18 Aeronautical Information
- GPI-19 Meteorological systems

**1. Introduction**

1.1 SIGMET contain information issued by a Meteorological Watch Office (MWO) concerning the occurrence, or expected occurrence, of specified en-route weather phenomena which may affect the safety of aircraft operations (ICAO Annex 3).

1.2 Problems with either the issuance, dissemination and/or formatting of SIGMET exist in most regions which is a major concern to the aviation industry. In some States, no Meteorological Watch Office (MWO) has been implemented, resulting in no SIGMET being issued for the corresponding Flight Information Region (FIR). Another concern is the occurrence of inconsistencies across FIR boundaries due to the different methods and working practices and lack of coordination between MWO.

1.3 To help address some of the issues a number of actions have been taken, including:

- Regular SIGMET tests and analyses to identify and rectify the issues;
- Issuance of SIGMET on behalf of another State under a bilateral arrangement;

- Establishment of educational material, including SIGMET posters;
- SIGMET seminars; and,
- Regional SIGMET Guides.

1.4 At the first meeting of the International Civil Aviation Organization (ICAO) Meteorological Warnings Study Group (METWSG/1), it was identified that there continued to be long-standing issues relating to the issuance of SIGMET in some States. These included: (a) issuance; (b) dissemination; and (c) formatting of SIGMET for all of the phenomena concerned. An ad hoc working group was established to undertake a feasibility study to consider the rationalization and consolidation of the issuance of SIGMET to selected regional centres. The ad hoc group provided two differing views regarding the most appropriate way forward. Fundamentally, questions had been raised concerning the likely benefits of continuing efforts to assist States in the provision of SIGMET rather than simply paving the way towards the selection of regional centres for the issuance of SIGMET themselves.

1.5 At the second meeting of the ICAO Meteorological Warnings Study Group (METWSG/2), it was agreed that a study be conducted to establish the viability of providing assistance to States through the introduction of SIGMET advisory information issued by designated regional centre(s), similar to that produced by the Volcanic Ash Advisory Centres (VAACs) and Tropical Cyclone Advisory Centres (TCACs).

## 2. Tasks

2.1 The main tasks of the SIGMET Advisory Ad hoc Group is to:

2.1.1 **A.** Establish the content of advisory information to support issuance of SIGMET (SIGMET advisory) for phenomena other than volcanic ash, radioactive release and tropical cyclone; and to develop the corresponding format.

2.1.2 **B.** Select appropriate regional centre(s) using the following criteria:

- (a) A monitoring scheme should be available in the region to easily provide statistics on the impact of the advisory information (use could be made of the web-based monitoring schemes already in use in some States);
- (b) The centres(s) selected should be willing to provide the advisory information required and have access to the necessary NWP capabilities etc.; and
- (c) The centre(s) should be represented in the ad hoc group in order to facilitate a flexible approach to the production of the advisory information.

*Note: The selection of centre(s) for this feasibility study will not influence any decision taken by the ICAO Regions in the future should such centres be required on an operational basis.*

2.1.3 **C.** Propose arrangements for a trial to be conducted by one or two regional centres (that are willing and able to do so) for the issuance of SIGMET advisories with the following aims:

- (a) To assess any improvements in the issuance of SIGMET by MWOs which receive the advisory information from the regional centre(s);
- (b) To assess any improvements in the content of SIGMET for MWOs in receipt of the advisory information including cases where adjacent MWOs are affected;

- (c) To assess the level of added value to users provided by SIGMET issued based on SIGMET advisory compared to the use of SIGMET advisory alone; and
- (d) To consider, in association with States and users, the delivery means that could be utilized by the regional centre(s) to distribute the SIGMET advisory.

*Note: The assessments under (a) and (b) would consist of a comparison of the level of compliance before and during the trial period.*

2.1.4 **D.** Establish any further training requirements, including the need for the review of online training material.

### **3. Work Plan**

3.1 A work plan for the SIGMET Advisory Ad hoc Group was established outlining the main activities and target dates for each activity. These activities include:

3.1.1 **Activity 1** - SIGMET Advisory Format and Dissemination (including the weather phenomena, validity period, format, dissemination means and issue frequency of the SIGMET Advisory during the trial).

