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INTERNATIONAL CIVIL AVIATION ORGANIZATION

EUR OPMET DATA MANAGEMENT HANDBOOK

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EUR OPMET Data Management Handbook	
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Document Change Record

Due to the size of the Change Record, it was decided to host it as a separate document on the *ICAO Paris website*. It can be found together with the main document.

Due to SPAM-protection, all contact information has been removed from this document. Contact details for the DMG are provided via the *ICAO-Portal*.

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1 Introduction

1.1 Purpose of this document

1.1.1 The purpose of the "EUR OPMET Data Management Handbook" is to provide details on the procedures for OPMET data exchange under the EUR RODEX (Regional OPMET Data Exchange) schema. The Handbook defines the responsibilities and the procedures to be followed by the different components of the RODEX-schema and also informs about the content, the data formats and exchange criteria for the OPMET bulletins.

1.2 History

1.2.1 The MOTNE (Meteorological Operational Telecommunications Network Europe), which was the predecessor of the RODEX schema, was originally implemented on a pair of low-speed telegraphic loops connecting a number of centres in the EUR Region. The centres, known as MOTNE Centres, had dedicated time slots during which they inserted meteorological data from their area of responsibility onto the loops. When not sending data, each MOTNE Centre monitored the loops for meteorological data which could then be disseminated to other centres within its own area of responsibility. This was done for a long time using punched tapes.

1.2.2 The MOTNE Regional Planning Group (RPG) planned the structure and administration of this mechanism. In 1995 the MOTNE RPG was replaced by the Meteorological Operational Telecommunications Network Europe Group (MOTNEG) as a sub-group of the EUR Aviation Systems Planning Group (EASPG).

1.2.3 The required volume of OPMET data within the EUR Region increased to an extent which exceeded the available bandwidth on the loops. Dissemination of the data was therefore transferred to the new AFTN/CIDIN network, thus removing the bandwidth and timing restrictions. The last loop was finally taken out of service in December 1996.

1.3 Bulletin Management Group

1.3.1 The BMG was formed in 1996 by the MOTNEG, which identified the need for a working group to manage OPMET data exchange within the EUR Region, based upon existing requirements. The Terms of Reference were as follows:

− to examine the existing EUR requirements and any new requirements and assess the feasibility of satisfying these requirements, taking into account the availability of the data;
− if necessary, to re-organise bulletins through the change of existing bulletins or addition of new bulletins, based on the validated requirements;
− to route all bulletins to SADIS and to the existing MOTNE Centres;
− the States should be informed 1 month in advance about changes in the programme by notification from the ICAO Office in Paris.
− the group should report its activities to the MOTNEG

1.3.2 In 2001 the MOTNEG group was dissolved, the BMG moved under the umbrella of the Meteorology Group (METG).

1.4 Review of MOTNE Exchange

1.4.1   In 2007, the BMG reviewed the MOTNE exchange system, with its 11 MOTNE-centres, to increase and ensure the efficiency. The results were presented to METG/17 leading to the decision that the MOTNE schema shall be transferred to the EUR RODEX schema (Regional OPMET Data Exchange). The new RODEX schema consisted of 3 Regional OPMET Centres (ROC), also functioning as inter-regional gateways (IROG), 3 regional OPMET databanks (RODB) and many National OPMET Centres (NOC) within the region. More details can be found in Chapter 4 "Components and Functions of the EUR RODEX Schema".

1.4.2   In 2010 the BMG was replaced by the DMG.

1.5   Data Management Group reporting lines

1.5.1   The initial members of the BMG were MOTNEG participants from Austria, Belgium, Denmark, France, the United Kingdom, Algeria and the Russian Federation. Since the dissolution of the MOTNEG in 2001, it was approved by the EANPG/43 that the BMG continues with its work but reporting instead to METG.

1.5.2   In accordance with METG Decision 20/06, the BMG was replaced by the Data Management Group (DMG). Concurrently, the functional needs and composition of the DMG were revised. The DMG was limited to members from Algeria, Austria, Belgium, Denmark, France, Romania, the Russian Federation and the United Kingdom; however, a limited number of experts from States beyond this DMG membership may, at times, be necessary to support complex DMG activities.

1.5.3   In mid-2016, a project started to investigate on the possible implementation of a fourth ROC, namely Moscow. The implementation of ROC Moscow was officially realized after 4 ½ years of work in the beginning of 2021.

1.5.4   In 2022 the membership of DMG was changed to be able to cope with new challenges ahead. At METG/32 it was agreed to have Germany (as IWXXM and SWIM expert) as well as Spain (liaison to SAM region for OPMET matters) as new members of DMG.

1.5.5   Besides the ToRs, defined by the parent group (METG) for the DMG, dedicated tasks are also coordinated with the METP WG MOG/SADIS, mostly regarding data monitoring. As OPMET data exchange uses the AFTN/AMHS network, close co-ordination is also kept with the AST-TF/PG (AFS to SWIM Transition Task Force / Planning Group [former AFSG/PG]).

2   EUR Regional OPMET Data Exchange (RODEX) Schema – General

2.1   Objective

2.1.1   The main purpose of the EUR Regional OPMET Data Exchange (RODEX) schema is to

−   describe the usage of the ICAO AFS (Aeronautical Fixed Service) to ensure the most efficient exchange of OPMET data within the EUR Region as well as with the other ICAO Regions to meet the user requirements for OPMET data; and
−   ensure the implementation of the OPMET-related SARPs in Annex 3, Annex 10 and the EUR electronic Air Navigation Plan (eANP) in a highly efficient and standardized way.

2.2   What is OPMET data?

2.2.1   The term OPMET (Operational Meteorological) data is to be understood as being all meteorological data needed by airspace users to plan and conduct a safe and efficient flight. This data comprises e.g. METAR, TAF and SIGMET but also Significant Weather Charts and Wind-/Temperature-Charts for several flight levels.

2.2.2   The RODEX-schema takes care of the OPMET data exchanged via the terrestrial part of the AFS (AFTN and/or AMHS). Throughout DOC 018 the term OPMET data is to be understood as all OPMET data exchanged via the terrestrial part of the ICAO AFS, excluding WAFC-forecasts. An overview of the OPMET data types is provided in the table at 5.1.1 and the OPMET data is available in both TAC and IWXXM format.

2.3   Structure

2.3.1   The above objective is achieved by implementing four Regional OPMET Centres (ROC), three Inter-Regional OPMET Gateways (IROG), three Regional OPMET Databanks (RODB) and 59 National OPMET Centres (NOC). At present, this structure is part of a larger global OPMET exchange, which should ensure seamless exchange of the required meteorological information to fulfil the needs of the aviation users. Similar schemas are implemented in other regions, e.g. the ROBEX-schema in the APAC-region or the AMBEX-schema in the AFI-region.
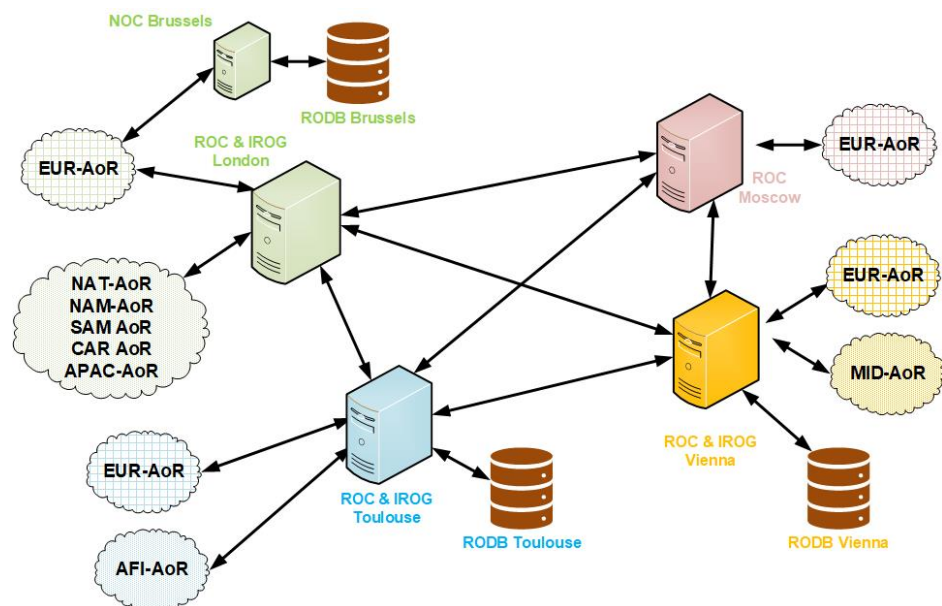
2.3.2   Information about the ROCs AoR (which State belongs to which AoR) can be found in Appendix E (Distribution Determination for OPMET Data).

2.4   Products

2.4.1   The EUR RODEX schema also provides guidelines on the production of OPMET data in predefined bulletins in order to ensure a flawless delivery to the aviation users. It handles all types of OPMET data in TAC (Traditional Alphanumeric Code) and IWXXM (ICAO Meteorological Information Exchange Model) format and provides facilities and services for scheduled and non-scheduled delivery of OPMET information.

2.5   IWXXM Data exchange

2.5.1   The ICAO Annex 3 Amendments 76 – 78 outlined the steps for the transition of Traditional Alphanumeric Code formatted OPMET data towards XML formatted data in compliance with the ICAO Meteorological Information Exchange Model (IWXXM).

2.5.2   The use of OPMET data in a TAC format presents an obstacle to the digital use of the data as it often contains typographical errors, is poorly structured and lacks validation. This makes the handling of global data difficult to use correctly and expensive to maintain. These significant difficulties have been highlighted during past code changes. The coding practices in text form also presents an obstacle to efficient automation as State coding exceptions are commonly used.

2.5.3   IWXXM represents a significant change from the provision and exchange of textual OPMET data towards a digital environment supporting the ICAO Global Air Navigation Plan (GANP) and transition towards a SWIM (System Wide Information Management) environment.

2.5.4   The development of new systems which provide and support digital OPMET requires initial investment but the use of enabling data exchange standards for other domains such as AIXM (Aeronautical Information Exchange Model) and FIXM (Flight Information eXchange Model) along with IWXXM will lead to cost reduction due to the implementation of widely used data modelling techniques including OGC (Open Geospatial Consortium) segments. This will enable users to create new products at lower cost, fusing all digital data available.

2.5.5   The Amendment 78 to ANNEX 3 introduced the requirement, as from November 2020, for the international exchange of METAR/SPECI, TAF, AIRMET, SIGMET, VAA, TCA and SWXA in IWXXM-format.

2.5.6   With this new format also the terminology as well as the functionalities within the exchange systems changed. Details will be explained later in the document.

2.6   OPMET data provision and requirements

2.6.1   The determination of the OPMET data to be provided for international exchange by each State is a responsibility of the respective meteorological authority in consultation with the aviation users concerned. The user requirements should be as far as possible fulfilled by the provided OPMET data. The agreed requirements for AOP OPMET data are promulgated via the electronic EUR Air Navigation Plan (eANP DOC 7754) in the following tables:

2.6.1.1   eANP Volume II Table MET II-1, *Meteorological Watch Offices, Service to be provided for FIR or CTA*, lists all MWOs in the EUR region. It defines the

requirements for the provision of SIGMET (WS, WV, WC) and AIRMET (WA) messages for each FIR/UIR.

2.6.1.2   eANP Volume II Table MET II-2, Aerodrome Meteorological Offices, defines the requirements for the AOP airports (defined in eANP Volume I, AOP Table I-1) to provide OPMET data. The table includes *inter alia* the requirements for METAR/SPECI, TREND forecast, TAF period of validity and minimum and maximum temperatures.

2.6.2   Additional requirements can be found in the ICAO Doc 9766, Handbook on the International Airways Volcano Watch (IAVW), which describes the areas of responsibility of Volcanic Ash Advisory Centres (VAAC) and a list of EUR MWOs and ACCs to which advisory information should be sent.

2.6.3   Besides the above mentioned AOP aerodromes, the DMG also manages the exchange of agreed non-AOP OPMET. A list of agreed non-AOP aerodromes and offshore structures can be made available by the DMG.

2.7   Management

2.7.1   Monitoring of the OPMET exchange under the EUR RODEX schema, planning of improvements and preparation of proposals for any changes of the schema, which may become necessary, are carried out by the EUR Data Management Group.

2.8   Related Documents

2.8.1   Global ICAO and WMO documents

2.8.1.1   The ICAO Annex 3, *Meteorological Service for International Air Navigation* contains the global standards and recommended practices (SARPs) on the content and format of operational meteorological messages. The provisions contained in Annex 3 are, except for a few minor editorial differences, identical with those in the WMO No. 49, *Technical Regulations,* Volume II –*Meteorological Service for International Air Navigation*.

2.8.1.2   The ICAO Annex 10, *Aeronautical telecommunications*, Volume II, *Communication Procedures*, contains the SARPs related to the Aeronautical Fixed Service (AFS).

2.8.1.3   The ICAO Doc 9880 Part II – Ground-Ground Applications - ATS Message Handling Service (ATSMHS) contains detailed technical specifications for the ATN (Aeronautical Telecommunication Network).

2.8.1.4   The ICAO Doc 10003, Manual on the Digital Exchange of Aeronautical Meteorological Information is specifying in detail the IWXXM data model.

2.8.1.5   WMO No. 386, *Manual on the Global Telecommunication System*, is the main document defining the structure of the abbreviated header of an OPMET bulletin. It also includes the filename convention which is used for exchanging OPMET data in IWXXM format, transported via the extended Aeronautical Message Handling System (AMHS) as File Transfer Body Part (FTBP).

2.8.1.6   Some aeronautical meteorological codes such as METAR, SPECI and TAF are defined in WMO No. 306, *Manual on Codes.* Information on the alphanumeric code

forms (TAC) can be found in Volume I.1 Part A, information on the IWXXM schema in Volume I.3 Part D.

2.8.2   Regional Documents

2.8.2.1   The ICAO Doc 7754, *EUR electronic Air Navigation Plan (eANP)*, which includes Volume II, contains the regional procedures related to the production and exchange of OPMET information in the European Region. The regional procedures are regularly reviewed by the Meteorology Group (METG) of the EASPG and proposals for amendment endorsed by the EASPG are processed in consultation with all States and international organizations concerned, according to the amendment procedure established by the ICAO Council.

2.8.2.2   The *EUR OPMET Data Management Handbook*, ICAO EUR Doc 018, is based on all documents listed above and represents the main guidance material related to the EUR RODEX schema. It is kept up to date by the EUR DMG and contains the following appendices:

−   **Appendix A:** The *RODB Interface Control Document* (ICD) contains guidance on the interrogation procedures and the content of the RODBs.

−   **Appendix B:** The EUR OPMET Data Update Procedure contains information on the update procedure for OPMET data as well as on the procedure to be used for requesting new (currently not available) data.

−   **Appendix C:** The EUR OPMET Data Monitoring Procedure contains information on the DMG monitoring activities, monitoring dates and procedures.

−   **Appendix D:** The EUR OPMET Data Monitoring Tool Specification specifies the standards and data validation requirements for OPMET data monitoring tools used by OPMET Centres participating to the DMG monitoring exercises. This is necessary to facilitate automated, centralized analysing of the results generated.

−   **Appendix E:** The Distribution Determination for OPMET Data contains information on the distribution criteria and responsibilities within the EUR-Region.

−   **Appendix F:** The Calculation of the Performance Indices contains information on how the different indices are calculated and how the results can be interpreted.

−   **Appendix G:** The EUR RODEX Backup Procedure contains information about the procedure to be applied in case of an outage of a ROC and the possible implications for NOCs.

2.8.2.3   The *EUR SIGMET and AIRMET Guide,* EUR Doc 014, is a supplementary document, containing guidance on the rules for SIGMET and AIRMET issuance as well as on the format of the SIGMET and AIRMET header and content. The EUR SIGMET and AIRMET Guide is available from the website of the ICAO Office Paris. This document is kept up to date by ICAO Regional Office Paris.

2.8.2.4   The ICAO EUR Doc 020 EUR AMHS Manual contains guidance on the AMHS. This document is kept up to date by ICAO Regional Office Paris.

3   Telecommunication - General

3.1   The RODEX Schema

3.1.1   The EUR RODEX schema is using the ground segment of the ICAO AFS (AFTN or AMHS) as the sole medium for the exchange of the OPMET messages (TAC and IWXXM) between the Regional and National OPMET Centres, as well as for Inter-Regional OPMET data exchange.

3.1.2   The access to the Regional OPMET Databanks (request-reply service provided by the RODBs) is only possible through this terrestrial AFS-network.

3.1.3   The Distribution Modes and AFS-addressing for the RODEX schema is presented in Appendix E - Distribution Determination for OPMET Data.

3.2   AFS

3.2.1   The exchange of OPMET data, as defined by the RODEX schema, is based on the utilization of the AFS and its facilitated services like AFTN or AMHS.

3.2.2   The requirement to use the AFS for exchanging OPMET data is outlined in ICAO Annex 3 (App 10, 2.1.4)

3.2.3   The use of AFS for the OPMET exchange encompasses two components:

- − use of the terrestrial AFS-network; and
- − use of secure FTP distribution systems – SADIS (and WIFS)

3.2.4   The international and inter-regional OPMET data AFS distribution medium is determined to be AFTN or AMHS (using IA5 text body part) for TAC-data.

3.2.5   Given the size and character set of IWXXM messages, it is not possible for these messages to be transmitted via AFTN. The file containing the message shall be compressed and attached as a FTBP (File Transfer Body Part) to the AMHS (ATS Message Handling System) message as defined in ICAO Doc 9880 Part II-B (*Manual on detailed technical specifications for the aeronautical telecommunication network (ATN) using ISO/OSI standards and protocols*) and further detailed in EUR Doc 020, to exchange IWXXM data internationally through the AFS.

3.2.6   The AFS shall therefore be used

- − Between NOCs and their designated ROC
- − Between ROCs in the EUR-Region
- − Between the EUR IROGs and IROGs in the other ICAO-Regions as determined by the RODEX schema.

3.2.7   The OPMET Data exchange between national Data Producers (AMS, AMO, MWO) as Originating Units and their National OPMET Centre (NOC) is to be organised between the responsible organizations designated by the State's Meteorological Authority. The OPMET data collected by the State's NOC for international dissemination via the designated ROC (ref. RODEX schema) shall be validated against TAC or the IWXXM Data Model format requirements before transmission.

3.2.8 OPMET bulletins transmitted via AFTN should be encapsulated in the text part of the AFTN message format (cf. Annex 10, Volume II, p. 4.4.2).

3.2.9 If data cannot be sourced directly from AFS, steps should be undertaken by the ROC and the respective NOC to define an implementation plan to overcome this deficiency.

