



INTERNATIONAL CIVIL AVIATION ORGANIZATION
WESTERN AND CENTRAL AFRICA OFFICE (WACAF)
ICAO Regional Seminar on ATS/MET/Pilots Coordination
(Yaoundé, Cameroon, 23 – 25 August 2010)



Agenda Item 2: Air traffic and meteorological services organizations

**AIR TRAFFIC AND METEOROLOGICAL
SERVICES ORGANIZATIONS**

(Presented by the secretariat)

Summary

This paper presents the basic organizational structure of aeronautical meteorology services and air traffic management services; it describes the main functions of each unit involved.

REFERENCE

Annex 3 - Meteorological Service for Air International Navigation.
Annex 11 - Air Traffic Service.
Doc. 8896 - AN/893/5 - Manual for Aeronautical Meteorology Practices.
Doc. 9426 - Air Traffic Services Planning Manual.

1. Introduction

1.1 The main objective of air traffic management authority and aeronautical meteorology authority for aviation is to provide assistance to ensure regular, safe and efficient conduct of flights. In order for these bodies to provide the necessary assistance to their customers, their organizational structures, goals and objectives must be framed properly. The following paragraphs briefly describe the organizational structures and responsibilities of these bodies.

2. Discussion

2.1 The following units provide air traffic and search and rescue services:

- a) Aerodrome control tower (TWR).
- b) Approach control unit (APP).
- c) Area control centre (ACC).
- d) Flight information centre (FIC)
- e) Air traffic services reporting office.
- f) Air-ground control radio station.
- g) Rescue coordination centre (RCC).

2.2 Centres, offices and stations providing meteorological information for ATS and search and rescue services units are the following:

- a) Meteorological office.
- b) Meteorological watch office (MWO)
- c) Aeronautical meteorological station.
- d) World area forecast centre (WAFC).
- e) Tropical cyclone advisory centre (TCAC).
- f) Volcanic ash advisory centre (VAAC).

2.3 Link between ATS units, RCCs/RSCs and meteorological offices and aeronautical meteorological stations is summarized in the Table in the Appendix

3. Conclusion

3.1 Participants are invited to note of the structure and functions of aeronautical meteorology and air traffic management and the links between them.

APPENDIX A

AIR TRAFFIC AND METEOROLOGICAL SERVICES
ORGANIZATIONS

1. Units Providing Air Traffic and Search And Rescue Services

1.1 The following units provide air traffic and search and rescue services:

- a) **Aerodrome control tower (TWR).** A unit established to provide air traffic control service to aerodrome traffic.
Provides aerodrome control service which includes, in particular, the control of aircraft arriving at or departing from the aerodromes concerned. In most cases TWRs provide this service to aircraft on the manoeuvring area (runways and taxiways) of the aerodrome and in the vicinity of the aerodrome (i.e. during actual take-off and landing and upon entering or leaving the traffic circuit, taking into consideration the dimensions of the circuit).
- b) **Approach control unit (APP).** A unit established to provide air traffic control service to controlled flights arriving at or departing from one or more aerodromes.
Established at certain aerodromes when it is necessary or desirable to create a separate unit, it provides approach control service to controlled aircraft approaching or departing an aerodrome under instrument flight rules.
- c) **Area control centre (ACC).** A unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction.
Note.— The ATS units in a), b) and c) also provide flight information and alerting services.
- d) **Flight information centre (FIC).** A unit established to provide flight information service and alerting service.
Note 1.— As indicated by its title, the function of an FIC is to provide “information” useful for the safe and efficient conduct of flights; this is different from the function of units that carry out “control” service (e.g. ACCs), which provide a service aimed at the prevention of collisions as well as the maintenance of an orderly flow of air traffic.
Note 2.— Air traffic flow management (ATFM) is being developed and implemented as a sub-element of the new air traffic management (ATM) system (see also Chapter 7). It is to become a tool to support ATS in ensuring an optimum flow of air traffic in areas and at times when demand may exceed the available capacity of the air traffic control system. Specialized regional ATFM centres/units are being established to provide for relevant strategic, tactical and real-time ATFM functions. The tactical and real-time functions of the specialized ATFM centres may be supported by ATFM positions at ACCs. It is envisaged that global ATFM centres may be required in the future.
- e) **Air traffic services reporting office.** A unit established for the purpose of receiving reports concerning air traffic services and flight plans submitted before departure.
Note.— An ATS reporting office may be established as a separate unit or combined with an existing unit, such as another ATS unit, or a unit of the aeronautical information service (see Chapter 6).
- g) **Air-ground control radio station.** An aeronautical telecommunication station having primary responsibility for handling communications pertaining to the operation and control of aircraft in a given area.
The station may supply to aircraft, in coordination with the ATS unit concerned, meteorological information for flight information purposes. The station may also be involved

in transmitting air reports received from aircraft to the ATS units and meteorological watch offices (MWOs) concerned.

