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SIGMET Workshop

(Virtual, 09 December 2021)

**ICAO / WMO SARP_s
related to the SIGMET_s**

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Outline

- Annex 3 – Overview
- History of SIGMET
- About Meteorological Watch Office
- Annex 3 - SIGMET Information
- ICAO Doc 8896 Manual of Aeronautical Meteorological Practice



Annex 3 - Overview

■ April 1948 : First Edition of Annex 3

- SARPs relating to MET first adopted by the Council, pursuant to the provisions of Article 37 of the Convention on International Civil Aviation (Chicago, 1944), and designated as Annex 3 to the Convention with the Title **Standards and Recommended Practices — Meteorological Codes**
- Table A of Annex 3 : History of amendments, together with a list of the principal subjects involved and the dates on which the Annex and the amendments were adopted or approved by the Council, when they became effective and when

■ November 1975 : Amd. 60

- Complete revision of Annex 3, incorporating the PANS-MET, the specifications of which were regarded as being suitable for inclusion in Annex 3 as Standards and Recommended Practices
- Title of Annex 3 was, amended to read : **Meteorological Service for International Air Navigation.**

■ Table A (Annex 3) : History of amendments

- Subsequent amds together with a list of the principal subjects involved and the dates on which the Annex and the amendments were adopted or approved by the Council, when they became effective and when they became applicable.

■ Contents of Annex 3

- SARPs (adopted by the Council)
- Appendices (adopted by the Council)
- Definitions of terms used in the Standards and Recommended Practices which are not self-explanatory in that they do not have accepted dictionary meanings.
- Tables and Figures
- Forewords, Introduction, Notes, Attachments

■ Relation to corresponding WMO Publication

- The regulatory material contained in Annex 3 is, except for a few minor editorial differences, identical with that appearing in the **Technical Regulations (WMO-No. 49), Volume II — Meteorological Service for International Air Navigation, Parts I and II.**



History of SIGMET

- **June 1957 : Amd. 43** ; Introduction of “SIGMET information” to replace the terms “advisory message” and “warning message”
- **March 1986 : Amd. 66**; Introduction of the definition of “SIGMET information”
- **Amds. 67-80** : Further iterative improvements



SIGMET Information – Definition

- **A3, Chap. 1** refers:
 - **SIGMET information.** Information issued by a Meteorological Watch Office concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations.



Meteorological watch office – Definition

- **A3, Chap 1 refers:**
 - **Meteorological watch office (MWO).** An office designated to provide information concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations within its specified area of responsibility.



Meteorological watch office - Establishment

- **A3, Chap 3, §3.4.1 refers:**
 - Contracting State, having accepted the responsibility for providing air traffic services within a flight information region (FIR) or a control area (**CTA**), shall establish, in accordance with regional air navigation agreement, one or more MWOs, or arrange for another Contracting State to do so.



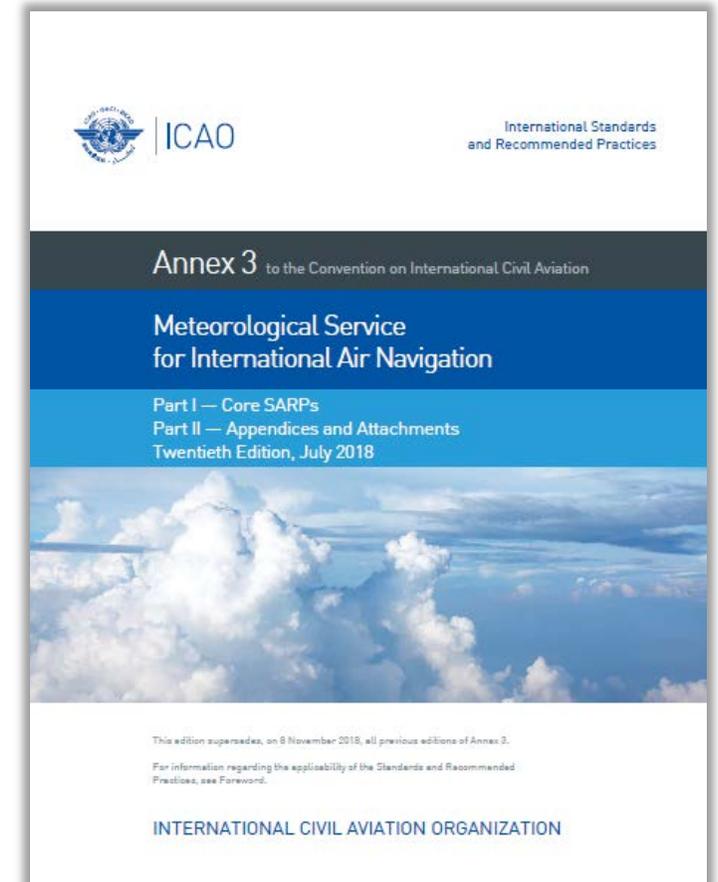
Meteorological watch office – Main Tasks