3.2.10 The requirements for the transit times of the AFTN messages and bulletins containing OPMET information are given in ICAO Annex 3, Appendix 10, 1.1. For AMHS messages, the transit times for OPMET data should at least be identical.

3.2.11 Within the EUR region, some States use only SADIS for the reception of global OPMET data. For back-up purposes, it is highly recommended that those States consider having a WIFS account. All States which use SADIS only as a parallel data source for global OPMET-data should also consider applying for a WIFS-account.

3.2.12 In 2011 the former SADISOPSG encouraged all SADIS-users to register for a WIFS account in their Conclusion 16/14.

3.2.13 In order to improve the availability and regularity of OPMET data, the ROCs may create appropriate additional backup-connections with the NOCs in its AoR.

4   Components and Functions of the EUR RODEX Schema

4.1   General

4.1.1   The EUR RODEX schema consists of several components, utilizing the ICAO AFS as medium for the exchange of OPMET data. These components provide one or more functions within RODEX. The different components as well as the functions, necessary for the regional and interregional OPMET-data exchange of regular and non-regular OPMET data, are listed and explained below.

4.2   Component - Originating Unit (OU)

4.2.1   This is an operational unit where OPMET data is produced and issued. The ICAO/WMO functions can be
          − AMS (Aeronautical Meteorological Station)
          − AMO (Aerodrome Meteorological Office)
          − MWO (Meteorological Watch Office)
          − TCAC (Tropical Cyclone Advisory Centre)
          − VAAC (Volcanic Ash Advisory Centre)
          − SWXC (Space Weather Centre)
          − WAFC (World Area Forecast Centre)

4.2.2   An Originating Unit is providing the following functions
          − Data Producer (see chapters 6, 7, 8, 9 and 10) .
          − Data Translator (optional, see 4.11)

4.3   Component - National OPMET Centre (NOC)

4.3.1   A NOC is the service which manages the national exchange of ICAO OPMET data within a state. NOCs should collect and validate at least all international required OPMET messages – required AOP and agreed exchanged non AOP (refer to the Regional (electronic) Air Navigation Plans for AOP) – generated by the State`s originating units, compile national collective bulletins and make them available according to the regional distribution schema over the AFS.

4.3.2   Each State shall establish **<u>one</u>** dedicated NOC, being responsible to provide the following functions:
          − Data Aggregator (see 4.9)
          − Data Switch (see 4.11)
          − Data Translator (optional, see 4.10)

4.3.3   In order to avoid duplication of the OPMET data traffic, all regional OPMET exchange should be directed through the ROCs. Direct addressing of OPMET data from the originator or NOC to recipients in the regions should be avoided, except in case of bilaterally agreed data exchange of non-AOP data.

4.3.4   A NOC shall operate in close conjunction with the State's national AFTN/AMHS Telecommunication (COM) centre/switch to fulfil the requirement to use the ICAO AFS for international OPMET data exchange. Whether a direct AFTN/AMHS connection is implemented or a proprietary solution used is up to the State and out of scope of this document.

4.3.5   The necessary procedures to fulfil the responsibilities of a NOC, to validate and exchange OPMET data within its own State, are beyond the planning responsibilities of ICAO and DMG.

4.4   Component – Regional OPMET Centre (ROC)

4.4.1   A ROC is the service which manages the regional exchange of ICAO OPMET data. It should collect, validate and disseminate OPMET messages – required AOP and agreed exchanged non AOP – received from the NOCs in its Area of Responsibility (AoR) according to the EUR-RODEX schema. The ROCs as well as their respective AoR are listed in the "Distribution Determination for OPMET Data" (Appendix E).

4.4.2   In the EUR-Region the RODEX schema defined four ROCs:

− ROC London
− ROC Moscow
− ROC Toulouse
− ROC Vienna

4.4.3   Normally, a ROC also acts as the NOC for the State it is situated.

4.4.4   A ROC **must** use the ICAO AFS for the exchange of OPMET data.

4.4.5   A ROC is providing the following functions:

− Data Switch (see 4.11)
− Data Translator (optional, see 4.10))

4.4.6   In more detail, a ROC is responsible for the collection of OPMET messages from the NOCs in the AoR and for the distribution of this data to the other ROCs and, if applicable, to the RODB in the AoR.

4.4.7   A ROC is also responsible for the provision of OPMET data to the NOCs in the AoR. The data to be provided should be agreed between the ROC and the NOC concerned.

4.4.8   Furthermore, a ROC is responsible for the quality control of the bulletins from within the AoR (see Section 12 for details) on 24 hours / 7 days a week basis. This is necessary to ensure that messages can be routed correctly and without delay within the RODEX schema.

4.4.9   A ROC should minimize the duplication of OPMET data from within the AoR.

4.4.10   A ROC should monitor the reception of OPMET data for national and international dissemination. To fulfil this task, ROCs shall participate to the scheduled DMG OPMET monitoring exercises. Details on this exercise can be found in the *EUR OPMET Data Monitoring Procedure (App. C).*

4.4.11   The following principles are applied for the regional OPMET data exchange:

− a ROC shall be connected to a COM-centre capable of handling efficiently the volume of anticipated traffic.
− a ROC should be capable of handling all OPMET data types.

4.5   Component - Interregional OPMET Gateway (IROG)

4.5.1   An IROG is the service which manages the inter-regional exchange of ICAO OPMET data with specific ICAO regions.

4.5.2   In the EUR-Region, the RODEX schema defines three IROGs (see also figure under paragraph 2.2.1):

- London (EGGY), responsible for the NAT, NAM, SAM, CAR, PAC and ASI Regions
- Toulouse (LFPW), responsible for the AFI Region
- Vienna (LOWM), responsible for the MID Region

4.5.3   The Inter-Regional OPMET exchange between the IROG(s) must use the ICAO AFS.

4.5.4   An IROG is providing the following functions:
- Data Switch (see 4.11)

4.5.5   In more detail, an IROG is responsible for the collection of OPMET messages from the ICAO-region(s) it is responsible for and for the distribution of this data to the ROCs in the EUR-region.

4.5.6   An IROG is responsible to send required EUR-OPMET data to the assigned IROG in the ICAO region(s). The amount of data to be sent will be agreed upon between the IROGs.

4.5.7   Furthermore, an IROG is responsible for the quality control of the bulletins from the other ICAO-region(s) (see Section 12 for details) on 24 hours / 7 days a week basis. This is necessary to ensure that messages can be routed correctly and without delay within the RODEX schema.

4.5.8   IROGs should maintain close co-ordination with the IROGs of the regions they are responsible for to fulfil user needs. The regional operational requirements can be found in the regional eANPs, Volume II, Met Table II-2.

4.5.9   The following principles are applied for the Inter-Regional OPMET exchange:

- An IROG shall be connected to a COM-centre capable of handling efficiently the anticipated volume of traffic.
- An IROG should be capable of handling all OPMET data types.

4.5.10   In order to avoid duplication of the OPMET data traffic, all inter-regional OPMET exchange should be directed through the IROGs. Direct addressing of OPMET data from the originator or NOC or ROC not responsible for this area to recipients in the other ICAO regions should be avoided.

4.6   Component - Regional OPMET Databanks (RODB)

4.6.1   An RODB is the service which provides the functionality to store OPMET data in a database and make it available for users holding a valid AFTN- or AMHS-address.

4.6.2   There are three Regional OPMET databanks in the EUR Region, provided by Brussels (EBBR), Vienna (LOWM) and Toulouse (LFPW). According to the EUR eANP, Volume II, Part V, 2.8 the ROCs in the EUR-region are taking care to disseminate all OPMET-data to the RODBs. Data originator and/or NOCs shall not send their OPMET data directly to the RODBs.

4.6.3   To fulfil their tasks, RODBs must be connected to the AFS, by that supporting to handle requests received via AFTN as well as extended AMHS.

4.6.4   The main responsibilities of the RODBs are as follows:

- Collect and store all TAC and IWXXM OPMET data received from the responsible ROC, based on requirements defined in the regional eANPs Volume II Table MET II-2
- Maximizing the amount of available OPMET data by using the DMG mechanism for requesting additional data (EUR OPMET Data Update Procedure ➔ Appendix B);
- Provide request/response facilities for authorized users to obtain TAC and/or IWXXM data according to the procedure defined in the ICD (Appendix A of this Handbook);
- Ad hoc monitor user request activities to detect possible misuse or abuse of the OPMET databanks

4.6.5   The service is established for aeronautical users, holding a valid AFTN- or AMHS-address, only. Such users are ATS-, AIS-, MET-units or airlines. The commercial use by non-aviation users is not allowed.

4.6.6   The RODBs shall store at the least the Table MET II-2 required OPMET data and the agreed non-AOP OPMET data exchanged via the RODEX schema in TAC and IWXXM format

4.6.7   There will be no translation between TAC and IWXXM undertaken by the RODBs.

4.6.8   More detailed information on the OPMET databanks, such as the supported data types, query language or format and content of the database replies, can be found in the ICD (Appendix A of this Handbook).

4.7   Component - SADIS and WIFS

4.7.1   AFS Internet based services are, on behalf of ICAO, maintained by
- United Kingdom (Secure Aviation Data Information Services (SADIS))
- United States (WAFS Internet File Service (WIFS))

4.7.2   These two systems provide, besides TAC and IWXXM OPMET data already exchanged via the RODEX schema, also World Area Forecast System (WAFS) data.

4.7.3   According to the EUR eANP, Volume II, Part V, 2.8 the ROCs in the EUR-region are taking care to disseminate all TAC and IWXXM OPMET-data to the SADIS and WIFS service providers.

4.8   Function – Data Producer

4.8.1   The function of a Data Producer is to provide OPMET data, both in TAC (until removed from ANNEX 3) and IWXXM format, in accordance with ICAO Annex 3. If a Data Producer is not able to generate IWXXM OPMET at source, it may also translate the TAC version into IWXXM.

4.8.2   The task to translate TAC OPMET data can also be delegated to a centre providing a Translation Centre function. This can be the National OPMET Centre (NOC) or, if the State signs a translation agreement, the responsible Regional OPMET Centre (ROC).

4.8.3   A template Letter of Agreement which can be used between a State and its ROC can be found on the ICAO Paris website (*https://www.icao.int/EURNAT/Pages/welcome.aspx =>*

EUR/NAT Documents => EUR ==> EUR Documents => MET Guidance => TAC to IWXXM translation services request form).

4.8.4 The IWXXM-message shall be validated against the latest applicable IWXXM schema and schematron by the Data Producer before distribution.

4.8.5 The IWXXM-message shall include the appropriate metadata such as the airport indicator, airport name, airport position and airport elevation.

4.9 Function – Data Aggregator

4.9.1 This function, also known as compiling, takes individual reports, performs limited data validation and aggregates them into collective bulletins. The aggregation can consist of one or more report(s) of the same type (e.g. METAR, TAF, SIGMET) and format (TAC, IWXXM).

4.9.2 In case of IWXXM-data the "Feature Collection Model" (COLLECT) shall be used in all cases, even if there is only one report included (SIGMET-message). The intent is to allow XML encoded meteorological information to be packed in a way that emulates the existing data distribution practices used within the AFS.

4.9.3 The IWXXM-aggregation shall be validated against the latest applicable IWXXM schema and schematron by the Data Producer before distribution.

4.9.4 The IWXXM-aggregator shall apply a correct filename (see 4.12) to its output.

4.9.5 The IWXXM-aggregator shall correctly compress data, applying an appropriate suffix (see 4.12) to the filename.

4.9.1 The IWXXM-aggregator shall apply appropriate metadata following agreed ICAO rules such as namespace declarations, UUID and schema locations.

4.10 Function – Data Translator

4.10.1 A Data Translator converts TAC formatted OPMET data into IWXXM format. This function can be provided nationally by an Originating Unit or National OPMET Centre on behalf of their State or bilaterally by a ROC.

4.10.2 In case a ROC is involved a "TAC to IWXXM translation services request" needs to be signed by the requesting State. The agreement can be found on the ICAO Paris website (*https://www.icao.int/EURNAT/Pages/welcome.aspx => EUR/NAT Documents => EUR ==> EUR Documents => MET Guidance => TAC to IWXXM translation services request form*).

4.10.3 Information about the Area of Responsibility of a ROC can be found in Appendix E (*Distribution Determination for OPMET Data)* or on the DMG-website.

4.10.4 The Data Translation function includes that the translated IWXXM data is validated against the latest schema and schematron rules before dissemination.

4.10.5 A Data Translator shall be able to parse incoming TAC-data and apply the IWXXM-schema to the data. This function can be associated with an Originating Unit, performing

the translation on report level, or a Data Aggregator, if the translation is done on bulletin level.

4.10.6   TAC data shall be translated only once. Multiple translation of the same TAC-data by different Data Translators is prohibited.

4.10.7   In case of TAC being translated into IWXXM, this should be reflected in the "Report Attributes" of the IWXXM-message, as can be seen in below example:

4.10.8   If a TAC message can't be translated into IWXXM, this should be reflected in the "Report Attributes" in addition to the information regarding the translated bulletin:

4.10.9

4.11   Function – Data Switch

4.11.1   This function is receiving OPMET data, TAC as well as IWXXM, performs basic quality validation (see Section 12 for details) and routes the data according to the abbreviated header information (TTAAii CCCC). The bulletin header fulfils the regulations described in WMO doc No 386, *Manual on the Global Telecommunication System.* In case of an IWXXM-message, this abbreviated header information is part of the filename.

4.12   WMO Naming Convention

4.12.1   Aggregated IWXXM-messages shall use the WMO Naming Convention to create a filename. This is mandatory to enable Data Switches to rout IWXXM-messages, as the routing is, as for TAC-data, based on the abbreviated header line (AHL).

pflag_productidentifier_**oflag**_originator_yyyyMMddhhmmss[_freeformat].**type[.compression]**

- The elements in **black and bold** are fixed elements where
  - the **pflag** is "**A**", indicating that the "product identifier" field will be decoded as the standard ABH including BBB as appropriate.
  - the **oflag** is "**C**", indicating that the "originator" field will be decoded as a standard CCCC site id
  - the type is "**xml**"
  - the compression is "**gz**"

A_TTAAiiCCCCYYGGgg*BBB*_C_CCCC_YYYYMMddhhmmss.xml.gz

- TTAAiiCCCCYYGGgg is the WMO header with the date time group
- *BBB* is ***optional***, used in case of retards (RRx), amendements (AAx) or corrections (CCx)
- CCCC is the repeated CCCC part from TTAAiiCCCC
- YYYYMMddhhmmss is the date/time group of file generation

4.12.2   The routing table will associate this TTAAiiCCCC data identifier with the AMHS addresses where the data should be sent to. The compressed file will be named with the suffix appropriate to the compression and sent onto AMHS.

4.12.3   FTBP name examples with METAR from LFPW

A_LAFR31LFPW171500_C_LFPW_20151117150010.xml.gz

1st retarded bulletin:

A_LAFR31LFPW171500RRA_C_LFPW_20151117150105.xml.gz

1st corrected bulletin:

A_LAFR31LFPW171500CCA_C_LFPW_20151117150425.xml.gz

4.12.4   WMO defined T1T2 (from TTAAii) for the following IWXXM data types:

- Aviation Routine Report (*METAR*):   *LA*
- Aerodrome Forecast (*"short" TAF*) (VT < 12 hours):   *LC*
- Tropical Cyclone Advisory   *LK*
- Special Aviation Weather Reports (*SPECI*):   *LP*
- Aviation General Warning (*SIGMET*):   *LS*
- Aerodrome Forecast (*"long" TAF*) (VT >= 12 hours): *LT*
- Volcanic Ash Advisory   *LU*
- Aviation Volcanic Ash Warning (*VA SIGMET*):   *LV*
- AIRMET   *LW*
- Aviation Tropical Cyclone Warning (*TC SIGMET*):   *LY*
- Space Weather Advisory *(SWXA)*   *LN*

5 OPMET Information and OPMET Exchange

5.1 OPMET data types

5.1.1 As described under 2.3.1, the TAC and IWXXM OPMET data exchange is handled by the RODEX schema. The supported data types can be found in the table below. It contains the WMO data type designator (T_1T_2) for TAC as well as for the IWXXM formatted OPMET data type equivalents (as far as defined).

Data type	Abbreviated name	WMO data type designator	
		TAC Format	IWXXM Format
Routine, also Scheduled OPMET data			
Aerodrome reports	METAR	SA	LA
	SPECI	SP	LP
Aerodrome forecasts	TAF: 12 up to 30-hours	FT	LT
	less than 12-hours	FC	LC
GAMET information	GAMET	FA	n/a
Non-Routine, also Non-Scheduled OPMET data			
SIGMET information	SIGMET	WS	LS
	SIGMET for TC	WC	LY
	SIGMET for VA	WV	LV
AIRMET information	AIRMET	WA	LW
Volcanic ash advisories	VAA	FV	LU
Tropical cyclone advisories	TCA	FK	LK
Space weather advisory	SWXA	FN	LN
SPECIAL Air-reports	ARS and ARS for Volcanic ash	UA	n/a
Administrative	ADMIN	NO	n/a

5.2 OPMET bulletins

5.2.1 The exchange of OPMET data is carried out through bulletins containing one or more meteorological report(s) (METAR, SPECI, TAF, SIGMET, …).

5.2.2 The routing of bulletins is based on the WMO abbreviated header, which has the following format:

$T_1T_2A_1A_2ii$ CCCC YYGGgg [BBB]

5.2.3 The WMO abbreviated header contains basic information about the content of an OPMET bulletin where:
- T_1T_2 stands for the data type designator (e.g. SA for METAR in TAC format or LK for tropical Cyclone Advisory in IWXXM format)
- A_1A_2 stands for the originating WMO country or territory designator (e.g. BX for Belgium)
- ii is the bulletin number also used to determine whether the bulletin is for global, inter-regional, regional or national distribution. The list of ii to be used in the EUR-region can be found on the ICAO Paris website and in the following table.

ii	use
01-19, 20-39	Global, regional and inter-regional distribution
40-89	National and bilateral distribution *Noting:* GAMET using series 50-59 should be distributed to regional OPMET databanks *Noting:* ARS using series 60-69 and ARS for volcanic ash using series 70-79 should be distributed to regional OPMET databanks and distributed globally
90-99	Reserved

- − CCCC is the location indicator of the centre compiling/issuing the bulletin
- − YYGGgg is
  - o for METAR the standard observation time
  - o for initially issued TAFs (non-corrected/amended TAF) the full hour in UTC preceding the transmission time.
- − BBB is an optional group used to identify
  - o amended messages (AAA, AAB, AAC, ...)
  - o corrected messages (CCA, CCB, CCC, …)
  - o retarded messages (RRA, RRB, RRC, …).