- h) **Rescue coordination centre (RCC).** A unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region.

RCC and rescue sub-centres (RSCs) promote the efficient organization of search and rescue, prepare plans for the conduct of search and rescue operations within their search and rescue regions and, when necessary, initiate and coordinate action by search and rescue units in accordance with these plans.

2 Centres, Offices and Stations Providing Meteorological Information to Aeronautical Users, Including ATS Units and Search and Rescue Services Centres

2.1 It may be recalled that it is the responsibility of each State to determine, in accordance with Annex 3, and with due regard to regional air navigation agreements, the meteorological service which would meet the needs of international air navigation in that State. Furthermore, each State should designate the meteorological authority to provide or arrange for the provision of this meteorological service to international air navigation. In discharging its responsibilities, the meteorological authority may arrange for the provision of all or certain portions of that meteorological service by other professional entities on its behalf. Information regarding the designation of the meteorological authority and details relating to the provision of meteorological service to international air navigation by the meteorological authority are required to be included in the aeronautical information publication (AIP), in compliance with Annex 15 — *Aeronautical Information Services*, Appendix 1, GEN 1.1 (Annex 3, refers; see also Appendix 3 to this manual). Additional information is also provided in the Directory of National Civil Aviation Administrations (Doc 7604), which can be obtained from the ICAO Internet site at <http://www.icao.int>.

2.2 Meteorological service is provided by the following centres, offices and stations:

- a) **Meteorological office.** An office designated to provide meteorological service for international air navigation. Individual meteorological offices may be located at aerodromes or other locations as determined by the State concerned. A meteorological office and/or aerodrome meteorological office carries out all or some of the following functions to meet the needs of flight operations at aerodromes:
- prepare and/or obtain forecasts and other relevant information (e.g. aerodrome warnings and wind shear warnings and alerts) for flights with which it is concerned; the extent of its responsibilities to prepare forecasts shall be related to the local availability and use of en-route and aerodrome forecast material received from other offices;
 - prepare and/or obtain forecasts of local meteorological conditions (e.g. aerodrome forecasts (TAF));
 - maintain a continuous survey of meteorological conditions over the aerodromes for which it is designated to prepare forecasts;
 - provide briefing, consultation and flight documentation to flight crew members and/or other flight operations personnel;
 - supply other meteorological information to aeronautical users, including associated ATS units (usually TWRs and APPs);
 - display the available meteorological information;
 - exchange meteorological information with other meteorological offices; and
 - supply information received on pre-eruption volcanic activity, a volcanic eruption and volcanic ash cloud to its associated air traffic services unit, aeronautical information services unit and meteorological watch office as agreed between the meteorological, aeronautical information service and ATS authorities concerned.

Note.— For aerodromes without meteorological offices, the meteorological authority concerned designates the meteorological offices which are to supply the required information.

- b) **Meteorological watch office (MWO).** A meteorological office designated to:
- maintain watch over meteorological conditions affecting flight operations within its area of responsibility (a flight information region (FIR) or a control area or combinations thereof);
 - prepare SIGMET and other information related to its area of responsibility;
 - supply SIGMET information and, as required, other meteorological information to associated air traffic services units (i.e. ACC or FIC);
 - disseminate SIGMET information;
 - when required by regional air navigation agreement:
 1. prepare AIRMET information related to its area of responsibility;
 2. supply AIRMET information to associated air traffic services units; and
 3. disseminate AIRMET information;
 - supply information received on pre-eruption volcanic activity, a volcanic eruption and volcanic ash cloud for which a SIGMET has not already been issued, to its associated ACC/FIC, as agreed between the meteorological and ATS authorities concerned, and to its associated volcanic ash advisory centre (VAAC) as determined by regional air navigation agreement; and
 - supply information received concerning the accidental release of radioactive materials into the atmosphere, in the area for which it maintains watch or adjacent areas, to its associated ACC/FIC, as agreed between the meteorological and ATS authorities concerned, and to aeronautical information service units, as agreed between the meteorological and appropriate civil aviation authorities concerned. The information shall comprise location, date and time of the accident, and forecast trajectories of the radioactive materials.

Note 1.— MWOs are established by the States that accepted responsibility for providing ATS within an FIR or a control area.

Note 2.— In many cases, for efficiency, MWOs are collocated with an aerodrome meteorological office.