- **A3, Chap 3, §3.4.2 refers:**
 - a) Maintain continuous watch over meteorological conditions affecting flight operations within its area of responsibility;
 - b) Prepare SIGMET and other information relating to its area of responsibility;
 - c) Supply SIGMET information and, as required, other meteorological information to associated air traffic services units;
 - d) Disseminate SIGMET information;
- ...

SARPs related the Provision of SIGMET Information

How to read the next Slides

- Standard : starts by “§” + reference
- Recommendations : starts by “Rec.”+ reference
- Note : starts by “Note”





SIGMET Information

- **A3, Chap. 7 refers**
 - **A3, Chap.3: §7.1.1** : MET Office responsible for SIGMET issuance & SIGMET description
 - **A3, Chap.3: §7.1.2**: Cancellation of SIGMET
 - **A3, Chap.3: §7.1.3**: Period of validity of a SIGMET message
 - **A3, Chap.3: Rec. 7.1.4**: *SIGMET messages concerning volcanic ash cloud and tropical cyclones*
 - **A3, Chap.3: §7.1.5**: **Coordination between MWO and associated ACC/FICs**
 - **A3, Chap.3: §7.1.6** : Lead time and update of SIGMET



Technical Specifications related to SIGMET Information

- **A3, Chap. Appx 6 refers**
 - **A3, Appx 6: Note** - *Data type designators to be used in abbreviated headings for SIGMET,, tropical cyclone and volcanic ash advisory messages (Manual on the Global Telecommunication System (WMO-No. 386).*