5.2.4   After the WMO abbreviated header the data follows either in TAC- or IWXXM-format.

5.2.5   The meteorological message is encapsulated in an AFTN-envelope (only TAC) or an AMHS-envelope (TAC and/or IWXXM)

5.2.6   Several ICAO as well as WMO documents are available, providing further details. A list of documents related to data exchange can be found under 2.7.

   5.2.6.1   Examples of bulletin headers for reports in TAC and IWXXM format:

Datatype	TAC-Format	IWXXM-Format
METAR	SAOS31 LOWM 211020	LAOS31 LOWM 211020
TAF	FTFR31 LFPW 150500	LTFR31 LFPW 150500
SIGMET	WSBX31 EBBR 301455	LSBX31 EBBR 301455
VAA	FVXX01 EGGR 030954	LUXX01 EGGR 030954

   5.2.6.2   The most recent IWXXM schematrons and schemas officially adopted by WMO should be applied. A dedicated procedure will be provided by ICAO in due time and is under development by METP WG MIE. The information on the current released IWXXM versions can be found on the Internet in the GitHub repository of the Task Team on Aviation Data (TT-AvData).

5.3   Basic information on TAC-formatted OPMET-data

5.3.1   OPMET-data in TAC format are well known to originators as well as users. Therefore, this paragraph does not provide detailed information on the code(s) itself. It only shall be mentioned that the codes for METAR, SPECI and TAF are described in
- − WMO Doc 306, Volume I and
- − ICAO ANNEX 3

5.3.2   The codes for MET-report, SIGMET, AIRMET, AIREP, ARS as well as advisory messages are to be found in ICAO ANNEX 3 only.

5.3.3   Examples for TAC-data can be found in chapters 6-10 of this document and will not be discussed further here.

5.4   Basic information on IWXXM-formatted OPMET

5.4.1   General

5.4.1.1   Under this paragraph some basic principles, explanations and guidance will be outlined for the production of OPMET data in IWXXM-format. Further details on the IWXXM-schemas and schematrons can be found on the WMO-website: https://community.wmo.int/en/activity-areas/wis/iwxxm

5.4.1.2   The IWXXM format is not intended to be read in its raw form by humans. It is intended as a structured, 'machine to machine' message that is then subsequently processed for human interpretation/interaction.

5.4.1.3   An important requirement when producing IWXXM-messages is, that UUIDs are used

5.4.1.4   An IWXXM message shall furthermore contain certain metadata to provide some general information on the report in the IWXXM-message such as:

- report status
- whether it is an automated station
- the permissible usage
- information in case of a translated bulletin

5.4.2   Report Status Indicator

5.4.2.1   This indicator can be set to the following values

- NORMAL
- AMENDMENT (for TAF)
- CANCELLATION (for TAF, SIGMET, AIRMET)
- CORRECTION (for METAR, SPECI, TAF)
- MISSING (for METAR, TAF in case of NIL-messages)

5.4.3   Automated Station Indicator

5.4.3.1   This indicator is only useable for METAR and SPECI to indicate whether it is an automated station (set to TRUE) or a human observation (set to FALSE).

5.4.4   Permissable Usage

5.4.4.1   This indicator is used to define whether a message is "OPERATIONAL" or "NON-OPERATIONAL".

5.4.4.2   An operational message is one that is intended to be used as the basis for operational decision making. As such, the content of the message may result in decisions that may affect any or all phases of flight by any authorised and competent stakeholder (i.e. air navigation service providers, airport authorities, pilots, flight dispatchers etc). Recipients of such messages (either automatic or human) would therefore

expect that the information is sourced from a competent entity and that originating equipment (sensors etc) are serviceable and that any human involvement is carried out by qualified, competent personnel.

5.4.4.3   A non-operational message is one that is not intended to be used for operational decision making, even though it may contain realistic data (particularly during an exercise). Recipients of such messages shall ignore the content of the message with regard to decision making. Non-operational messages may be further classified as either being related to TEST or EXERCISE.

5.4.4.4   TEST messages may be issued for the following reasons:
- As an ad-hoc message to test distribution of a particular message, such as SIGMET when, for example, a new system is installed at an originating centre.
- As part of a more organised test of message routing for non-scheduled messages such as SIGMET.
- As part of the process to introduce IWXXM messages by a particular entity. In this instance, IWXXM messages may be issued on a regular basis over a period of weeks or months in advance of OPERATIONAL status.

5.4.4.5   EXERCISE messages may be issued for the following reasons:
- As a national or regional (or more rarely 'global') organised event intended to permit stakeholders to become familiar with the data content of messages. An example would be for Regional Volcanic Ash Exercises where stakeholders wish to provide training and 'desk top' scenarios for rare events.
- Under exercise scenarios, the messages may contain realistic data (though not necessarily valid data). For instance, volcanic ash exercises sometimes use volcanic ash data based on historical wind patterns to ensure that the requisite training is provided (i.e. to ensure the volcanic ash data impacts particular FIRs).

5.4.5   Information in case of translations

5.4.5.1   In cases where a TAC-bulletin is translated into the IWXXM-version, the report shall contain several attributes to provide further details. This is important also in regard to possible quality monitoring of IWXXM-data.

- translatedBulletinID (The TAC bulletin ID that was translated, of the form 'TTAAiiCCCCYYGGgg')
- translatedBulletinReceptionTime (The time at which the translated TAC bulletin was received by the translation centre)
- translationCentreDesignator (The ICAO designator of the centre which performed translation from TAC to XML)
- translationCentreName (The name of the translation centre which performed translation from TAC to XML)
- translationTime (The time at which translation was performed from TAC to XML)
- translationFailedTAC (Only used when a TAC message could not be translated to include the original TAC-message)

5.4.5.2   In case the translation failed, the IWXXM-report shall at least, for a METAR, SPECI or TAF contain the meta-data of the airport (CCCC, name), the bulletin header time,

report time and validity period (for TAF). In case of SIGMET or AIRMET it should include meta-data of the FIR the bulletin header time as well as the validity period of the original message. Additionally, the attribute "translationFailedTAC", listred above, shall be included.

5.5   Compliance Testing

5.5.1   IWXXM compliance testing platforms or software are provided by some software providers of message switching systems. Beyond that, States may use the GitHub repositories to find information, including examples about IWXXM.

https://github.com/wmo-im/iwxxm
https://github.com/wmo-im/iwxxm-translation

5.5.2   States/NOCs might also contact their responsible ROC in order to co-ordinate test exchange of IWXXM-data in order to get feedback on the correctness of the produced IWXXM-messages.

6   METAR/SPECI Exchange

6.1   METAR and SPECI General

6.1.1   METAR reports are issued for AOP-aerodromes as required in the ICAO eANP, Volume II, MET Table II-2. These METARs should be included in the regular EUR RODEX schema.

6.1.2   Additional METARs for non-AOP aerodromes issued on discretion by a State and/or required by users may also be included in the regular EUR RODEX schema, if agreed by the States concerned ➔ agreed non-AOP aerodromes.

Note: The ICAO eANP Volume II Table MET II-2 includes the aviation user requirements for OPMET data (METAR and TAF) from AOP aerodromes. For the domestic airports not included in the ICAO eANP Volume II Table MET II-2 States are consulted on their agreement for providing these additional aerodromes. Once agreed, the States should provide the required OPMET information on a continuous basis.

6.1.3   All METAR/SPECI should be available on request from the RODBs.

6.1.4   NOCs should compile eANP required METARs/SPECIs for international distribution in dedicated bulletins. METARs/SPECIs not in the eANP (agreed non-AOP aerodromes or aerodromes exchanged only nationally or bilaterally) should be compiled in different bulletins. Those bulletins are to be differentiated by using different ii-bulletin numbers in the abbreviated header (TTAAii CCCC).

6.1.5   SPECI-report dissemination via RODEX schema should be identical to METAR-report dissemination.

6.1.6   A SPECI bulletin shall contain only one single SPECI report.

6.1.7   During the transition period from TAC towards IWXXM, Originating Units shall continue producing and distributing TAC OPMET data and the equivalent IWXXM OPMET data in parallel.

6.1.8   An Originating Unit can delegate the translation of the TAC into IWXXM METAR/SPECI to its NOC. The NOC can delegate the translation of METAR data from TAC to IWXXM to the assigned ROC or a Data Translation Centre if not (yet) capable to produce IWXXM formatted METAR data.

6.1.9   The IWXXM METAR Producer is responsible for the validation of the data against the most recent schema & schematron before international distribution.

6.2   Responsibilities of AMSs and NOCs

6.2.1   The AMS prepares METAR/SPECI observations and sends them to the responsible NOC.

6.2.2   The NOC compiles the collected METAR/SPECI observations in one or more collective bulletins and sends those via the AFS to the responsible ROC. The NOC is responsible for the WMO No. 306 and ICAO Annex 3 code format compliance of METAR/SPECI observations and bulletins from its State.

6.2.3   Where two or more separate METAR/SPECI bulletins are issued with the same 'A$_1$A$_2$' group (e.g. "UK") different "ii" values (e.g., UK"31" and UK"32") should be used in the WMO heading to differentiate the bulletins.

6.3   Responsibilities of the ROCs

6.3.1   ROCs collect all TAC and IWXXM METAR/SPECI bulletins from the NOCs in their AoR via the AFS. When needed, for compliance with the ICAO EUR format standards for distribution, a ROC re-compiles METAR/SPECI bulletins.

6.3.2   A ROC can act as a Data Translation Centre on behalf of the NOCs within its AoR.

6.3.3   A ROC disseminates, via the AFS, all TAC and IWXXM METAR/SPECI bulletins from their area of responsibility to the other ROCs, the IROG in their AoR and to the RODB in their AoR.

6.3.4   ROCs should provide TAC and IWXXM METAR/SPECI bulletins to the NOCs in their area of responsibility, as agreed between the ROC and the NOC. The possibility to provide IWXXM METAR/SPECI bulletins depends on the capabilities of a NOC to use extended AMHS.

6.4   Responsibilities of the IROGs

6.4.1   IROGs collect all TAC and IWXXM METAR/SPECI bulletins from the ICAO region responsible for, as well as all EUR OPMET data.

6.4.2   IROGs disseminate, via the AFS, all TAC and IWXXM METAR/SPECI bulletins to the IROG(s) of the ICAO-region(s) they are responsible for, depending on the requirements for EUR-OPMET data by that region(s).

6.4.3   IROGs disseminate, via the AFS, all TAC and IWXXM METAR/SPECI bulletins from the ICAO region(s) they are responsible for to the ROCs in the EUR-region.

6.5   Format compliance and content of METAR and SPECI data

6.5.1   When producing METAR and SPECI messages the AMS shall apply strictly the code formats defined in WMO No. 306 and ICAO Annex 3.

6.5.1.1   TAC Format references:

− WMO No. 306, Manual on Codes, Volume I.1, Part A – Alphanumeric Codes FM 15-XII METAR and FM 16-XII SPECI.
− ICAO Annex 3, Chapter 4, and Appendix 3: Technical specifications related to meteorological observations and reports.

6.5.1.2   IWXXM Format references:

− WMO No. 306, Manual on Codes, Volume I.3, Part D – Representation in Extensible Markup Language
  • FM201: COLLECTION OF REPORTS: Collection of features = reports in a collective bulletin;
  • FM205: IWXXM: Details on schemas for all OPMET data types (Versions 1.1, 2.1 as well as 3.0)

6.5.2   TAC Format METAR compliance, T_1T_2 = SA

6.5.2.1   Each METAR observation in a METAR collective bulletin should start with the code word METAR followed by the ICAO location indicator (CCCC) of the aerodrome and the date/time group (YYGGggZ), indicating the actual UTC time of observation. Corrected METAR messages, should start with METAR COR.

6.5.2.2   For METARs, which are not available at the time of compilation of the collective bulletin, the code word NIL should be inserted, followed by the date/time group indicating the standard time of observation.

Example: `METAR LOWK 271220Z NIL=`

6.5.2.3   For METARs, which are generated fully automated, the code word AUTO should be inserted followed by the date/time group.

Example: `METAR LOWK 271220Z AUTO ......=`

6.5.3   IWXXM Format METAR compliance, $T_1T_2 = LA$

6.5.3.1   The unit producing the METAR in IWXXM format, either being the originating station, its NOC or the delegated Data Translation Centre, is responsible for the IWXXM format compliance and equivalence with the corresponding TAC formatted METAR.

6.5.4   TAC Format SPECI compliance, $T_1T_2 = SP$

6.5.4.1   In EUR Doc 7754 Volume II (EUR eANP), the following is stated:

"In the EUR Region, routine observations, issued as a METAR, should be made throughout the 24 hours of each day at intervals of one hour or, for RS and AS designated aerodromes1, at intervals of one half-hour at aerodromes as indicated in Table MET II-2."

6.5.4.2   Additionally, ICAO ANNEX 3, 4.4.2, b) states the following

"4.4.2 Reports of special observations shall be issued as: ......

b) SPECI for dissemination beyond the aerodrome of origin (mainly intended for flight planning, VOLMET broadcasts and D-VOLMET) unless METAR are issued at half-hourly intervals."

6.5.4.3   If SPECI-messages are produced with the intention to disseminate those internationally, the A_1A_2ii-groups in the Abbreviated Header of a SPECI bulletin of a station should correspond with the Abbreviated Header of the METAR collective bulletin that station is included in.

Example: `SPBX31 EBBR`
            `SPECI EBAW ...`
  because the METAR-collective-bulletin containing EBAW has the header
            `SABX31 EBBR`
            `METAR EBAW ...`

6.5.4.4   If SPECI-messages are produced with the intention to disseminate those only locally or bilaterally, the A_1A_2ii-groups in the Abbreviated Header of a SPECI bulletin of a

station can be defined individually. States should only take care, that the ii is above the range used for international/interregional dissemination (see table paragraph 4.2.3)

6.5.4.5 The CCCC could be either the NOCs CCCC or the CCCC of the airport for which the SPECI is issued. This has to be agreed upon nationally.

Example: `SPOS41 LOWM`
`SPECI LOAV ...`
or
`SPOS41 LOAV`
`SPECI LOAV ...`

6.5.4.6 A SPECI message included in a SPECI bulletin should start with the code word SPECI followed by the ICAO location indicator (CCCC) of the aerodrome and a date/time group (YYGGggZ) indicating the UTC time of the observation of the meteorological conditions for which the SPECI is issued. Corrected SPECI messages, should start with SPECI COR.

6.5.5 IWXXM Format SPECI compliance, T_1T_2 = LP

6.5.5.1 The unit producing the SPECI in IWXXM format, either being the originating station, its NOC or the delegated Data Translation Centre, is responsible for the IWXXM format compliance and equivalence with the corresponding TAC formatted SPECI.

7   TAF Exchange

7.1   TAF General

7.1.1   Terminal aerodrome forecasts (TAF) are issued for AOP-aerodromes as required in the ICAO eANP, Volume II, MET Table II-2-Aerodrome Meteorological Offices (AMO). These TAFs should be included in the regular EUR RODEX schema exchange.

7.1.2   Additional TAFs for non-AOP aerodromes issued on discretion by a State and/or required by users may also be included in the regular EUR RODEX schema exchange, if agreed by the States concerned ➔ agreed non-AOP aerodromes.

Note: The ICAO eANP Volume II *Table MET II-2 includes the aviation user requirements for OPMET data (METAR and TAF) from AOP aerodromes. For the domestic airports not included in the ICAO eANP* Volume II *Table MET II-2 States are consulted on their agreement for providing these additional aerodromes. Once agreed, the States should provide the required OPMET information on a continuous basis.*

7.1.3   All TAF should be available on request from the RODBs.

7.1.4   NOC should compile eANP required TAF for international distribution in dedicated collective bulletins. TAFs not in the eANP (not required; for national usage or distribution based on bilateral agreements) should be compiled in different collective bulletins. Those bulletins are to be differentiated by using different ii-bulletin numbers in the abbreviated header (TTAAii CCCC).

7.1.5   During the transition period from TAC towards IWXXM, AMOs shall continue producing and distributing TAC OPMET data and the equivalent IWXXM OPMET data in parallel.

7.1.6   An AMO can delegate the translation of the TAC into IWXXM TAF to its NOC. The NOC can delegate the translation of TAF data from TAC to IWXXM to the assigned ROC or a Data Translation Centre if not (yet) capable to produce IWXXM formatted TAF data.

7.1.7   The IWXXM TAF Producer is responsible for the validation of the data against the most recent schema & schematron before international distribution.

7.2   Responsibilities of AMOs and NOCs

7.2.1   The AMOs produce TAF reports and send those to the responsible NOC.

7.2.2   The NOC compiles the collected TAF reports in one or more collective bulletins and sends those via the AFS to the responsible ROC. The NOC is responsible for the WMO No. 306 and ICAO Annex 3 code format compliance of TAF reports and bulletins from its State.

7.2.3   Where two or more separate TAF collective bulletins are issued with the same 'A_1A_2' group (e.g. "UK") different "ii" values (e.g., UK"31" and UK"32") should be used in the WMO heading to differentiate the bulletins.

7.2.4   TAFs should be monitored by the originating AMOs. An amended TAF shall be issued when the established criteria are met or when a TAF is cancelled.

7.2.5   Amended or corrected TAFs should be sent by the originating station to the responsible NOC and further on to the responsible ROC without delay. The optional group BBB related

to amendment or correction shall be used in the WMO abbreviated heading in accordance with WMO No. 386, Part II, paragraph 2.3.2.2, to indicate an amended TAF.

7.2.6 TAF messages should be quality controlled by the originating meteorological offices and, when necessary, a corrected message sent immediately after an error in an already transmitted message was identified.

7.2.7 According to ICAO Annex 3, paragraph 6.2.5 paragraph 3, TAFs that cannot be kept under continuous review shall be cancelled.

7.3 Responsibilities of a ROC

7.3.1 ROCs collect all TAC bulletins and IWXXM TAF aggregations from the NOCs in their AoR via the AFS. When needed, for compliance with the ICAO EUR format standards for distribution, a ROC re-compiles TAF bulletins.

7.3.2 A ROC can act as a Data Translation Centre on behalf of the NOCs within its AoR.

7.3.3 A ROC disseminates, via the AFS, all TAC bulletins and IWXXM TAF aggregations from their area of responsibility to the other ROCs, the IROG in their AoR and to the RODB in their AoR.

7.3.4 ROCs should provide TAC bulletins and IWXXM TAF aggregations to the NOCs in their area of responsibility, as agreed between the ROC and the NOC. The possibility to provide IWXXM TAF aggregations depends on the capabilities of a NOC to use extended AMHS.

