



International Civil Aviation Organization

**SEVENTEENTH MEETING OF THE METEOROLOGY  
SUB-GROUP (MET SG/17) OF APANPIRG**

Bangkok, Thailand, 13 – 16 May 2013

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**Agenda Item 7: Meteorological advisories, warnings and hazards**

- 7.2) Implementation of advisories and warnings – SIGMET for radioactive clouds

**MEETING THE REQUIREMENT OF ISSUING A SIGMET FOR  
RADIOACTIVE CLOUDS**

(Presented by United States)

**SUMMARY**

This information paper offers a path to providing the SIGMET for radioactive clouds utilizing current practices for volcanic ash clouds.

**1. Introduction**

1.1 With Amendment 74 to Annex 3 – *Meteorological Service to International Air Navigation*, which became applicable in November 2007, the SIGMET for a radioactive cloud (RDOACT CLD) became a requirement for all Meteorological Watch Offices (MWO). The provision of this SIGMET has been challenging not only for the United States but undoubtedly for other MWOs, in that there was a lack of guidance on how to provide this information. As noted in Annex 3 (i.e. Note in Annex 3, 3.4.2g), WMO Regional Specialized Meteorological Centres (RSMC) have the expertise to provide transport model products for radiological emergency response. That information is to be made available to assist MWOs in the provision of the SIGMET for radioactive cloud. However, there is no international guidance on how that information is provided or clear direction as what would constitute the need to provide this information.

1.2 At the Seventh Meeting of the International Airways Volcano Watch Operations Group (IAVWOPSG/7), as part of the tasking to an ad hoc group, a Concept of Operations (ConOps) for Radioactive Cloud Information was presented (WP/18). IAVWOPSG/7 welcomed the work but agreed it was not mature. It is the intent to complete this document work by early 2014 so a ConOps can be provided for the proposed MET Divisional Meeting in July 2014.

1.3 In that regard, the purpose of this information paper is to advise the meeting on the work underway in the United States. Recognizing the importance of the RSMC in support of United States MWOs the United States National Weather Service (NWS) is looking at ways to provide an advisory similar to the volcanic ash advisory (VAA) that can easily be used by United States MWOs to support the issuance of the RDOACT CLD SIGMET. This work is still under development, but the United States wants to share with the group what is being envisioned in the United States.

1.4 The group needs to recognize that there are still several challenging issues that remain to be addressed. Foremost is the issue of what constitutes the issuance of an advisory that may result in a SIGMET. Then there are other issues within the United States that involve a multi-disciplinary team approach for crisis management. Many decisions would be made at the highest level in the United States Federal Government. All of those procedures and processes need to be taken into consideration before any advisory is issued that result in the issuance of a RDOACT CLD SIGMET.

## **2. Discussion**

2.1 The NWS in its efforts to fulfill the standards for the provision of the SIGMET for a RDOACT CLD is planning on developing procedures using Washington RSMC to support the United States MWOs (Anchorage, Honolulu, and Kansas City) in providing expert guidance on the location of the RDOACT CLD within United States Flight Information Regions (FIRs). The United States MWOs do not have the expertise in global transport and dispersion models to analyze source terms and dispersion trajectories. This requires a highly skilled set of personnel who understand the atmospheric dispersion and source terms.

2.2 As noted above in the introduction, there is a need for a multi-disciplinary team of experts to come to consensus and develop guidance on defining the threshold for the issuance of an advisory for the SIGMET. The United States MWOs will take the guidance material provided and will coordinate with the RSMC and other United States Federal Government agencies, as required (i.e. United States Department of Energy and their associated research laboratories, United States Nuclear Regulatory Commission, the United States Environmental Protection Agency and the United States Department of Defense) on the issuance of the SIGMET for United States FIRs.

2.3 As a first step to provide information on a radioactive cloud, the NWS is looking at the development of a Radiological Aviation Advisory (RAA) that would serve as the basis for the SIGMET. The RAA product would have the same look of volcanic ash advisory (VAA) information and would mirror the current Annex 3 template for VAA.

2.4 The RAA (issued by Washington RSMC), combined with the appropriate collaborative decision forecasting among United States agencies, would be the basis for the MWOs to prepare a RDOACT SIGMET. An example RAA and example RDOACT CLD SIGMET based on the RAA example are included in the **Appendices A and B** to this information paper.

## **3. Action by the Meeting**

3.1 The meeting is invited to note the information contained in this paper.

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**Appendix A**

**Example of United States Radiological Aviation Advisory (RAA)**

FXXX20 KWNO 042118  
RDOACT ADVISORY

DTG: 20100804/2118Z

RSMC: WASHINGTON

RDOACT RELEASE: PEARL HARBOR HI

LOC: N2121 W15759

AREA: HAWAIIAN ISLANDS

RELEASE ELEV: 200 FT

ADVISORY NR: 2010/003

INFO SOURCE: DEPT OF DEFENSE. HYSPLIT MODEL.

RELEASE DETAILS: INITIAL RELEASE OCCURRED 04/2038Z

EST RDOACT DTG: 04/2100Z

EST RDOACT CLD: SFC/080 N2122 W15755 - N2117 W15749 - N2110 W15758 -  
N2117 W15805 - N2122 W15755 MOVING SW 15KT

FCST RDOACT CLD +4HR: 05/0100Z SFC/080 N2122 W15755 - N2117 W15749 -  
N2058 W15815 - N2114 W15832 - N2122 W15755

RMK: RDOACT CLD NOT DETECTED VIA SATELLITE IMAGE. ESTIMATED OBS AND FCST  
POSITIONS BASED ON RELEASE DETAILS AND HYSPLIT MODEL TRAJECTORY.

NXT ADVISORY: 20100805/0100Z

**Appendix B**

Example of United States RDOACT CLD SIGMET based on the RAA example

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KZAK SIGMET N4 VALID 042120/050120 PHFO-  
KZAK OAKLAND OCEANIC FIR RDOACT CLD FCST AT 2100Z WI N2122 W15755 -  
N2117 W15749 - N2110 W15758 - N2117 W15805 - N2122 W15755 SFC/080  
MOV SW 15KT NC
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