Technical Specifications related to SIGMET Information

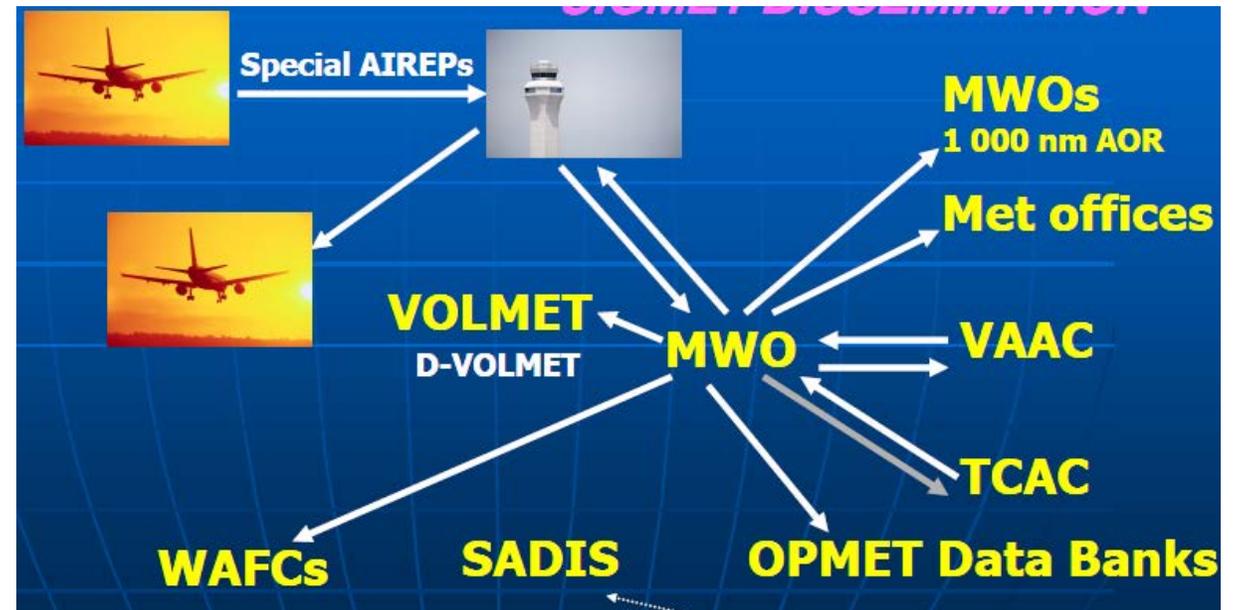
- **A3, Chap. Appx 6:§1.1 refers** : Format of SIGMET messages
 - **A3, Appx 6: §1.1.1:** Content and order of elements in a SIGMET message (Table A6-1A refers)
 - **A3, Appx 6: §1.1.2:** Identification of SIGMET message as “SIGMET”
 - **A3, Appx 6: §1.1.3:** Sequencing Number of SIGMET (correspond with the number of SIGMET messages issued for the flight information region (FIR) since 0001 UTC on the day concerned – Case of MWO whose area of responsibility encompasses more than one FIR and/or control area (CTA)).

Technical Specifications related to SIGMET Information

- **A3, Chap. Appx 6:§1.1 refers : Format of SIGMET messages *(Cont.)***
 - **A3, Appx 6: §1.1.4:** Phenomena to be included in SIGMET messages.
 - **A3, Appx 6: §1.1.5:** SIGMET message conciseness – Provisions for SIGMET concerning TS and TC in relation with TURB and Icing.
 - **A3, Appx 6: Rec. 1.1.6:** *Until 4 November 2020, SIGMET information should be disseminated in IWXXM GML form*
 - **A3, Appx. 6:§1.1.6 :** As of 5 November 2020, SIGMET information shall be disseminated in IWXXM GML form
 - **A3, Appx.6: :§1.1.6 :** Note – Technical specifications for IWXXM in WMO N°306 – Guidance on the implementation of IWXXM -> Doc 10003
 - **A3, Appx.6: : Rec.1.1.7** — *Graphical format of SIGMET as specified in Appendix 1*

A3, Chap. Appx 6:§1.2 refers : Dissemination of SIGMET messages

- **A3, Appx 6: §1.2.1:** Dissemination of SIGMET Information to MWOS, others Met Offices, WAFCs, VAAC (in accordance with regional air navigation agreement)
- **A3, Appx 6: §1.2.2:** Dissemination of SIGMET messages to international OPMET databanks and the centres designated by regional air navigation agreement for the operation of aeronautical fixed service Internet-based services (in accordance with regional air navigation agreement)





A3, Chap.7, Appx 6:§4.1 Identification of flight information region

- **Recommendation.**— *In cases where the airspace is divided into an FIR and an upper flight information region (UIR), the SIGMET should be identified by the location indicator of the air traffic services unit serving the FIR.*
- **Note.**— *Applicability of SIGMET to FIR : The SIGMET message applies to the whole airspace within the lateral limits of the FIR, i.e. to the FIR and to the UIR. The particular areas and/or flight levels affected by the meteorological phenomena causing the issuance of the SIGMET are given in the text of the message.*

A3, Chap. Appx 6:§4.2 Criteria related to phenomena included in SIGMET

- **A3, Chap.7, Appx 6: Rec. 4.2.1 TS and CB clouds (OBSC /EMBD /ISOL /OCNL).**
- **A3, Chap.7, Appx 6: Rec. 4.2.2 Area of TS (FRQ)**
- **A3, Chap.7, Appx 6: Rec. 4.2.3: Squall line (SQL)**
- **A3, Chap.7, Appx 6: Rec. 4.2.4 Hail (GR)**
- **A3, Chap.7, Appx 6: Rec. 4.2.5 Severe /Moderate TURB**

A3, Chap. Appx 6: §4.2 Criteria related to phenomena included in SIGMET (Cont.)