7.4 Responsibilities of the IROGs

7.4.1 IROGs collect all TAC bulletins and IWXXM TAF aggregations from the ICAO region responsible for, as well as all EUR OPMET data.

7.4.2 IROGs disseminate, via the AFS, all TAC bulletins and IWXXM TAF aggregations to the IROG(s) of the ICAO-region(s) they are responsible for, depending on the requirements for EUR-OPMET data by that region(s).

7.4.3 IROGs disseminate, via the AFS, all TAC bulletins and IWXXM TAF aggregations from the ICAO region(s) they are responsible for to the ROCs in the EUR-region.

7.5 Format and content of TAF data

7.5.1 Applicable ICAO and WMO documents

7.5.1.1 AMOs issuing TAF messages shall apply strictly the code formats defined in WMO No. 306 and ICAO Annex 3.

7.5.1.2 TAC Format references:

- WMO No. 306, Manual on Codes, Volume I.1, Part A – Alphanumeric Codes FM 51-XV TAF.
- ICAO Annex 3, Chapter 6, and Appendix 5: Technical specifications related to forecasts.

7.5.1.3 IWXXM Format references:

- WMO No. 306, Manual on Codes, Volume I.3, Part D – Representation in Extensible Markup Language
  - FM201: COLLECTION OF REPORTS: Collection of features = reports in a collective bulletin;
  - FM205: IWXXM: Details on schemas for all OPMET data types (Versions 1.1, 2.1 as well as 3.0)

7.5.2   TAC Format TAF compliance, T_1T_2 = FC and FT

7.5.2.1   Each TAF message in a TAF bulletin should start with the code word TAF followed by the ICAO location indicator (CCCC) of the aerodrome and the date/time group (YYGGggZ), indicating the official UTC time of issuance.

7.5.2.2   An amended TAF, if issued after the beginning of validity of the original TAF, should have the beginning of validity set to the closest whole hour preceding the time of issuance of the TAF AMD. The time of issuance itself should be indicated in the YYGGggZ group. No changes shall be done on the date-time group in the WMO Abbreviated Header Line.

7.5.2.3   Example TAF AMD:

```
FTFR15 LFPW 011100
TAF LFRL 011100Z 0112/0212 16010KT 9999 BKN015 TEMPO 0112/0115
4000 -RADZ BKN003 BKN010 BECMG 0118/0120 BKN007 BKN012 TEMPO
0120/0209 2000 -RADZ OVC004=

FTFR15 LFPW 011100 AAA
TAF AMD LFRL 011558Z 0115/0212 16009KT 6000 BKN020 TEMPO 0120/0209
4000 -RADZ BKN003=
```

7.5.2.4   In the particular case in which the TAF AMD is issued before the beginning of validity of the original TAF, the beginning of validity shall remain unchanged.

7.5.2.5   Example TAF AMD:

```
FTFR15 LFPW 011100
TAF LFRL 011100Z 0112/0212 16010KT 9999 BKN015 TEMPO 0112/0115
4000 -RADZ BKN003 BKN010 BECMG 0118/0120 BKN007 BKN012 TEMPO
0120/0209 2000 -RADZ OVC004=

FTFR15 LFPW 011100 AAA
TAF AMD LFRL 011145Z 0112/0212 16009KT 6000 BKN020 TEMPO 0112/0115
2000 RADZ BKN003 BKN010 TEMPO 0120/0209 4000 -RADZ BKN003=
```

7.5.2.6   An amended TAF which is issued due to a cancellation is not covered in detail in regard to the validity period by ICAO ANNEX 3. Therefore, it is up to a State to decide whether the same rules are followed as for a "regular" TAF amendment (see above) or whether the original validity period is used when cancelling a TAF.

7.5.2.7   Example TAF AMD for cancelling a TAF

```
TAF AMD YUDO 161845Z 1618/1703 CNL=
```

7.5.2.8   A missing TAF in a TAF collective bulletin should be indicated with "NIL", as shown in the following example:

```
TAF EHAM 281100Z NIL=
```

7.5.2.9   CNL is only to be used in conjunction with an issued amendment but not within regular compilations. If a TAF was cancelled and no new TAF is produced, NIL shall be used within the compilation.

7.5.3   IWXXM Format TAF compliance, T_1T_2 = LC and LT

7.5.3.1   The IWXXM TAF Originating Unit, either being the AMO, its NOC or the delegated Data Translation Centre is responsible for the IWXXM format compliance and equivalence with the corresponding TAC formatted FC and FT TAF.

8   Exchange of SIGMET, AIRMET and Advisories

8.1   SIGMET, AIRMET and Advisories General

  8.1.1   SIGMET and AIRMET should be prepared by the meteorological watch offices (MWOs), designated by the State's meteorological authority, for the FIRs required by the ICAO eANP, Volume II, MET Table II-1.

  8.1.2   When preparing SIGMET/AIRMET-messages, MWOs should follow the guidelines indicated in the ICAO EUR Doc 014 (EUR SIGMET and AIRMET Guide).

  8.1.3   A list of EUR SIGMET/AIRMET headers is provided on the ICAO Paris website at the following location (EUR/NAT Documents ➜ EUR Documents ➜ EUR Documents ➜ MET Guidance ➜ Headers – EUR SIGMET and AIRMET.pdf). All SIGMET messages in that list shall be distributed to all ROCs and RODBs via the ICAO AFS.

  8.1.4   All SIGMET/AIRMET should be available on request from the RODBs.

  8.1.5   Where two or more separate SIGMET/AIRMET bulletins are issued with the same "A_1A_2" group (e.g. $T_1T_2A_1A_2$="WSFR") either different "ii" bulletin number values (e.g., "31" and "32") or different "CCCC" compiling station shall be used in the WMO heading to differentiate the bulletins.

        Example with different "ii" as used by France:
        WSFR31 LFPW ➜ FIR LFFF
        WSFR32 LFPW ➜ FIR LFBB
        WSFR33 LFPW ➜ FIR LFEE
        WSFR34 LFPW ➜ FIR LFMM
        WSFR35 LFPW ➜ FIR LFRR

        Example with different "CCCC" as used by Turkey:
        WSTU31 LTAC ➜ FIR LTAA (Ankara)
        WSTU31 LTBA ➜ FIR LTBB (Istanbul)

  8.1.6   During the transition period from TAC towards IWXXM, MWOs shall continue producing and distributing TAC OPMET data and the equivalent IWXXM OPMET data in parallel.

  8.1.7   An MWO can delegate the translation of the TAC into IWXXM SIGMET/AIRMET to its NOC. The NOC can delegate the translation of SIGMET/AIRMET data from TAC to IWXXM to the assigned ROC or a Data Translation Centre if not (yet) capable to produce IWXXM formatted SIGMET/AIRMET data.

  8.1.8   The IWXXM SIGMET/AIRMET Producer is responsible for the validation of the data against the most recent schema & schematron before international distribution.

8.2   Advisory messages preceding Volcanic Ash and Tropical Cyclone SIGMETs

  8.2.1   Volcanic Ash Advisories (VAA) should be issued by the designated Volcanic Ash Advisory Centres (VAAC), as indicated in ICAO Doc 9766, *Handbook on the International Airways Volcano Watch (IAVW).*
        • VAAC London for the NW-Part of the EUR-region and the NAT-region
        • VAAC Toulouse for the rest of the EUR-region, AFI and MID

8.2.2 Tropical Cyclone Advisories (TCA) should be issued by the designated Tropical Cyclone Advisory Centres (TCAC).
- TCAC Tokyo for the eastern coastal part of the EUR-region
- TCAC Miami for the western coastal part of the EUR-region

8.2.3 The advisories produced by the TCACs and VAACs should be disseminated in accordance with the regional OPMET data exchange schemas.

8.2.4 The RODBs should make TCA and VAA messages available on request.

8.3 Responsibilities of the MWOs and NOCs.

8.3.1 After receiving a VAA-message (T_1T_2 = FV, LU) or a TCA-message (T_1T_2 = FK, LK), the responsible MWO should issue a SIGMET for volcanic ash (T_1T_2 = WV, LV) or a tropical cyclone (T_1T_2 = WC, LY) in case that the own FIR and/or UIR is affected.

8.3.2 The MWOs send the SIGMET-messages to their NOC, which will forward those to the responsible ROC.

8.3.3 SIGMET shall be kept under continuous review by the MWOs (see EUR Doc 014 for details).

8.4 Responsibilities of a ROC

8.4.1 ROCs collect all TAC and IWXXM SIGMET, AIRMET and advisory bulletins from the NOCs in their AoR via the AFS.

8.4.2 A ROC can act as a Data Translation Centre on behalf of the NOCs within its AoR.

8.4.3 A ROC disseminates, via the AFS, all TAC and IWXXM SIGMET, AIRMET and advisory bulletins from their area of responsibility to the other ROCs, the IROG in their AoR and to the RODB in their AoR.

8.4.4 ROCs should provide TAC and IWXXM SIGMET, AIRMET and advisory bulletins to the NOCs in their area of responsibility, as agreed between the ROC and the NOC. The possibility to provide IWXXM SIGMET, AIRMET and advisory bulletins depends on the capabilities of a NOC to use extended AMHS.

8.5 Responsibilities of the IROGs

8.5.1 IROGs collect all TAC and IWXXM SIGMET, AIRMET and advisory bulletins from the ICAO region responsible for, as well as all EUR OPMET data.

8.5.2 IROGs disseminate, via the AFS, all TAC and IWXXM SIGMET, AIRMET and advisory bulletins to the IROG(s) of the ICAO-region(s) they are responsible for, depending on the requirements for EUR-OPMET data by that region(s).

8.5.3 IROGs disseminate, via the AFS, all TAC and IWXXM SIGMET, AIRMET and advisory bulletins from the ICAO region(s) they are responsible for to the ROCs in the EUR-region.

8.6 SIGMET/AIRMET format and content compliance

8.6.1 MWOs issuing SIGMET/AIRMET messages shall apply strictly the code formats defined in the following documents:

8.6.1.1 The TAC code format of SIGMETs/AIRMETs is prescribed in:

- ICAO Annex 3, Chapter 7, and Appendix 6: Technical specifications related to SIGMET and AIRMET information, aerodrome warnings and wind shear warnings and alerts.
- Special procedures for the EUR Region can be found in the EUR ICAO Doc 014 (EUR SIGMET and AIRMET Guide) which is available from the website of the ICAO Office Paris.
- WMO No. 49, Technical Regulations, Volume II, Part II, Appendix 6, [C.3.1] 1.

8.6.1.2 For the IWXXM SIGMET/AIRMET production applicable to the TAC code format, refer to:

- WMO No. 306, Manual on Codes, Volume I.3, Part D – Representation in Extensible Markup Language
- FM201: COLLECTION OF REPORTS: Collection of features = reports in a bulletin;
- FM205: IWXXM: Details on schemas for all OPMET data types (Versions 1.1, 2.1 as well as 3.0)

8.6.2 IWXXM Format SIGMET compliance, T_1T_2 = LS, LV, LY and LW

8.6.2.1 The SIGMET/AIRMET Originating Unit, either being the MWO, its NOC or the delegated Data Translation Centre is responsible for the IWXXM format compliance and equivalence with the corresponding TAC formatted T_1T_2 = WS-, WV- or WC-SIGMET, respectively the WA-AIRMET.

8.7 Space Weather Advisory messages

8.7.1 The ICAO space weather service is provided by joint operation of several global space weather centres (SWXC), each providing the service, on a rotational basis, for 2 weeks.

8.7.2 Space Weather Advisory messages shall be issued by the designated Space Weather Centre (SWXC), as indicated in the ICAO Doc 10100 (Manual on Space Weather Information in Support of International Air Navigation).

8.7.3 The advisories produced by the SWXCs should be disseminated in accordance with regional OPMET data exchange.

8.7.4 The ROCs should distribute the Space Weather Advisory Messages (T_1T_2 = FN, LN) via the AFS to the NOCs in the AoR, SADIS and EUR RODBs according to the RODEX schema.

8.7.5 The NOCs should distribute the Space Weather Advisory Messages to area control centres, flight information centres, NOTAM offices as well as aerodrome meteorological offices according to national agreements.

8.7.6 The RODBs should make SWXA messages available on request.

9   **AIREP Exchange**

9.1   General

    9.1.1   This Section contains guidance regarding the collection of routine air reports (AIREP) received by voice communications and special air-reports (ARS) from aircrafts by meteorological watch offices (MWO) through their associated ATS units.

9.2   Special AIREP (ARS)

    9.2.1   ARS are covered by ICAO Annex 3 and **<u>are of urgent nature</u>** as detailed below.

    9.2.2   These reports are disseminated without delay to MWOs. In accordance with regional air navigation agreement (Appendix 4, 3.1.3 of ICAO Annex 3) and RODEX schema, they are disseminated by the NOC, then the ROC to WAFCs, SADIS and to other meteorological offices. More information can be found in EUR DOC014 on best practice about ARS dissemination.

    9.2.3   ARS of pre-eruption volcanic activity, volcanic eruption or volcanic ash shall be sent by the responsible MWO to the VAACs without delay (Appendix 4, 3.1.2 of ICAO Annex 3) via the NOC and ROC, following the RODEX schema.

9.3   WMO headers

    9.3.1   The WMO headers used to send the AIREP should follow the WMO regulations - WMO No 386, table D3 – as indicated here:

        UA   01-59   Routine aircraft reports

        UA   60-69   Special aircraft reports, except for volcanic ash

        UA   70-79   Special aircraft reports related to volcanic ash

    9.3.2   Examples

        9.3.2.1   ARS received in a French ATS unit and related to volcanic ash should be sent with a WMO bulletin header such as UAFR70 LFPW.

        9.3.2.2   ARS received in a French ATS unit and not related to volcanic ash should be sent with a WMO bulletin header such as UAFR60 LFPW.

9.4   Example ARS on volcanic ash

    9.4.1   Pilot to ACC Petropovlovsk-Kamchatsky

        9.4.1.1   A pilot transmits a ARS on volcanic ash via voice communications to ACC. Referencing PANS-ATM Appendix 1, Part 1 – Reporting instructions sections 1-4 and 9, the following example was created:

> AIREP SPECIAL UNITED AIRLINES TREE TOO TOO POSITION
> FIFE FIFE ZERO TREE NORTH WUN SEVen ZERO TOO ZERO
> EAST FLIGHT LEVEL TREE ZERO ZERO CLIMBING TO FLIGHT
> LEVEL TREE FIFE ZERO VOLCANIC ASH CLOUD

9.4.2   ACC Petropovlovsk-Kamchatsky (PKK) to MWO Yelizovo

9.4.2.1   There are different arrangements between ACC and MWO (e.g. information received by fax or phone vs. AFTN). The following is an example of providing an ARS from the ACC to the MWO via the AFS (AFTN/AMHS).

9.4.2.2   The format used for forwarding of meteorological information received by voice communications to the associated meteorological watch office (MWO) is covered in subtitle 3 of Appendix 1 of PANS-ATM. Following example will be created based on the information given by the pilot or dispatch.

```
ARS UAL322 5503N17020E 0105 F300 ASC F350 VA CLD=
```

9.4.3   MWO Yelizovo to VAAC Tokyo, Regional OPMET Centre-(ROC) Moscow, SADIS, WIFS

9.4.3.1   The format used for forwarding of an ARS from the MWO to VAAC, ROC, SADIS and WIFS is in accordance with Annex 3, Appendix 6, Table A6-1B (**uplink**). Following example will be created based on the information given by the ACC.

```
ARS UA322 VA CLD OBS AT 0105Z N5503E17020
FL300/350 =
```

9.4.3.2   The MWO should send this information using the World Meteorological Organization Abbreviated Header Line (WMO AHL) of UARA71 RUPK to the appropriate ROC, in this case ROC Moscow, via agreed communication lines. According to the regional OPMET exchange schema, ROC Moscow will then route to the three other ROCs, including ROC London, which will route to SADIS, WIFS and the appropriate VAAC – in this case, VAAC Tokyo.

9.5   Example ARS on severe turbulence

9.5.1   pilot to ACC Paris

9.5.1.1   A pilot provides a ARS on severe turbulence via voice communications to ACC. Referencing PANS-ATM Appendix 1, Part 1 – Reporting instructions sections 1-4 and 9, the following example was created.

```
'AIREP SPECIAL AIR NEW ZEALAND WUN ZERO WUN POSITION FIFE
ZERO ZERO FIFE NORTH ZERO ZERO TOO ZERO WUN WEST WUN
FIFE TREE SIX FLIGHT LEVEL TREE WUN ZERO CLIMBING TO
FLIGHT LEVEL TREE FIFE ZERO SEVERE TURBULENCE'
```

9.5.2   ACC Pairs (LFFF) to MWO Toulouse (Centre Meteo)

9.5.2.1   There are different arrangements between ACC and MWO (e.g. information received by fax or phone vs. AFTN). The following is an example of providing an ARS from the ACC to the MWO via AFTN.

9.5.2.2   The format used for forwarding of meteorological information received by voice communications to the associated meteorological watch office (MWO) is defined in subtitle 3 of Appendix 1 of PANS-ATM. Following example was created based on the information given by the pilot or dispatch.

```
ARS ANL101 5005N00201W 1536 F310 ASC F350 SEV TURB=
```

9.5.3   MWO Toulouse to Regional OPMET Centre-ROC Toulouse, then ROC London to SADIS, WIFS.

9.5.3.1   The format used for forwarding of an ARS from the MWO to ROC, SADIS and WIFS is in accordance to Annex 3, Appendix 6, Table A6-1 (**uplink**). Following example is created based on the information given by the ACC.

ARS NL101 SEV TURB OBS AT 1536Z N5005W00201 FL310=

The MWO should send this information using the World Meteorological Organization Abbreviated Header Line (WMO AHL) of **UAFR61 LFPW** to the appropriate NOC which will send it to the responsible ROC (in this case, ROC Toulouse with AFTN address **LFPWYMEU**) which will then route to SADIS and WIFS according to the regional OPMET exchange schema via ROC London.

10   GAMET Exchange

10.1   General

10.1.1   Table MET II-1, *Meteorological Watch offices, Service to be provided for FIR or CTA*, contains a list of requirements for the issuance of AIRMET information in accordance with ICAO E U R Doc. 014 (EUR SIGMET and AIRMET guide). When abbreviated plain language for area forecasts in support of the issuance of AIRMET information is used, the forecast shall be prepared as a GAMET area forecast, using approved ICAO abbreviations and numerical values.