Note 3.— The information concerning the accidental release of radioactive materials is provided, at the request of the delegated authority in a State, by WMO regional specialized meteorological centres for the provision of dispersion model products for radiological environmental emergency response.

- c) **Aeronautical meteorological station.** A station designated to make observations and issue meteorological reports for use in international air navigation. These observations are used in the issuance of reports which the station disseminates locally at the aerodrome and beyond the aerodrome. Aeronautical meteorological stations shall make routine observations at fixed intervals. At aerodromes, the routine observations shall be supplemented by special observations whenever specified changes occur in respect of surface wind, visibility, runway visual range, present weather and/or cloud.

Note 1.— Local routine and special reports (MET REPORT and SPECIAL), disseminated locally at the aerodrome, are intended for arriving and departing aircraft. Aerodrome routine and special meteorological reports (METAR and SPECI) issued for dissemination to aerodromes beyond the aerodrome of origin are mainly intended for flight planning, D-VOLMET and VOLMET broadcasts (see 3.6), etc. Trend forecasts are often attached to both types of reports.

Note 2.— In addition, an aeronautical meteorological station also issues, as necessary, volcanic activity reports on the occurrence of pre-eruption volcanic activity, volcanic eruptions and volcanic ash cloud and disseminates them to the associated ATS unit, MWO and the AIS unit concerned.

Note 3.— The local aeronautical meteorological station often provides its reports direct to the aerodrome control tower and/or approach control office, i.e. not necessarily via the meteorological office associated with these ATS units.

- d) **World area forecast centre (WAFc).** A meteorological centre designated to prepare and issue significant weather forecasts and upper-air forecasts in digital form on a global basis direct to States by appropriate means as part of the aeronautical fixed service.
- e) **Tropical cyclone advisory centre (TCAC).** A meteorological centre designated by regional air navigation agreement to provide advisory information to MWOs, WAFcS and international OPMET data banks regarding the position, forecast direction and speed of movement, central pressure and maximum surface wind of tropical cyclones.
Note.— The advisory information is prepared in support of the issuance of SIGMET information for tropical cyclones.
- f) **Volcanic ash advisory centre (VAAC).** A meteorological centre designated by regional air navigation agreement to provide advisory information to MWOs, ACCs, FICs, WAFcS and international OPMET data banks regarding the lateral and vertical extent and forecast movement of volcanic ash in the atmosphere following volcanic eruptions.
Note.— The advisory information is prepared in support of the issuance of SIGMET information for volcanic ash cloud. Each VAAC is a part of the ICAO International Airways Volcano Watch (IAVW). In the ACCs and AIS units, the advisory information is used in the issuance of NOTAM or ASHTAM concerning volcanic ash activity.

2.3 While the meteorological offices and stations listed in previous § form part of the national aeronautical meteorological infrastructure, the meteorological centres listed in previous paragraphs represent international facilities organized under the auspices of ICAO.

3. Link Between ATS units, RCCs/RSCs and meteorological offices

3.1 In order to achieve close and effective coordination between ATS units, RCCs/RSCs and meteorological offices, the meteorological authority in each State is required to designate meteorological offices to be associated with individual ATS units and RCCs/RSCs.

3.2 Meteorological offices located at aerodromes are normally associated with local ATS units, i.e. TWRs and APPs. There are, however, many aerodromes where there is no meteorological office. In such cases, the functions of the meteorological office associated with the local ATS units at that aerodrome may be delegated to a meteorological office located at another aerodrome. These functions may be shared by two or more meteorological offices.

3.3 MWOs are associated with an ACC and an FIC. The responsibilities of an MWO may be shared between two or more MWOs.

3.4 MWOs also exercise the duties of the meteorological offices associated with RCCs/RSCs.

Note.— Information on meteorological offices, aerodrome meteorological offices and meteorological watch offices established by States to meet the requirements of international air navigation is published in the facilities and services implementation document (FASID) related to air navigation plans.

3.5 The unavoidably close interrelationship between the aerodrome aeronautical meteorological station and the TWR and APP defines the link between the three parties. This link is

often referred to as an aeronautical meteorological station being “associated” with the TWR and/or the APP.

3.6 The ATS units and the corresponding meteorological offices are summarized in Table 2-1.

Table 2-1. ATS units and associated meteorological offices

<i>ATS unit</i>	<i>Associated meteorological office</i>
Aerodrome control tower (TWR)	Aerodrome meteorological office
Approach control office (APP)	Aerodrome meteorological office
Area control centre (ACC)	Meteorological watch office (MWO)
Flight information centre (FIC))	Meteorological watch office (MWO)