- **A3, Chap.7, Appx 6: §4.2.6 TURB specifications**
 - SEV TURB whenever the peak value of the cube root of EDR exceeds 0.7; and
 - MOD TURB whenever the peak value of the cube root of EDR is above 0.4 and below or equal to 0.7.
- **A3, Chap.7, Appx 6: Rec 4.2.7 Severe /Moderate Icing (ICE)**
- **A3, Chap.7, Appx 6: Rec 4.2.8 Mountain wave (MTW)**
 - *SEV MTW whenever an accompanying downdraft of 3.0 m/s (600 ft/min)*
 - *moderate whenever an accompanying downdraft of 1.75–3.0 m/s (350–600 ft/min)*
- **A3, Chap.7, Appx 6: Rec 4.2.9 Sandstorm /Dust storm**
 - *HVY SS /DS whenever the visibility is below 200 m and the sky is obscured*
 - *MOD SS /DS whenever :*
 - *1) below 200 m and the sky is not obscured; or*
 - *2) between 200 m and 600 m.*



A3, Chap. Appx 6 refers - Tables

- **Table A6-1A:** Template for SIGMET
 - Note 1.– Specifications of Ranges / Resolutions in Table A6-4
 - Note 2.– Icing / turbulence associated with TS / CB /TC
- **Table A6-4:** Ranges / resolutions for for the numerical elements included in SIGMET messages



A3, Chap. Appx 6 refers – Examples of SIGMET

- A6-1. SIGMET message and cancellation
- A6-2. SIGMET message for tropical cyclone
- A6-3. SIGMET message for volcanic ash
- A6-4. SIGMET message for radioactive cloud
- A6-5. SIGMET message for severe turbulence

Doc 8896 Manual of Aeronautical Meteorological Practice, Twelfth Edition, 2019

- 1964 : 1st Ed. As Manual of Aeronautical Meteorological Practice
 - Status : Guide for use by aeronautical MET personnel on MET procedures, codes, symbols, abbreviations,
- 1977 : 2nd Ed. to reflect, in particular, the many changes in procedures and terminology recommended by the Eighth AN Conference and the MET DIV Meeting (1974).
- 1982 : 3rd Ed. to reflect important changes to MET procedures, particular in connection with the establishment of WAFS.
- 1990 : 4th ED. To reflect the inclusions in Annex 3 of provisions regarding the transition to the final phase of the WAFS, aerodrome observations, reports and forecasts, SIGMET information
- 1996: 5th Ed. was the result of Amd 70 to Annex 3 and the 6th Ed. reflected the substantial changes made to Annex 3 in Amendments 71 and 72.
- The 7th Ed. took account of the substantial changes which were introduced in Annex 3 by Amendment 73A
- The 8th Ed. incorporated all the changes included in Amendment 74 to Annex 3. Explanations of the terms “MET authority”, “MET inspectorate”, “MET regulator” and “MET service provider” were introduced, guidance related to issuance of SIGMET.
- The 9th , 10th , and 11th Eds. Reflected the changes made to Annex 3 by Amd 75 (2010), Amd 76 (2013) and Amd 77 (2016) respectively
- The 12th Ed. introduced space weather centres and the requirement to disseminate OPMET information using ICAO IWXXM modem introduced in Amendment 78 to Annex 3..
- Appendices provide information on other subjects such as location of instruments at aerodromes and use of meteorological information by operators and flight crew members
- In this manual the words “shall” and “should” are not used in a regulatory sense as in ICAO or WMO regulatory documents.**





Summary

SIGMET Service

→ A3: Ch.:3,7; App.:6

SIGMET Service

→ Doc 8896, Doc ~~873~~, Doc 10003, Doc 9377

WMO
N°1100



North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



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