Note: when chart form is used, the forecast shall be prepared as a combination of forecasts of upper wind and upper-air temperature, and of SIGWX phenomena. The issuance of graphical products is not covered within this document.
States who want to provide such charts via SADIS are asked to contact the SADIS-Manager (sadismanager@metoffice.gov.uk) for further details.

10.2   Responsibilities and Procedures to be followed by the originator and NOC

10.2.1   The MWO whose area of responsibility encompasses more than one FIR and/or CTA shall issue separate GAMET area forecast for each FIR and/or CTA within its area of responsibility.

10.2.2   Where necessary, the FIR should be divided in sub-areas and separate AIRMET and GAMET area forecasts issued for each sub-area.

Note: GAMET area forecasts should be issued for the same FIR/CTA, or part thereof for which the AIRMET is issued.

10.2.3   GAMET prepared in support of the issuance of AIRMET information shall be issued every 6 hours for a period of validity of 6 hours and transmitted to meteorological offices within the AoR, to the MWO responsible for the issuance of relevant AIRMET information and the responsible NOC, not later than one hour prior to the beginning of their validity period. The NOC shall send the GAMET to the responsible ROC without delay.

Note: usually the MWO is also the meteorological office responsible for the issuance of the GAMET

10.3   Responsibilities and Procedures to be followed by ROC

10.3.1   ROCs should collect GAMET area forecasts in support of the issuance of AIRMET information from the NOCs in their area of responsibility.

10.3.2   ROCs should transmit the GAMETs received from within their Area of Responsibility via the AFS to other ROCs.

10.3.3   ROCs should transmit all received GAMETs via the AFS, as necessary, to the NOCs in their Area of Responsibility including RODBs, as agreed between the ROC and NOC (ref.: RODEX schema, ICAO Doc 018, Appendix E Distribution Determination for OPMET Data).

10.4   Format and structure of the GAMET area forecast

10.4.1   GAMET format should follow the provisions of Annex 3 (Appendix 5; Chapter 4 and the template Table A5-3) or the WMO N°49 Technical Regulations Volume II and also regional procedures as defined in EUR basic Air Navigation Plan PART VI – Meteorology (MET).

10.4.2   Header of the GAMET area forecasts is the same type as in all other OPMET data messages $T_1T_2A_1A_2ii$ CCCC YYGGgg.

- T_1T_2 = FA
- A_1A_2 = originating WMO country or territory designator
- ii = 50-59 (*according to Manual on the GTS, Vol I; Part II; Attachment II-5 Table D3*)
- CCCC = ICAO four-letter location indicator of the station or centre originating or compiling the area forecasts
- YYGGgg = Date-Time Group; where YY is the day of the month and GGgg the full hour preceding the transmission time of the bulletin

10.4.3   Where two or more separate GAMET area forecasts are issued with the same 'A_1A_2' group (e.g. "FALJ") either different "ii" values (e.g., "51" and "52") should be used in the WMO heading or, if applicable, different "CCCC".

          Example for different "ii":
```
FASN50 ESWI 050400
FASN51 ESWI 050400
FASN52 ESWI 050400
```

          Example for different CCCC: *)
```
FADL51 EDZM 050300
FADL51 EDZF 050300
FADL51 EDZH 050300
```

    *) The used example is based on a no longer produced product

10.4.4   The first line of GAMET area forecast shall contain the ICAO location indicator of the ATS unit serving the FIR or CTA to which it refers to, the message identification, validity period in UTC, location indicator of the MWO (meteorological watch office) originating the message with a separating hyphen at the end.

          Examples:
```
LJLA GAMET VALID 150600/151200 LJLJ-
GCCC GAMET VALID 041500/042100 GCGC-
```

10.4.5   The second line of GAMET area forecast shall contain the location indicator and name of the FIR/CTA, or part thereof for which the GAMET is issued including also the vertical extension. GAMET could be issued for the whole FIR/CTA or part of FIR/CTA. If GAMET covers a part of FIR/CTA it should be numbered with a single symbol. Information about subdivision of GAMET area within FIR/CTA should be published in State AIP.

          Example
```
ESAA SWEDEN FIR/A BLW FL125
ESAA SWEDEN FIR/B BLW FL125
ESAA SWEDEN FIR/C BLW FL125
```

10.4.6   Following is an example of a GAMET according to rules stated in ICAO ANNEX 3:

```
FASN10 ESWI 050300
ESAA GAMET VALID 050400/051000 ESSA-
ESAA SWEDEN FIR/A BLW FL125
SECN I
SFC WSPD: NIL
SFC VIS: 04/06 3000 M FG BR IN AREA N,SW,SE
SIGWX: 06/10 OCNL TSRA IN AREA N
SIG CLD: 04/06 BKN SFC/500 FT IN AREA N,SW,SE 06/10
OCNL CB IN AREA N
ICE: NIL
TURB: NIL
MTW: NIL
SIGMET APPLICABLE: NIL
SECN II
PSYS: SEE SIGNIFICANT WEATHER CHARTS
WIND/T: 04/07 2000 FT 250/15 KT PS03 5000 FT 240/20
KT MS02 10000 FT
250/15 KT MS08
07/10 2000 FT 250/15 KT PS03 5000 FT 240/20 KT MS02
10000 FT 250/15
KT MS08
CLD: SEE SIGNIFICANT WEATHER CHARTS
FZLVL: 04/10 3000FT-4000FT AGL
MNM QNH: 1003 HPA
VA: NIL
```

11   Management of OPMET Exchange Under the EUR RODEX Schema

11.1   DMG Management Roles

11.1.1   **DMG chairperson**: The DMG chairperson chairs the DMG meeting and represents the DMG by reporting the activities of the group to other ICAO Meetings. The chairperson also supervises the changes to the "EUR OPMET Data Management Handbook".

11.1.2   **DMG vice chairperson:** The DMG vice chairperson seconds the chairperson, can be delegated some specific functions and chairs the DMG when the chairperson is not available to represent DMG.

11.1.3   **DMG Secretary**: The DMG secretary creates and issues a report for each meeting and maintains a record of actions to be handled by the DMG-members.

11.1.4   **DMG Focal Point**: The DMG Focal Point:

11.1.4.1   Maintains the EUR OPMET Working Table and generates the catalogues based on that information. Coordinates the requests for changes to the OPMET data distributed in the EUR Region by means of the METNO Procedure

11.1.4.2   Issues the requests for additional non-EUR OPMET data via ICAO Europe.

11.1.4.3   Collects the DMG OPMET data monitoring results for analysing and publication.

11.1.5   **Warning Test Focal Point:** The WARNING Test Focal point organizes, collates and publishes the results from the regular Warning tests and proposes action plans to the DMG.

11.1.6   **Volcanic Ash Focal Point:** The Volcanic Ash Focal Point coordinates as necessary with the EUR groups in charge of Volcanic Ash exercises.

11.1.7   **Problem Handling Manager:** The Problem Handling Manager coordinates the problems issued by OPMET Providers concerning the OPMET data in the Problem Handling Team and presents a Problem Status Report to the DMG.

11.1.8   **EUR OPMET Databank Focal Point:** The RODB Focal Point coordinates the monitoring exercises of the EUR OPMET Databanks and the implementation of new common requirements.

11.2   EUR OPMET Working Tables

11.2.1   The DMG Working Tables contain all known scheduled and non-scheduled OPMET data available within the EUR-Region. The tables are under review and maintenance by the DMG focal point since the MOTNEG/DMG Survey in 1997. Updates of the following data sources trigger changes to the DMG Working Tables on a regular basis:

- The eANP Volume II Table MET II-2 User Required data, updated regularly by ICAO Montreal. The DMG tables will only be updated twice a year on regular times;
- The SADIS OPMET monitoring results required for generating SADIS Annexes 2 and 3, which describe the bulletin headers and content of OPMET data on SADIS, updated twice a year;
- The EUR OPMET Data Update Procedure METNO bulletins issued by the DMG FP on AIRAC dates;
- The results of the DMG EUR OPMET data AFS monitoring exercise held once a year;
- ICAO Doc 7910 "Location Indicators" for the nomenclature of States and the airports;
- WMO 386 for the allocation of WMO Area Indicators (A_1A_2) in the AHL.

11.3   EUR OPMET Catalogues

Various catalogues can be extracted from the DMG Working Tables like the SADIS Catalogue provided to METP WG-MOG/SADIS.

11.3.1   The EUR OPMET Catalogues are updated every AIRAC cycle of the EUR OPMET Data Update Procedure.

11.4   EUR OPMET Procedures

11.4.1   EUR OPMET Data Update Procedure

11.4.1.1   The Update Procedure facilitates modification of the relevant tables and catalogues as described in 11.2 and 11.3 above, following any change.

11.4.1.2   The process provides change management and a co-ordinated implementation on the EUR terrestrial telecommunication infrastructure. Changes are implemented on AIRAC dates at 11:00 UTC.

11.4.1.3   It should be noted that the document defining the procedure should not be read in isolation but requires knowledge of and reference to other documents within the EUR RODEX schema.

11.4.1.4   EUR OPMET data requirements are defined in the eANP Volume II Table MET II-2, formerly known as the FASID table and the SUG (SADIS User Guide) Annex 1. The principle is, that all required data shall be available via SADIS as well as via the AFS (AFTN/AMHS).

11.4.1.5   Therefore, all ROCs should have a complete set of available data to distribute within their area of responsibility, tailored to the requirements of individual States.

11.4.1.6   Conversely, each ROC collects data from its area of responsibility for distribution to all other ROCs, RODBs and SADIS.

11.4.1.7 A more detailed description of the data update procedure can be found in Appendix B to this document.

11.4.2 EUR OPMET Data Monitoring Procedure

11.4.2.1 Data Monitoring

11.4.2.1.1 Having established working tables and an update procedure to facilitate user's requests, it is important to monitor the actual data exchanged via the RODEX schema to ensure that the tables are accurate. Data can disappear due to a variety of reasons, e.g. due to removed or replaced bulletins by a State.

11.4.2.1.2 Monitoring can identify data, not introduced before by EUR-States via the standard update procedure. Also new non-EUR region OPMET data, not co-ordinated beforehand, can be identified by monitoring.

11.4.2.1.3 Monitoring also enables an identification of anomalies in the availability of bulletins and reports between NOCs, ROCs, the databanks and SADIS. By using these indications, corrective action can then be taken to update/correct the routeing or to request data not available but defined in the requirements.

11.4.2.1.4 Monitoring should, as a minimum, be participated by the ROCs, RODBs and a SADIS end user representative. The coordinated periods of monitoring are defined in the EUR OPMET Monitoring Procedure to ensure that the snapshots are taken of the same timeframe across the Region.
- EBBR (Focal Point)
- LFPW
- EGGY and SADIS Provider
- LOWM
- UUUJ
- EBBR and LROM SADIS Users
- EBBR RODB

11.4.2.1.5 In order to get comparable monitoring results for all kinds of analyses, standard specifications for monitoring applications have been defined.

11.4.2.1.6 A more detailed description of the OPMET data monitoring exercises, including the schedules, can be found in Appendix C to this document.

11.4.2.1.7 The specifications for the monitoring tool are outlined in Appendix D: "EUR OPMET Data Monitoring Tool Specification".

11.4.3 Performance Indices

11.4.3.1 OPMET data monitoring, as described above, deals with individual reports and the bulletins in which they are monitored. It does not give a numerical interpretation about the availability and/or timeliness of the data. In order to monitor the implementation of ICAO ASBU Block 0 requirements for OPMET data, a set of indices were developed to measure the performances for each required report indicated in the EUR ICAO eANP, Volume II, Table MET II-2.

11.4.3.2 If a required report is detected not NIL within the monitoring, period, it is indicated as available. Monitoring results are generally analysed per ICAO Region. This allows an indication of availability for each Region against all the reports expected from. If required, the results can also be prepared on State level.

11.4.3.3   A more detailed description of the performance indices and how those are calculated can be found in Appendix F to this document.

11.4.4   Distribution Determination for OPMET Data

11.4.4.1   Distribution of meteorological data is determined by the tables 'Present Distribution Modes for Routine and Non-Routine Bulletins' and 'RODEX Responsibility and Address Information Table'. These tables are included in Appendix E of this document and represent the RODEX Schema.

12 **Message Validation Procedures**

12.1 Basic Principles

   12.1.1 TAC Formatted OPMET Data Validation

      12.1.1.1 This section deals in detail on how alphanumeric OPMET messages are validated at ROCs and defines the modifications operators are authorised to carry out. It should be noted that operators are not authorised to modify the meteorological content, e.g. visibility, QNHs etc. Only items such as bulletin headers, location indicators and observation times, necessary for the correct routing or storage in the RODB, may be corrected.

   12.1.2 IWXXM Formatted OPMET Data Validation

      12.1.2.1 The IWXXM OPMET data Producer / Originating Unit is responsible for the validation before the international distribution.

      12.1.2.2 In case a ROC receives incorrect IWXXM OPMET data, no corrective actions will be performed by the operator. Instead, those erroneous messages should be logged in a database for later analysing.

      12.1.2.3 OPMET Data are distributed in parallel in TAC- and IWXXM-formats. The IWXXM bulletin shall be equivalent to the corresponding TAC bulletin, meaning that the same list of location indicators should be included.

      12.1.2.4 If unable to produce IWXXM data at source, the translation of TAC formatted OPMET data can be performed by a Data Translation Centre. This can be the NOC, the ROC on behalf of the NOC or any recognised Translation Centre based on bilateral agreement between the NOC and its delegated translating centre.

12.2 TAC Validation Procedures
(TAC = Traditional Alphanumeric Code.)

Preliminary note: all indications of time and time ranges are in UTC.

   12.2.1 WMO Header Validation

      12.2.1.1 The first line of each message is the WMO abbreviated header line (AHL) in the following format.

$T_1T_2A_1A_2ii$[SPACE]CCCC[SPACE]YYGGgg[SPACE](BBB)

      12.2.1.2 A correct AHL is necessary for message switching systems to route data correctly.

12.2.1.3 T_1T_2 corresponds to one of the items listed below.

TT	Message Type
SA	METAR
SP	SPECI
FA	GAMETs
FC	Short TAF (less than 12 hours)
FT	Long TAF (up to 30 hours)
WS	SIGMET
WC	Tropical Cyclone SIGMET
WV	Volcanic Ash SIGMET
WA	AIRMETs
UA	ARS, and ARS for Volcanic ash
FV	Volcanic Ash Advisory
FK	Tropical Cyclone Advisory
FN	Space Weather Advisory

.

12.2.1.4 The AA group should comprise two alphabetical characters, coding the State or area of the contained data (OS=Austria, NT=North Atlantic).

12.2.1.5 The ii group should comprise 2 digits. Should only one digit be present then a leading zero or the correct two-digit indicator should be inserted. Should no ii group be present then a default value or the correct two-digit indicator should be inserted.

12.2.1.6 The CCCC group should comprise 4 alphabetical characters, indicating the compiling centre or originator of the bulletin. The CCCC should be a valid ICAO location indicator. In case a location indicator, not registered in ICAO Doc 7910, is used, no corrective action shall be done and the bulletin forwarded based on the TTAAii. ROCs should contact the originating States to co-ordinate changes to the CCCC.

12.2.1.7 The date time group of the bulletin, YYGGgg, should be considered valid if it lies between two configurable values, T1 minutes and T2 minutes, set after and before the current time. A table with the values for T1 and T2 can be found in chapter 12.2.6.1.

12.2.1.8 The BBB group is optional and will be used in case that the bulletin includes corrected (CCx), amended (AAx) or retarded (RRx) messages, where "x" is "A" for the first message, being increased in alphabetical order up to "X". Thereafter the "X" is kept until a bulletin with a new headertime is issued.

Current Time	-T2 minutes		Current Time	+T1 minutes
		Current Time		
Invalid	Valid			Invalid

12.2.1.9 Different values of T1 and T2 are configured for METARs, TAFs and SIGMETs.

12.2.1.10 Bulletins that fail to correspond to the format should be rejected to an operator position for inspection.

12.2.2   METAR Validation

12.2.2.1 For each individual METAR or SPECI within a collective bulletin the following items should be validated:

12.2.2.1.1   **CCCC** The report should contain a valid 4-letter ICAO location indicator, prefixed according to the following table.

Prefix	Bulletin Type (TT)	
METAR	SA	
METAR COR		
SPECI		SP
SPECI COR		

12.2.2.1.2   **YYGGggZ** — The report should have a valid date and time of observation, including the character 'Z', which stands for UTC. For METARs the observation time is acceptable if it lies between two configurable values, T3 minutes and T4 minutes, set after and before the current time.

Current Time	-T4 minutes		Current Time	+T3 minutes
	Current	Time		
Invalid	Valid			Invalid

12.2.2.1.3   Each station report should be terminated by the "=" character.

12.2.2.1.4   METAR bulletins, i.e. those for which TT = 'SA' should not be accepted if they contain SPECIs.

12.2.2.1.5   Collective bulletins containing any reports that fail the above validation rules should be rejected to the error queue for inspection and, if possible, correction.

12.2.3   TAF Validation

12.2.3.1 For each individual TAF forecast within a collective bulletin the following items should be validated:

12.2.3.1.1   **CCCC** The forecast shall contain a valid 4-letter ICAO location indicator, prefixed according to the following table.

Prefix	Bulletin Type (TT)	
TAF		
TAF AMD	FC	
TAF COR		
TAF		
TAF AMD		FT
TAF COR		

12.2.3.1.2 **YYGGggZ** — The **forecast** shall have a valid forecast report date-time-group in UTC including 'Z'. The forecast time should be accepted if it lies between two configurable values, T3 minutes and T4 minutes, set before and after the current time. These values are independently configurable for short TAFs (FC) and long TAFs (FT).

Current Time	-T4 minutes		Current Time	+T3 minutes
		Current	Time	
Invalid	Valid			Invalid

12.2.3.1.3 **$Y_1Y_1G_1G_1/Y_2Y_2G_2G_2$** — The forecast shall have a valid TAF validity period. This TAF validity period should be considered valid if it meets the following conditions.

12.2.3.1.4 The start of the validity period should be no more than a configurable value, T5 minutes, in the future from the current time.

12.2.3.1.5 The validity period should not exceed a configurable value of T6 minutes.

12.2.3.1.6 The end of the validity period should not be earlier than the current time.

12.2.3.1.7 Each forecast should be terminated by the "=" character.

12.2.3.1.8 Bulletins failing the validation rules above should be rejected to the operator position for inspection and, if possible, corrected.

12.2.3.1.9 Separate configurable values are defined for long TAFs (FT) and short TAFs (FC).

12.2.4 SIGMET and AIRMET Validation

12.2.4.1 For each individual SIGMET or AIRMET the following items should be validated:

12.2.4.1.1 **CCCC** — The SIGMET or AIRMET must commence with a 4-letter group indicating the ATSU.