3.1.2 **Activity 2** - Identification of Host State(s) for the SIGMET Advisory trial (including the identification of geographical area(s) to be covered by the trial and participating MWOs, along with the data sources, monitoring facilities and forecasting tools required by the Host State(s) during the trial).

3.1.3 **Activity 3** - Training Requirements (including a review of current training material and a report on training requirements for both Host State(s) and users).

3.1.4 **Activity 4** - Establishment of a Proposal and Plan for the SIGMET Advisory Trial (including the commencement date, length and hours of coverage of the trial, along with the key performance indicators and means of assessing the impact of the trial).

### **4. Progress**

4.1 Work has progressed well with the following proposals currently being considered by the METWSG SIGMET Advisory Ad Hoc Group:

4.1.1 Possible weather phenomena to be included in the trial:

- Thunderstorms:
  - obscured (OBSC TS), with hail (OBSC TSGR)
  - embedded (EMBD TS), with hail (EMBD TSGR)
  - frequent (FRQ TS), with hail (FRQ TSGR)
  - squall line (SQL TS), with hail (SQL TSGR)
- Severe turbulence (SEV TURB);
- Severe icing (SEV ICE), due to freezing rain (SEV ICE (FZRA));
- Severe mountain wave (SEV MTW).

4.1.2 SIGMET Advisories will be issued as required and then with an issue frequency of no greater than 4 hours until the phenomena is no longer expected. The likely validity period for the SIGMET Advisory during the trial is for a period of up to 6 hours. This should allow MWOs responsible for the issuance of SIGMET (up to 4-hour validity) to prepare and disseminate the relevant SIGMET.

4.1.3 The format for the SIGMET Advisory during the trial will be both textual and graphical with the textual format having a similar format to existing advisories and the graphical advisory allowing for multiple phenomena to be depicted on a single chart over multiple FIR. Dissemination for the SIGMET Advisory during the trial is to be via AFTN and the Internet.

4.1.4 Parts of the ICAO AFI and ASIA/PAC Regions have been identified as the most likely area(s) to conduct the trial due to the current deficiencies existing in parts of these Regions. Host State(s) will need to work closely with selected MWO during the trial period.

4.1.5 The Host State(s) will require systems to facilitate real-time visualization of the meteorological observations, the ability to produce both textual and graphical SIGMET Advisories and the means of disseminating the products via the internet and AFTN. They will require assess to data sources such as, satellite, radar, surface and upper air observations, NWP and WAFS. There may be a requirement to obtain more local data from other states to facilitate a higher accuracy of the product. Host States are also expected to manage the costs and resources required.

4.1.6 The training requirements are within the WMO area of responsibility and are detailed in Supplement 1 (Aeronautical Meteorology) to the WMO No. 258: Guidelines for the Education and Training of Personnel in Meteorology and Operational Hydrology. These Guidelines specify a basic curriculum for the education and training of forecasters and observers, irrespective of the type of office where a person was working. It should also be noted that WMO are re-developing a new, competency-based approach to training and qualification requirements for staff working in Aeronautical Meteorology. This competency-based approach defines required competencies in relation to airspace and area of responsibility of the personnel in question, and thus will differentiate between someone qualified to work at an aerodrome meteorological office (which may have responsibilities for several regional aerodromes), Meteorological Watch Offices with a warning responsibility for an entire FIR (SIGMET, AIRMET, including the Volcanic Ash and Tropical Cyclone SIGMET), and personnel working in regional advisory centers and World Area Forecast Centers with a larger regional or global area of responsibility. The required competencies, the curriculum and necessary on-the-job training (OJT) to achieve these competencies will be defined for the different levels and types of responsibility as part of the re-design of the entire Education and Training concept.

4.1.7 The trial is proposed for a 3 month period during the first half of 2011. Stakeholders will be notified via ICAO State Letter and via NOTAM. In addition this information will be presented at relevant ICAO, IATA and industry meeting and newsletters.

4.1.8 Assessment of the value of the outcomes of the trial will require analysis of the data consistency and quality, product format, accuracy of dissemination and stakeholder satisfaction. Relevant RODBs will be asked to participate during the trial period to help determine accuracy of format, timing and dissemination of the SIGMET Advisories and subsequent SIGMETs. IATA will also identify airlines that are willing to participate in the assessment phase of the trial.

## **5. Action required by the Meeting**

5.1 The meeting is invited to note the information presented in this paper.

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