12.2.4.1.2 **SIGMET or AIRMET** — Following the CCCC group SIGMET or AIRMET, as appropriate, should be indicated.

12.2.4.1.3 **SEQUENCE NUMBER** — Following the SIGMET or AIRMET there should be a sequence number for the SIGMET or AIRMET. The format should be according to the template in ANNEX 3, Appendix 6, Table A6-1 and shall correspond with the number of SIGMET or AIRMET messages issued for the flight information region since 0001 UTC on the day of issuance.

12.2.4.1.4 **VALID** — The sequence number should be followed by the word VALID.

12.2.4.1.5 **DDHHMM/DDHHMM** — The SIGMET or AIRMET should have a valid validity period. This validity period should be in the format DDHHMM/DDHHMM and should be considered valid if it meets the following conditions.

  − The start of validity period should be no more than a configurable value, T5 minutes, in the future from the current time.
  − The validity period should not exceed a configurable value of T6 minutes.
  − The end of the validity period should not be earlier than the current time.

12.2.4.1.6 CCCC – Following the validity group should be a 4-letter group, indicating the MWO, immediately followed by a hyphen.

12.2.4.1.7   CCCC – The 2nd line after AHL should start with another 4-letter group, this time indicating the FIR or UIR. The first 2 letters must be the same as the first 2 letters of the ATSU to be accepted as being a valid FIR and/or UIR. If the check fails, the ATSU should be regarded as being the correct indicator.

> *Recommendation – ATSU, MWO, FIR and UIR should be validated against ICAO DOC 7910 whenever possible.*

12.2.4.1.8   Messages failing the above validation rules should be rejected to the operator position for inspection and, if appropriate, repair.

12.2.4.1.9   Separate configurable values are defined for conventional SIGMETs (WS), Volcanic Ash SIGMETs (WV), Tropical Cyclone SIGMETs (WC) and AIRMETs (WA).

12.2.5   Timers

12.2.5.1 General Header Validation

Parameter	Value	Description
SA T1	15	Limit of permitted SA AHL YYGGgg after current time
SA T2	90	Limit of permitted SA AHL YYGGgg before current time
FC T1	240	Limit of permitted FC AHL YYGGgg after current time
FC T2	360	Limit of permitted FC AHL YYGGgg before current time
FT T1	480	Limit of permitted FT AHL YYGGgg after current time
FT T2	720	Limit of permitted FT AHL YYGGgg before current time
WS T1	360	Limit of permitted WS AHL YYGGgg after current time
WS T2	720	Limit of permitted WS AHL YYGGgg before current time
WC T1	720	Limit of permitted WC AHL YYGGgg after current time
WC T2	1440	Limit of permitted WC AHL YYGGgg before current time
WV T1	720	Limit of permitted WV AHL YYGGgg after current time
WV T2	1440	Limit of permitted WV AHL YYGGgg before current time
WA T1	360	Limit of permitted WA AHL YYGGgg after current time
WA T2	720	Limit of permitted WA AHL YYGGgg before current time

12.2.5.2 METAR Validation

Parameter	Value	Description
SA T3	15	Limit of permitted observation time after current time
SA T4	90	Limit of permitted observation time before current time

12.2.5.3 TAF Validation

Parameter	Value	Description
FC T3	240	Limit of permitted Time of Forecast after current time (FC)
FC T4	360	Limit of permitted Time of Forecast before current time (FC)
FC T5	360	Limit between current time and start of validity (FC)
FC T6	720	Limit of validity period (FC)
FT T3	720	Limit of permitted Time of Forecast after current time (FT)
FT T4	840	Limit of permitted Time of Forecast before current time (FT)
FT T5	720	Limit between current time and start of validity (FT)
FT T6	1800	Limit of validity period (FT)

12.2.5.4 SIGMET Validation

Parameter	Value	Description
WS T5	360	Limit between current time and start of validity
WS T6	720	Limit of validity period
WC T5	720	Limit between current time and start of validity
WC T6	1440	Limit of validity period
WV T5	720	Limit between current time and start of validity
WV T6	1440	Limit of validity period
WA T5	360	Limit between current time and start of validity
WA T6	720	Limit of validity period

12.3   TAC Message Correction Procedures

12.3.1   General Principles

12.3.1.1 This section describes the modification operators are authorised to apply to rejected bulletins. It should be noted that operators are not authorised to modify meteorological content, e.g. visibility, QNHs etc., but only items such as bulletin headers, location indicators and observation times.

12.3.1.2 If a specific error is identified to happen on a regular basis for one and the same bulletin, a problem ticket should be raised via the Problem Handling Procedure (see chapter 13).

12.3.1.3 In case of uncertainties by the operator, whether to correct a message or not, the concerned should be forwarded by overriding the checks (in case the system is supporting such a function).

12.3.1.4 In the following examples the erroneous parts are highlighted.

12.3.2   WMO Header Errors

12.3.2.1 Various Errors could be observed for WMO Headers. Among these is the substitution of '0' (zero) for 'O' in the alphabetical parts of the header, a missing digit in the YYGGgg group or an illegal optional group. These are often straightforward corrections. The YYGGgg group should only be corrected if the correction is implied by other information within the bulletin e.g. METAR observation time. Following are examples of possible errors.

12.3.2.2 In the example below the message was rejected because the date time group of the AHL has only 5 digits. Adding a single digit, which makes the AHL date time group and the date time of origin of forecast correspond, repairs this.

FTZW20 FVHA 020400 RRA
TAF FVFA 020400Z 0206/0306 04006KT CAVOK BECMG 0210/0212 FEW040CB
SCT080 TEMPO 0211/0216 3000 TSRA SCT040CB BKN080 BECMG 0217/0219
CAVOK=

12.3.2.3   In the next example the message was rejected because the AA part of the AHL contains the numeric character '0' (Zero). This is simply corrected by replacing '0' with 'O'.

SAG040 FOOL 020700
METAR FOOB 020700Z 26004KT 9999 OVC008 23/22 Q////=
METAR FOGR 020700Z ///// 0400 FG SCT008 OVC100 26/25 Q1011=
METAR FOOY 020700Z ///// 8000 -TSRA SCT008 FEW015CB OVC023 23/23
Q1011=
METAR FOOG…

12.3.2.4   In the example below the message was rejected because a "Z" was added at the end of the header time YYGGgg of the AHL. This is simply corrected by deleting the 'Z'.

```
FTIN32 VOTV 240900Z
TAF VOTV 240900Z 2412/2512 00000KT 3000 HZ FEW015 SCT020
BKN100 BECMG 2500/2501 1500 BR BECMG 2503/2504 4000 HZ
BECMG 2506/2507 23010KT 6000 TEMPO 2412/2512 3000
TSRA/SHRA SCT006 SCT015 FEW025CB OVC080=
TAF VOCI…
```

12.3.3   Multi-Part Messages

12.3.3.1   Long messages (longer than 1.800 characters) may be segmented automatically by COM-centres in the AFTN network. Such segmentation introduce non-meteorological text elements, as can be seen in the following example.

12.3.3.2   In this example of a multi-part message not only the lines commencing with "//END" cause the rejection of the messages. Also, the reason that the METAR for KBHM is split in the middle is causing the messages to be rejected. The first bulletin, because there is an incomplete METAR (missing "=" at the end), the second bulletin because of the absence of a header.

12.3.3.3   The operator could remove the last part of the first bulletin, starting with the incomplete METAR.

12.3.3.4   For the second message, there is nothing the operator could do, apart from deleting, as it is normally not traceable to which bulletin those reports originally belong.

```
SAUS31 KWBC 050000
METAR KABQ 042356Z 18009KT 10SM FEW160 SCT250 11/M16
A2992=
METAR KATL 042353Z 30012KT 10SM FEW250 07/M04 A3000=…
…
METAR KBGR 042353Z 18008KT 1 1/4SM -RA BR OVC003 04/03
A2907=
METAR KBHM 042353Z 33006KT
//END PART 01//
```

```
10SM CLR 08/M06 A3009=
METAR KJAX 042356Z 31005KT 10SM FEW040 BKN250 16/09
A2994=
METAR KJFK 042351Z 26024G30KT 10SM SCT060 06/M05 A2955=
METAR KLAS 042356Z 09006KT 10SM FEW250 14/M12 A2992=…
…
METAR KLAX 042350Z 25011KT 10SM BKN200 BKN250 17/11
A2993=
//END PART 02/02//
```

12.3.4   Multiple Separation Signal (=)

12.3.4.1 Reports sometimes have multiple separation signals '=' at the end. These characters can cause problems with report-based validation which are searching for a "=" sign to identify the end of a report and expect a new report thereafter. Excess separation signals should be removed.

12.3.4.2 In this example the TAF for OEDF has been terminated with 2 separation signals. The operator should remove one of the characters in order to permit the message to be validated correctly.

```
FTBN31 OBBI 051100TAF OBBI 050900Z 0512/0612 33015G25KT
9999 SCT025=
TAF OEDF 051100Z 0512/0612 35020KT 8000 SCT030 SCT090
TEMPO 0512/0516 4000 BLDU BECMG 0516/0518 31012KT==
TAF OEDR 051100Z 0512/0612 35020KT 8000 SCT030 SCT090
TEMPO 0512/0516 4000 BLDU BECMG 0516/0518 31012KT=
TAF OTBD 051100Z 0512/0612 21015KT 9999 FEW030 BKN090
TEMPO 0512/0524 33013G25KT TSRA FEW035CB SCT025 BKN080=
```

12.3.5   Missing Separation Signal (=)

12.3.5.1 If in a METAR or TAF bulletin a separation signal (=) is missing at the end of a report or a forecast, the incomplete report or forecast should be deleted unless the operator feels certain that the report or forecast is complete.

12.3.6   Localized Corruption

12.3.6.1 In bulletins containing multiple METARs or TAFs it has been observed that some individual reports or forecasts are obviously corrupted. It should be noted that such messages should only be rejected when validated groups are corrupt, a message that has been validated may still contain corrupted meteorological groups. When such a message is rejected the operator should remove any forecasts or reports in which the corruption prevents validation. See the following example.

12.3.6.2 In this example it can be seen that only the first TAF, for FMMI, appears to be free of corruption. All of its groups are complete and reasonable. After that a lot of "question marks" can be found which indicate unknown characters in regard to the international telegraph alphabet IA-5. The remaining TAFs, for FMNM, FMMT, FIMP and FMEE show obvious signs of corruption. Those question marks with grey background could be replaced by the keyword "TAF". The whole report with yellow background has to be removed due to the corruption. The final report for FMEE does not have a separation signal and as the operator cannot guarantee that it was not truncated it is removed. Additionally, a question mark with green background can be found in the BECMG change group.

```
FTIO31 FMMI 051100
TAF FMMI 051130Z 0512/0612 27010KT 9999 SCT020 BKN100
TEMPO DZRA BECMG 0516/0520 SCT020CB BKM100 TEMPO 5000
RATS BECMG 0602/0606 VRB03KT 9999 FEW007BKN017 BECMG
0606/0609 10010KT 9999 SCT017 BKN100??????????FMMT
051130Z 0512/0612 16006KT 9999 SCT017CB SCT033 BKN233
TEMPO 5000TSRA BECMG 0600/0603 SCT017 BKN033 PROB40 TEMPO
5000 RA=??????????????????????????????????????8000 -
SHRA FEW020CB BKN020 BKN080 BECMG 0520/0524 10007KT BECMG
0601/0605VRB03KT BECMG 0607/0610 22012KT SCT023
SCT043=?????????????????????????????FIMP 050500Z
0506/0606 08013G25KT 9999 SCT018 SCT050 PROB-30 TEMPO
5000 SHRA FEW010 FEW014TCU BKN016 BECMG 0513/0515
09010KT=TAF FMEE 050924Z 0512/0612 10016KT 9999 FEW026
SCT050 BECMG 0516/0518 14012KTFEW020 BECMG 0?06 10020KT
FEW026
```

12.3.6.3 In the example below it can easily be seen that the corrupted time of forecast for FAKM should read 100500Z in order to be consistent with the other TAFs in the bulletin. This can be assured by checking the consistency of the validity period with the other reports in the bulletin.

```
FCZA43 FABL 100500
TAF FABL 100500Z 1006/1015 04008KT 9999 SCT040 TX31/12ZTN20/06Z=
TAF FAKM 100??Z 1006/1015 36012KT CAVOK TX34/12ZTN23/06Z=
TAF FAUP 100500Z 1006/1015 35008KT CAVOK TX38/18ZTN26/06Z=
TAF FAWM 100500Z 1006/1015 03010KT 9999 SCT040 TX30/12ZTN21/06Z=
```

12.3.7   METAR Corrective Actions

12.3.7.1 SPECIs in METAR Bulletins

12.3.7.1.1   Sometimes a METAR bulletin will be received containing SPECIs. This can be identified by the prefix SPECI before the location indicator. Such an occurrence will cause a message to be rejected. In the case where the reports are obviously routine, i.e. their observation time is a regular value such as 121200Z, the SPECI prefix should be deleted. If however the observation time of the SPECI is irregular then the TT part of the header should be modified from SA to SP.

12.3.7.1.2   In the following examples the erroneous parts are highlighted.

12.3.7.1.3   In the first example the report does not appear to be regular METARs as it is indicated as SPECIs. In this case the operator can assume that it is a SPECIs and modify the TT part of the bulletin header from SA to SP.

        SASA85 EGRR 101023
        SPECI SBPV 101010Z 00000KT 9999 BKN008 BKN100 24/24 Q1011=

12.3.7.1.4   In the second example the report for NZCH is marked as a SPECI. However, its observation time is the same as the routine METARs so in this case the operator can delete the SPECI prefix which appears to be erroneous.

        SANZ31 NZKL 101300
        METAR NZAA 101300Z VRB02KT 30KM FEW025 17/15 Q1019 NOSIG=
        METAR NZWN 101300Z 02015KT 30KM BKN022 18/14 Q1016 NOSIG RMK
        KAUKAU 01029KT=
        SPECI NZCH 101300Z 05008KT 8000 OVC005 15/14 Q1013 TEMPO 15KM NSW
        TEMPO BKN004=

12.3.7.2 Incorrectly placed METAR and SPECI prefix

        Sometimes the METAR or SPECI prefix is incorrectly positioned within an individual report. This may be corrected by moving the METAR or SPECI string to the correct place. In the example below METAR has been incorrectly placed after the location indicator UHPP.
        SARA32 LOWM 101000
        METAR UIII 101000Z 13002MPS CAVOK M13/M18 Q1025 NOSIG RMK
            QFE726/0968 12410550=
        METAR UIBB 101000Z 18002MPS 6000 -SN BKN100 OVC200 M18/M20 Q1018
        NOSIG RMK QFE720 30490232=
        METAR UIAA 101000Z 25003MPS 9999 SKC M25/M32 Q1025 NOSIG   RMK
        QFE710 29CLRD70=
        METAR UHWW 101000Z 01002MPS 9999 BKN200 M11/M22 Q1028 NOSIG
        RMK QFE770/1026 75CLRD80 =
        METAR UHSS 101000Z 32006MPS 9999 SCT030CB M08/M12 Q1016
            NOSIG RMK MT OBSC QFE760 01820345=
        METAR UHSH 101000Z NIL=
        UHPP METAR 101000Z 000000MPS 9999 BKN030CB M07/M10 Q1021 NOSIG
        RMK QFE 762 SC 05=
        METAR UHMP 101000Z NIL=
        METAR UHNN 101000Z 32003MPS 9999 -SN OVC/// M17/M19 Q1022 RMK
                QFE760 298///37=

12.3.7.3 Mistyped Time of Observation

12.3.7.3.1   Time of observation is often mistyped. They may be corrected if the error is obvious. Obvious errors include:

- the addition of a superfluous '0' in the field
- a date inconsistent with the current date and the bulletin header date time group.
- the absence of a 'Z' at the end of the time of observation, or the usage of other characters instead

12.3.7.3.2   In the following example it can be seen that the observation time for DAON is dated from the previous day. In such a case the operator should examine previous METARs for DAON to obtain assurance that the date is just mistyped and can be corrected to 101000Z. If the operator is unsure the METAR should be deleted.

SAAL31 DAAA 101000 RRA
METAR DAAG 101000Z NIL=
METAR DABB 101000Z 22012KT 9000 -RA FEW013 SCT033 BKN100 10/07 Q1017=
METAR DAON 091000Z 22016KT CAVOK 11/03 Q1021=
METAR DAOO 101000Z 23011KT 9999 FEW033 BKN233 11/07 Q1020=
METAR DABC 101000Z 00000KT 9999 FEW026 BKN100 05/02 Q1017=
METAR DAAT 101000Z NIL=

12.3.7.3.3   In the following example the time of observation for UAUU has been mistyped. An additional 0 has been added. The operator can remove the additional 0 to make it consistent with the other METARs in the bulletin.

SAKZ31 LOWM 101000
METAR UAUU 1010000Z 02005MPS CAVOK M14/M19 Q1042 RMK 8838//55 NOSIG=
METAR UATT 101000Z 07013MPS CAVOK M12/M19 Q1033 RMK 130///60 NOSIG=
METAR UATE 101000Z 10005MPS 9999 OVC033 M01/M06 Q1017 RMK 120///70 NOSIG=
METAR UARR 101000Z 06005G10MPS 9999 DR FEW/// M12/M19 Q1036 NOSIG RMK047203344545=
METAR UAAA 101000Z NIL=
METAR UAKK 101000Z 06006MPS CAVOK M17/M23 Q1034 NOSIG 058/1060 QFE727=
METAR UAII 101000Z 34002MPS CAVOK 09/05 Q1017 NOSIG RMK 280///65=
METAR UACK 101000Z NIL=
METAR UACC 101000Z NIL=

12.3.7.3.4   In the following example the time of observation for UTAK is followed by a '+'. The operator can replace this with a 'Z'.

SATR31 LOWM 071700
METAR UTAK 071700+ 00000MPS P6000 SKC 03/01 Q1020 NOSIG =
METAR UTAA 071701Z AUTO VRB01MPS 9999 SKC 06/05 Q1020 NOSIG=

12.3.7.4 Concatenated Time of Observation

12.3.7.4.1   A METAR or SPECI will be rejected if its time of observation is concatenated with either, the location indicator, the AUTO field or the wind speed and direction group. This can simply be corrected by inserting a space between the different groups.

12.3.7.4.2   In the example below a space would be inserted after LBWN.

> SABU31 LBSM 050000
> METAR LBSF 050000Z 28007MPS 240V310 9999 OVC025 04/M00 Q1023 NOSIG=
> METAR LBWN050000Z 27005MPS CAVOK 04/02 Q1018 NOSIG 8809//95=
> METAR LBBG 050000Z 25004MPS 9999 BKN043 03/00 Q1019 NOSIG=
> METAR LBPD 050000Z 26011MPS CAVOK 07/M00 Q1021 NOSIG=
> METAR LBGO 050000Z 27011G16MPS 9999 FEW050 BKN100 07/02 Q1020 NOSIG=

12.3.7.5 Late METARs

12.3.7.5.1   A METAR or SPECI should be rejected if its time of observation is older than a configurable period. In this case the METAR should be discarded unless there is evidence in the bulletin that the time of observation has been mistyped.

12.3.7.5.2   The following example was received at around 0000Z on the 5th of the month. The operator should examine previous METARs for SCIP to obtain assurance that the date is just mistyped and, if this is the case, correct it to 050000Z in order to make it consistent with all of the other reports in the bulletin. If the operator is unsure the METAR should be deleted.

> SACH10 SCSC 050000
> METAR SCAR 050000Z VRB03KT CAVOKI 24/17 Q1013=
> METAR SCDA 050000Z 19004KT 9999 FEW030 22/17 Q1012 =
> METAR SCFA 050000Z 19006KT 9999 BKN040 20/17 Q1013 NOSIG=
> METAR SCIP 040000Z 10010KT 9999 FEW020 BKN040 23/17 Q1021 NOSIG=
> METAR SCEL 050000Z 15007KT 120V180 CAVOK 23/11 Q1013 NOSIG=
> METAR SCIE 050000Z 23010KT CAVOK 18/14 Q1014=
> METAR SCTC 050000Z VRB03KT 9999 FEW020 19/13 Q1013=
> METAR SCTE 050000Z 25006KT 2500 -SHRA SCT008 OVC018 15/15 Q1010 NOSIG=

12.3.8   TAF Corrective Actions

12.3.8.1 Incorrectly placed TAF and AMD strings

12.3.8.1.1   If the TAF or AMD strings are incorrectly positioned, e.g. after the location indicator, then they should be repositioned correctly.

12.3.8.1.2   In the example below, AMD has been incorrectly positioned in the TAF for KPBF. The keyword AMD should be moved between the keyword TAF and the location indicator KPBF.

> FTUS23 KWBC 042300 AAA
> TAF AMD KDRT 050008Z 0500/0524 11008KT P6SM FEW015 BKN040 BKN100
>   TEMPO 0500/0502 06015G30KT SHRA
>   FM051000 10010KT 5SM -SHRA VCTS BKN015 OVC040CB
>   FM051800 12010KT P6SM SCT050 BKN250=
> TAF KPBF AMD 050008Z 0500/0524 10003KT P6SM SCT250
>   FM051500 04005KT P6SM SCT050 BKN250=

12.3.8.1.3   In the next example the keyword TAF has been incorrectly positioned after the location indicator SBUL. This can easily be corrected by moving the keyword TAF in front.

>   FTBZ46 SBBR 042300 RRA
>   TAF SBTT 042300Z 0500/0524 00000KT
>   CAVOK TN23/0511Z TX30/0517Z
>   BECMG 0509/0511 36005KT
>   BECMG 0515/0517 06005KT SCT020
>   BECMG 0521/0523 09003KT
>   CAVOK RMK PEH=
>   SBUL TAF 042310Z 0500/0512 05005KT
>   CAVOK TX21/0500Z TN16/0510Z
>   BECMG 0504/0506 09005KT RMK PGG=
>   TAF SBUR 042310Z 0500/0512 05005KT
>   CAVOK TX23/0500Z TN17/0510Z RMK PGG=
>   TAF SBYS 042300Z 0500/0512 18005KT
>   CAVOK TN09/0506Z TX18/0511Z
>   BECMG 0506/0508 36005KT 7000 FEW020 RMK PDE=

12.3.8.2 Mistyped Time of Forecast

12.3.8.2.1   If the time of forecast has obviously been mistyped, it may be corrected. Obvious mistypes can be detected when other TAFs within the bulletin show a consistent time. In the example below the time of forecast, which has been highlighted, has been mistyped. The time of forecast for UHNN should be either 101245Z or 101250Z to make it consistent with UHPP or UHSS. Either value will make little material difference to the meaning of the message.

>   FCRA34 LOWM 101200
>   TAF UHMM 101250Z NIL=
>   TAF UHMP 101250Z NIL=
>   TAF UHNN 1012450Z 1013/1022 36005G12MPS 9999 –SHSN BKN020CB
>   OVC070 550007 TEMPO 1013/1022 2500 SHSN=
>   TAF UHPP TAF 101250Z 1013/1022 02005MPS 9999 OVC015CB OVC070 640150
>   FM1900 16005G10MPS 5000 SHSN OVC010CB OVC070 650100 550009 TEMPO
>   1019/1022 0800 SHSN DRSN OVC002=
>   TAF UHSH 101250Z NIL=
>   TAF UHSS 101245Z 1013/1022 32008MPS 9999 BKN020CB 530009 TEMPO
>   1013/1022 4000 SHSN VV006=

12.3.8.3 Mistyped Validity Period

12.3.8.3.1   TAF validity errors should be handled with care. If it looks as though a TAF could be corrected to make its validity period consistent with other in the bulletin the operator should examine previous TAFs to obtain assurance that such consistency is valid and that the TAF has not been previously issued. If this assurance cannot be obtained, then the TAF should be deleted.

12.3.8.3.2   If the validity period has been obviously mistyped, then it may be corrected. In the example below it can be seen that the TAF validity period for LCPH has been mistyped because it currently implies a period from 0400Z on the 10th to 1300Z on the 11th which is in excess of the maximum length permitted for an FC (< 12 hours). The TAF for LCLK, in the same bulletin, though has a correct validity period. A previous FCCY31 bulletin can be examined to conform that LCLK and LCPH have consistent validity periods, if this is the case the end of the validity should be changed to 1013 making it consistent with the period for LCLK.

FCCY31 LCLK 100300
TAF LCLK 100300Z 1004/1013 28006KT 9999 FEW030 SCT050 BECMG
1004/1006 22015KT PROB30 TEMPO 1004/1013 5000 SHRA=
TAF LCPH 100300Z 1004/1113 27015KT 9999 FEW020 SCT050 PROB40 TEMPO
1004/1013 5000 SHRA=

12.3.8.3.3   In the example below the wrong format for the start of validity is used. This can be changed by the operator to "0300". This has been done in this example for the last TAF and highlighted with yellow background.

FTME31 OLBA 022300
TAF OLBA 022324Z 0300/0324 18016KT 8000 RA BKN026 BKN070 BECMG
0305/0307 22025G50KT PROB40 TEMPO 0306/0324 4000 TSSHRA SCT020CB
BKN023=
TAF OSDI 022324Z 0300/0324 20010KT 7000 FEW030 SCT200 BECMG
1214G25KT 4000 SCT030 BKN090 TEMPO 0315/0324 SHRA SCT022CB BKN025
OVC090=
TAF OSAP 022318Z 0300/0324 VRB03KT 3000 BR SCT020 BKN100 TEMPO
0300/0318 27012KT 4000 SHRA SCT015CB BKN020 BKN080=
TAF OJAM 022300Z 0224/0324 22014KT 2000 DU BECMG 0306/0308
23012G22KT 5000 HZ SCT030 FEW100 PROB30 TEMPO 0312/0324 4000 SHRA
BKN025 SCT100 SCTCB030=
TAF OJAI 022300Z 0224/0324 22014KT 2000 DU BECMG 0306/0308
23012G22KT 5000 HZ SCT030 FEW100 ROB30 TEMPO 0312/0324 4000 SHRA
BKN025 SCT100 SCTCB030=
TAF OJAQ 022300Z 0300/0324 18014KT 2000 DU BECMG 0306/0308
18014G24KT 5000 BLDU SCT030 FEW100=

12.3.8.4 Missing Validity Period

12.3.8.4.1   Some TAFs are received with no validity period. These will be rejected by the Gateway. Operators should discard each individual TAF within a bulletin for which a validity period has not been coded. In the example below the validity period of the TAF for URWA has been omitted and therefore should be deleted from the bulletin. Whenever possible the originator should be contacted, to inform about the missing information and the undertaken action.

```
FTEA32 HKNA 050500 RRA
TAF HUEN 050500Z 32008KT 9999 FEW021 FEW023CB
   BECMG 0507/0512 VRB14KT -TS SCT023 FEW025CB
   FM 051700 18010KT FEW020 FEW022CB
   BECMG 0520/0524 34006KT
   TEMPO 0602/0606 VRB12KT 8000 -TSRA SCT018 FEW020CB
BKN100
   BECMG 0607/0612 16012KT 9999 FEW024 FEW026CB=
```

12.3.8.5 Concatenated Time of Forecast or Validity Period

12.3.8.5.1   A TAF will be rejected if its time of forecast or validity period is concatenated with an adjacent group. This can simply be corrected by inserting a space between the affected groups. In the example below the time of forecast and validity period of the TAF for HLLB have been concatenated.

```
FCMP31 LMMM 310500 RRA
TAF HLLT 310500Z 3106/3115 27010G20KT 9999 SCT025 TEMPO
CAVOK=
TAF HLLB 310500Z3106/3115 24015G25KT 9999 SCT025=
```

12.3.8.6 Dual TAFs

12.3.8.6.1   Sometimes a TAF is issued with two location indicators. A fictitious example is presented below. In such a case the TAF should be edited so that two distinct TAFs with the same content are created. The modified version is presented below the original.

> FTBA31 MYNN 071700
> TAF MYNN 071745Z 0718/0818 21010KT 9999 SCT020 TEMPO 0718/0722 8000
> SHRA BKN018 FM080 32015KT 9999 SCT020 BKN045 PROB30 0708/0712 8000
> -SHRA BKN018=
> TAF MBGT/MBPV 071745Z 0718/0818 13012KT 9999 SCT025=

> FTBA31 MYNN 071700
> TAF MYNN 071745Z 0718/0818 21010KT 9999 SCT020 TEMPO 0718/0722 8000
> SHRA BKN018 FM080 32015KT 9999 SCT020 BKN045 PROB30 0708/0712 8000
> -SHRA BKN018=
> TAF MBGT 071745Z 0718/0818 13012KT 9999 SCT025=
> TAF MBPV 071745Z 0718/0818 13012KT 9999 SCT025=

12.3.8.7 Mixed Short and Long TAFs

12.3.8.7.1   If an FC bulletin is received containing one or more long TAFs the bulletin should be rejected and the header modified from FC to FT. The same applies to FT bulletins containing short TAFs.

12.3.8.7.2   If, however, the bulletin contains a mixture of short and long TAFs, then either the long TAF or short TAFs should be removed from the bulletin and sent with an appropriate header (copy & paste). Some investigations might be necessary by the operator to identify the correct header to be used. The example below shows an FT bulletin containing both a long TAF and a short TAF. The short TAF would be extracted from the original bulletin and sent with an appropriate (in this case fictional) FC header.

> FTIN90 VAAH 070500
> TAF VAJM 070500Z 0706/0806 07006KT 6000 SKC BECMG 1315 5000 FU/HZ
> TEMPO 0801/0803 03004KT 4000 HZ BECMG 0805/0806 07005KT 6000 SKC=
> TAF VARK 070500Z 0706/0715 07006KT 6000 SKC BECMG 0713/0715 5000
> FU/HZ=

> FCIN90 VAAH 070500
> TAF VARK 070500Z 0706/0715 07006KT 6000 SKC BECMG 0713/0715 5000
> FU/HZ=

12.3.8.7.3   The example below shows a fictional FC bulletin containing both a long TAF and a short TAF for VARK. This type of error should be reported back to the originator as there should be only one type of TAF (short or long) be produced for an aerodrome. The e.g. short TAF should only be exchanged locally or on bilateral agreement. The original TAF bulletin should be corrected by the operator by removing the short TAF.

> FCIN90 VAAH 070500
> TAF VARK 070500Z 0706/0806 07006KT 6000 SKC BECMG 0713/0715 5000
> FU/HZ TEMPO 0801/0803 03004KT 4000 HZ BECMG 0805/0806 07005KT 6000
> SKC=
> TAF VARK 070500Z 0706/0715 07006KT 6000 SKC BECMG 0713/0715 5000
> FU/HZ=

12.3.9   SIGMET/AIRMET Corrective Actions

12.3.9.1 Invalid FIRs/UIRs

12.3.9.1.1   Where a SIGMET or AIRMET is rejected due to the absence or incorrect length of the Air Traffic Services Unit (ATSU) indicator on the line following the Abbreviated Header Line (AHL, the operator should attempt to correct /add the ATSU based on the FIR and/or UIR indicator at the beginning of the second line after the header. Repetitive examples of such errors should be reported to the DMG. At the same time a message should be sent to the originator describing the error and the correction applied by the operators.

12.3.9.1.2   In the following fictitious example, the SIGMET has been rejected as the ATSU indicator is missing. The operator will identify the correct indicator (EDFF) from the FIR name using Doc 7910 and edit the SIGMET accordingly.

> WSDL31 EDZF 240600
> EDFF SIGMET 1 VALID 240600/241200 EDZF-
> EDFF FRANKFURT FIR LOC SEV TURB...

12.3.9.2 Incorrectly formatted SIGMET/AIRMET Sequence Number

SIGMET and AIRMET sequence numbers are checked for the correct format but not in regard to the value of the sequence number.

12.3.9.2.1   In the following example the number 1A is causing the SIGMET to be rejected, as it does not comply with the message format described in ANNEX 3 as well as the EUR Doc. 014. This can be corrected by moving the A in front of 1, changing 1A into A1.

> WVCA31 MMEX 230330
> MMEX SIGMET 1A VALID 230330/230930 MMMX-
> MMEX MEXICO CTA VA CLD POPOCATEPETL 1901N9837W OBS AT
> 222037
> EXTD 400NM NE BTN SFC FL300 MVNG NE 70KT NC.
> OTLK VA 230930 800NM SFC FL300 E FM SUMMIT=

12.3.9.2.2   In the next example the number 3 has been concatenated with the SIGMET group causing the message to be rejected. This can be corrected by inserting a space in between.

> WVCA31 TTPP 231730
> TTZP SIGMET3 VALID 231730/232330 TTPP-
> TTZP PIARCO FIR SOUFRIERE HILLS MONTSERRAT 16.7N 62.2W
> VA CLD 10NM WIDE OBS BLO FL060 MOV W AT 20-25KTS
> OTLK VALID 232330/240530...LTL CHNG=

12.3.9.3 Incorrect Format of the Validity Period

12.3.9.3.1   The validity period is tightly validated in the Gateway so there are a number of errors which may cause rejection most of which can be rectified by a simple correction. One possible error is, that the VALID keyword is misspelled or completely missing. Looking at the validity group itself, several possible reasons can cause a warning message to be rejected. Some of them are described in the following examples.

12.3.9.3.2   In the first example the SIGMET has been rejected because of a misspelling of the VALID keyword. It can be corrected by deleting the 'E'.

```
WSEG31 HECA 241415
HECC SIGMET 2 VALIED 241415/241815 HECA-
HECC CAIRO FIR ISOL EMBD CB FCST HECA TOP FL 300 MOV NE
08KT NC=
```

12.3.9.3.3   In the next example the SIGMET has been rejected because the validity date-time-groups have been appended with 'Z'. It can be corrected by deleting those.

```
WSRA31 UAFM 241600
UAFM SIGMET N1 VALID 241600Z/242000Z UAFM-
UAFM BISHKEK FIR FCST MOD ICE 0500-7000M
MOD TURB 1000-8000M INTST NC=
```

12.3.9.3.4   In the example below the SIGMET has been rejected because the validity dates are separated by a space instead of a slash "/". It can be corrected by replacing this space with a slash "/".

```
WSBZ24 SBCW 212141
SBCW SIGMET 10 VALID 242200 242359 SBCT -
SBCW CURITIBA FIR EMBD TS OBS AT 2140UTC IN
SBFI/SBCA/RITAT PSN/SBDN/SBPP/
KALAD PSN/SSGY/SBFI AREA TOP FL390 STNR NC =
```

12.3.9.3.5   In the following example the SIGMET has been rejected because the end of validity date is incorrect. It is obvious from the bulletin date time group and the start of validity time that the date can be modified to 23.

```
WSCU31 MUHA 230225
MUFH SIGMET 01 VALID 230230/130630 MUHA-
MUFH HABANA FIR AREA TS OBS BY SATELLITE AND RADAR
ASOCIATED TO COLD FRONT
AT 24.N84.4W 24.0N82.1W 23.6N82.6W 22.5N84.3W 21.5N84.7W
TO
24.4N84.4W TOP 400 MOV SE 15KT INCR=
```

12.3.9.4 Invalid Validity Period

12.3.9.4.1   Validity periods may be rejected if

- The validity period is too long
- The start of the validity period is too far in the future
- The end of the validity period is earlier than the current time

12.3.9.4.2   Messages rejected due to such reasons should be examined for simple mistypes, e.g. an obviously incorrect date, which may be corrected. If the error is not correctable then the originator should be contacted if possible, e.g. by an AFTN SVC (Service Message).

12.3.9.4.3   In the case of SIGMETs where the period of validity exceeds the maximum permissible period of validity, whenever possible the originator shall be contacted and/or a ticket raised via the Problem Handling Procedure (see chapter 13). The rejected message shall be sent further on according to the routing table without any change by overriding the validation (if the system is capable to do so).

12.3.9.4.4   In the example below the validity period is too long as the date for the end of validity has been mistyped.

> WSPO31 LPMG 161051
> LPPC SIGMET 1 VALID 161055/141500 LPPT -
> LPCC LISBON FIR EMBD TS OBS MAINLY OVER TMA MADEIRA TOP FL300
> MOV SE 5 KT NC=

12.3.9.4.5   In the fictitious example below the start of the validity period is too far in the future. As the message was received at 01:03 on the 15th and the bulletin header date time group is 150059.

> WSUZ31 UTTT 150059
> UTTT SIGMET 1 VALID 160200/160900 UTTT-
> UTTT TASHKENT FIR SEV TURB 0600/7000M SEV ICE 0500/7000M FCST
> INTST NC=

12.3.9.4.6   In the next fictitious example, the message was received at 0300Z on the 17th.
> WSEW33 LEMM 162215
> GCCC SIGMET 1 VALID 162215/160215 GCGC-
> GCCC CANARIAS FIR EMBD TS OBS AT 2215 IN N2917 W01723 TOPS FL390
> MOV S
> NC=

12.3.9.5   AIRMET/SIGMET Header Mismatch

12.3.9.5.1   If an AIRMET, i.e. the string AIRMET is included in the line following the AHL, is received with a TT value of 'WS' then it will be rejected. Similarly, if a SIGMET, i.e. the string SIGMET is included in the line following the AHL, is received with a TT value of 'WA' then it will be rejected. In such a case the TT value in the AHL should be modified to match the SIGMET or AIRMET stream.

12.3.9.5.2   In the example below the AIRMET has been rejected because the AHL is WA... In this case the TT value WS, highlighted should be replaced by WA.

> WSEG31 HECA 191350
> HECC AIRMET 7 VALID 191350/191750 HECA-
> HECC CAIRO FIR SFC VIS2000M SA OBS AT 1300Z AND FCST HEGN AND
> HESH STNR NC=

12.4   IWXXM Validation Procedures

12.4.1   Originators of IWXXM-messages should validate the messages before international exchange. No real-time validation is performed by ROCs. Offline validation is planned to be implemented in future. Further information can be found in chapter D.4.

12.5   IWXXM Message Correction Procedures

12.5.1   No correction for IWXXM messages will be undertaken.

13   Problem Handling Procedure

13.1   Introduction

13.1.1   To meet the new quality standards, which are commonly required by the aviation authorities, a procedure was developed to standardize the manner in resolving problems related to the availability of OPMET data when the international dissemination of these data are not fully effective.

13.1.2   Only problems related to the DMG mandate and to the collection, dissemination and accessibility of OPMET data, are conceivable to be handled within this procedure.

13.1.3   More details on the PHP procedure and the involved functions can be found under paragraph 13.3.

13.2   How to proceed for OPMET Providers

1	When a problem is reported by an end user and your own organisation (OPMET provider) cannot solve the problem please inform the end user that you start the Problem Handling Procedure.
2	Collect as much detailed information as possible.

3	Forward this information to
	       - A Regional OPMET Centre or
	       - A DMG Member or
	       - An ICAO (recognised) Organisation (IATA, ICAO-EUR Region, etc.)
	who will act as Problem Reporter and will create a problem ticket; you will automatically be informed of any status changes of the problem ticket

4	The Problem Reporter will raise a ticket via the PHP-Ticketing Application. The Problem Handling Manager will evaluate the problem and, if accepted as a problem based on its nature, assigns a Problem Handler.
5	The Problem Reporter will contact you, if necessary, for more information or to set a target date for an update or to notify you that the problem cannot be dealt with in this procedure.
6	Each time when the status of the problem is changed, please inform your end user.

13.3   General Requirements

13.3.1   The EUR OPMET DMG Problem Handling Procedure (PHP) increases the efficiency of the handling of reported problems about the collection, dissemination and accessibility of OPMET data within the European Region and streamlines the actions.

13.3.2   The procedure improves the transparency of the problem handling to all involved parties. Therefore, special attention has been paid to the provision of feedback to the persons or organisations that announced the problems.

13.3.3   The Problem Handling database, accessible to the EUR OPMET DMG Members, stores OPMET data problem files. The database shall serve as an information and knowledge bank concerning related problem cases, the history of investigations and activity reports.

13.3.4   Designated DMG Members organise and conduct inquiries to resolve OPMET data problems independent of the frequency of the EUR OPMET DMG meetings. Each problem shall be evaluated irrespective of who submitted it.

13.3.5   The EUR OPMET DMG is entitled to change the EUR OPMET Problem Handling Procedure either to meet its mandate or to increase compliancy with the specifications

described in the General Concept of the procedure and with the standard quality management requirements.

13.3.6   Ideally, the EUR OPMET Problem Handling Procedure will become a highly automated application with defined access for the end users interfacing to the EUR OPMET DMG. The EUR OPMET DMG is aware of standardized automated ticketing helpdesk applications that could be configured to the specifications of the procedure presented in Attachment A of this document and available on the EUR DMG FTP Servers and the DMG website

13.4   The Scope

13.4.1   The problems handled following the procedure are related to:

13.4.1.1 The production of EUR OPMET data by the National OPMET Centres (NOCs).

13.4.1.2 The collection of EUR OPMET data by the Regional OPMET Centres (ROCs).

13.4.1.3 The collection of Non-EUR OPMET data through the Inter-Regional OPMET Gateway Centres (= ROCs)

13.4.1.4 The dissemination or routeing of EUR and Non-EUR OPMET data within the European Region.

13.4.1.5 The interregional distribution of European OPMET data.

13.4.1.6 The routeing of OPMET data to the European OPMET Databases.

13.4.1.7 The routeing of OPMET data to the SADIS Provider.

13.4.1.8 The accessibility of the European OPMET Databases and the available OPMET data.

13.4.2   The aspects handled within the procedure are

13.4.2.1 WMO TAC (Traditional Alphanumeric Code) Code format compliancy of EUR OPMET data.

13.4.2.2 IWXXM Format compliancy of EUR OPMET data.

13.4.2.3 EUR OPMET data performance: availability, regularity and timeliness.

13.4.2.4 The EUR communication networks for OPMET data dissemination.

13.4.2.5 The EUR OPMET Databases: accessibility, availability and access procedures.

13.4.3   End systems related issues are excluded for handling by the EUR OPMET DMG PHP.

13.5 The EUR OPMET DMG PHP Ticketing Application

13.5.1 Manual Procedure

13.5.2 A BMG Task Team (former EUR OPMET DMG) drew up the Problem Handling Procedure (PHP) specifications endorsed by the former BMG and the METG. However, testing the procedure revealed some inertia and reluctance of BMG Members to adopt the procedure, mainly because of the implicit administrative overhead.

13.5.3 AUTOMATED APPLICATION

13.5.4 The PHP specifications proved to be very adequate for the development of an automated helpdesk ticketing application. The BMG Task Team converted the manual PHP procedure to what is now the Internet based EUR OPMET DMG PHP Ticketing Application for the reporting and handling of OPMET Problems. The website is hosted by Skeyes (Belgium ATS) and accessible to the EUR OPMET DMG Members only.

13.6 Definitions

13.6.1 PHP Problem Classification

13.6.1.1 The Problem Nature

13.6.1.1.1 A problem, when regarding the EUR OPMET DMG, can be either incidental or structural:
- An incidental problem has limited consequences and occurs occasionally.
- A structural problem has a significant impact, recurs systematically or is persistent in time. It affects the performance of OPMET data locally or generally.

13.6.1.1.2 Structural problems always have to be handled, while incidental problems will not result in a start-up of the whole procedure. However, a systematically recurring incidental problem can become a structural problem to be dealt with, in accordance with the procedure.

13.6.1.2 The Problem Type

13.6.1.2.1 Apart from specials tasks assigned to the EUR OPMET DMG within its mandate, the cause of a problem can be determined as the OPMET problem "Type". OPMET Problems related to an end system are considered as being the responsibility of the User. Other problems are considered to be beyond the scope and thus not EUR OPMET DMG related.

13.6.1.3 The Problem Subtype

13.6.1.3.1 Per Type of problem, known issues can be defined as some of the predefined "Subtypes".

13.6.1.4 Overview of OPMET Data Problems

13.6.1.4.1   The following graph presents an overview of OPMET Data problems:
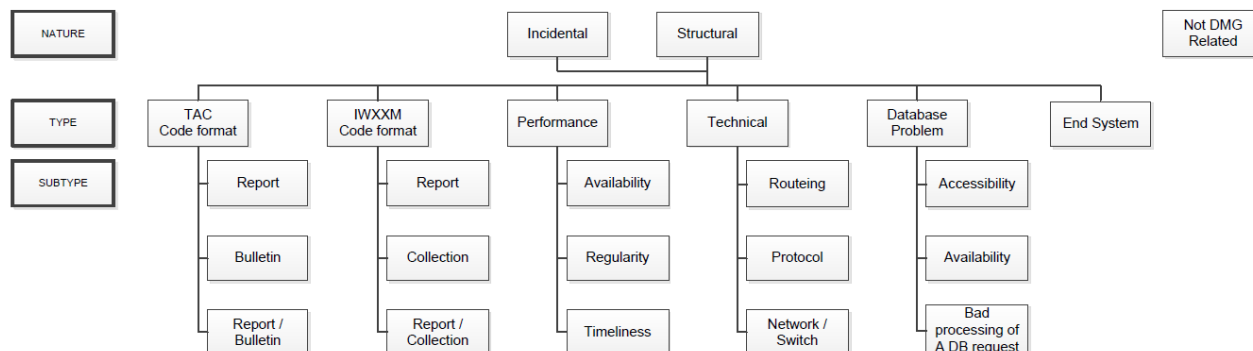
13.6.1.5 New Problem Type and Subtype

13.6.1.5.1   The PHP application development team can create an additional Problem Type and additional Subtypes for existing or new Types. Any Problem Type/Subtype can be activated or de-activated by the development team members. Problem Types and Subtypes are be created, activated and de-activated only in accordance with the directives of the DMG.

13.6.2   Problem Reporter

13.6.2.1 The Problem Reporter, representing their organisation or an end user, submits potential structural problems to the EUR OPMET DMG through the Problem Handling Procedure. On behalf of the user originating the problem, the Problem Reporter deliberates over possible solutions suggested by the EUR OPMET DMG.

13.6.2.2 Users

13.6.2.2.1   A problem can be raised by the following users:
- An authorised aeronautical user: National OPMET Centre, air liner, etc.
- A Regional OPMET Centre;
- A Member of the EUR OPMET DMG;
- A Sub-Group of the EUR OPMET DMG;
- Any organisation recognised by ICAO;
- A State.

13.6.2.3 The Problem Reporter (PR)

13.6.2.3.1   Throughout this procedure, the Problem Reporter shall be either:
- An ICAO (recognised) Organisation;
- A Regional OPMET Centre;
- An EUR OPMET DMG Member.

13.6.3   Problem Handling Team

13.6.3.1 The dedicated officials of the Problem Handling Team all are EUR OPMET DMG Members functioning as, and /or:

- A Problem Handling Manager;
- A Problem Archive Manager;
- A Problem Handler.

13.6.3.2 The EUR OPMET DMG Officials can appeal to a Consultant Expert external to the EUR OPMET DMG for assistance.

13.6.3.3 Problem Handling Manager (PHM)

13.6.3.3.1 The EUR OPMET DMG assigns at least one Problem Handling Manager (PHM) and a backup. A PHM determines the work domain over which he or she will be fully responsible as the first contact person in line to and from the Problem Reporter standing in for the end users. A PHM can delegate or share responsibilities per Types of problems to other PHMs. For each problem, when structural, the PHM responsible for that Type of problems assigns a Problem Handler for investigation and responsive actions towards a solution. The responsible PHM decides whether or not a problem submitted to the EUR OPMET DMG is eligible for further handling following the procedure.

13.6.3.4 Problem Handler (PH)

13.6.3.4.1 Per Problem Type, the EUR OPMET DMG provides for one or more possible Problem Handlers one of which the PHM will designate for initiating an investigation. The Problem Handler suggests possible solutions to the Problem Reporter who submitted the problem. A Problem Handler can ask an expert for assistance.

13.6.3.5 Problem Archive Manager (PAM)

13.6.3.5.1 A Problem Archive Manager can be assigned for generating reports from the PHP archive.

13.6.3.6 Consultant Expert

13.6.3.6.1 A Problem Handler can request a Consultant Expert for assistance in the investigation of a problem. A Consultant Expert need not be a DMG Member and communications with the EUR OPMET DMG are led via the Problem Handler of the problem case.

13.6.3.7 Problem Handling Team organisation chart
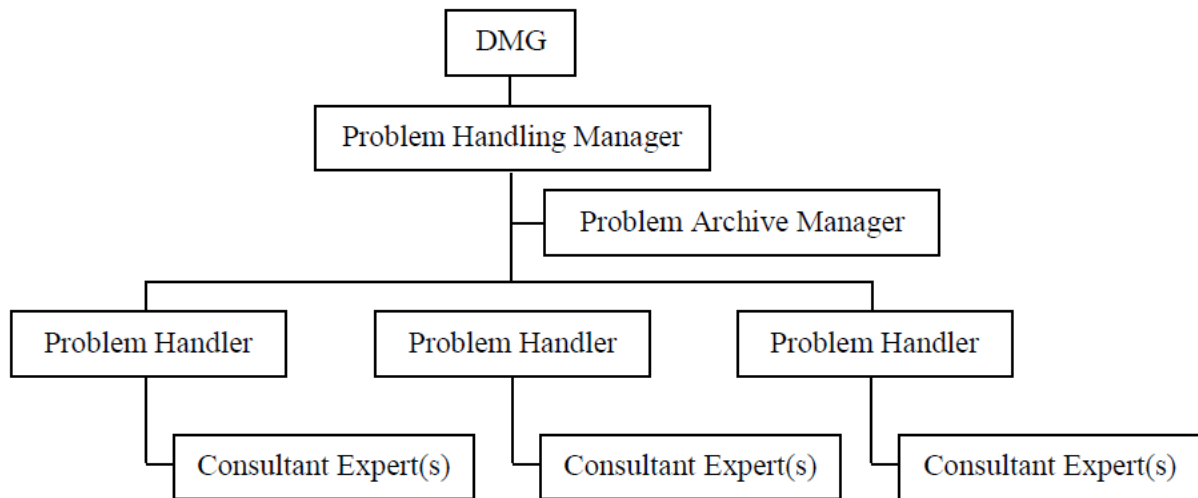
13.6.4   Problem Ticket

13.6.4.1 A Problem Ticket is an OPMET Problem submitted to the EUR OPMET DMG using the PHP Ticketing Application by a Problem Reporter on behalf of an end user who experienced the problem. The Problem Ticket traces all events and possible actions performed during the investigation of the problem.

13.6.5   Problem Ticket Access Modes

13.6.5.1 The access to the EUR OPMET DMG EUR Ticketing Application website is restricted to the EUR OPMET DMG Members and trusted persons from ICAO (recognised) organisations. A Problem Ticket has two access modes.

13.6.5.2 Read mode:

13.6.5.2.1   Appearing Problem Tickets are in read mode initially. When having access rights to a Ticket as a Problem Handling Manager, the Problem Handler, the Problem Reporter or as an additional reader, all current information can be viewed by selecting its register number.

13.6.5.3 Edit mode:

13.6.5.3.1   A Problem Ticket in edit mode can be updated by the viewer to the extent permitted by the current access rights.

13.6.6   Problem Ticket Status

13.6.6.1 Every Problem Ticket that has been submitted has one of the following statuses:
- Initial
- Logged
- Wait
- Closed
- Failed
- Final Failed
- Final Closed.

13.7   Problem Handling Process

13.7.1   The Problem Reporter or a user via the Problem Reporter collects all possible circumstantial information prior to submitting a Problem to the EUR OPMET DMG. The EUR OPMET DMG Problem Handling Team evaluates the problem in order to define its Nature, Type and Subtype. When the EUR OPMET DMG is concerned, the problem shall be handled following the procedure. The Problem Reporter gets feedback on the EUR OPMET DMG problem handling actions and relays it to the User originating the problem. In conspiracy with the User, the Problem Reporter accepts or rejects suggested EUR OPMET DMG solutions to their problem.

13.7.2   The EUR OPMET DMG PHP is totally transparent to the end users. The end user reports any problem to the EUR OPMET DMG by email via a Problem Reporter. Also, the Problem Reporter provides any feedback to the end user with regard to the EUR OPMET DMG actions and suggested solutions.

13.7.3   All reported problems will be evaluated irrespective of who submitted them.

13.7.4   The handling of a problem on which a Problem Ticket has been issued is subject to the evaluation of the responsible Problem Handling Manager. When it concerns a DMG matter, the problem will be handled by a Problem Handler. Actions then are registered on and co-ordinated by means of the Problem Ticket until closure of the Ticket on mutual agreement with the Problem Reporter on behalf of the end user. If the problem happens to be an incident or is of no concern to the EUR OPMET DMG, the Problem Ticket will be closed.

13.7.5   A Problem can be redirected, assigned to another Problem Handler.

13.7.6   A Problem Ticket can be closed and re-created on replacement of its Problem Reporter.

APPENDIX A – Interface Control Document

1. Introduction

   1.1. This document defines the standard access procedures for the designated ICAO Regional OPMET databanks (RODB) in the EUR Region.

   1.2. It also informs about the standard formats for request and reply messages.

   1.3. By accessing these databanks, the user implicitly acknowledges the disclaimer in A.12.

2. EUR Regional OPMET Databanks

   2.1. RODB-Sites in the EUR-Region

      2.1.1. The designated OPMET databanks in the EUR Region are located at Brussels, Toulouse and Vienna.

   2.2. Backup procedures

      2.2.1. In case of an outage of one of the three EUR OPMET databanks, any of the other two databanks can be used as fall-back. To this end, the user should simply change the AFTN/AMHS-address to which the request is sent.

   2.3. Access Addresses

      2.3.1. The EUR OPMET Databanks can be accessed via the ICAO AFS only, either via AFTN or AMHS

      2.3.2. The AFTN addresses to be used to access the OPMET databanks via an AFTN user system/terminal are the following:

Brussels	EBBRYZYX
Toulouse	LFPWYZYX
Vienna	LOWMYZYX

      2.3.3. The AMHS addresses to be used to access the OPMET databanks via an AMHS user system/terminal are the following:

Brussels	/C=XX/A=ICAO/P=BELGIUM/O=EBBR/OU1=EBBR/CN=EBBRYZYA
Toulouse	/C=XX/A=ICAO/P=FRANCE/O=LFLF/OU1=LFPW/CN=LFPWYZYA
Vienna	/C=XX/A=ICAO/P=AUSTRIA/O=LOVV/OU1=LOWM/CN=LOWMYZYA

2.4. Meteorological Data Types

2.4.1. The following meteorological data types may be retrieved from the RODBs with some limitations as described below the table:

Message Type	TT (TAC)	TT (IWXXM)
METAR/SPECI (1)	SA/SP	LA/LP
9 HR TAF	FC	LC
24/30 HR TAF	FT	LT
SIGMET	WS	LS
Tropical Cyclone SIGMET (3)	WC	LY
Volcanic Ash SIGMET (3)	WV	LV
AIRMET	WA	LW
GAMET (5)	FA	
ARS (2)(5)	UA	
Volcanic Ash Advisory (4)	FV	LU
Tropical Cyclone Advisory (4)	FK	LK
Space Weather Advisory (4)	FN	LN

Note (1): *A reply for a METAR request will consist of the latest METAR or SPECI reports available for the concerned station.*

Note (2): *Available only at Brussels and Vienna RODB*

Note (3): *When a query for WS (TAC format) or LS (IWXXM format) SIGMETs is received, the reply will contain all valid SIGMETs (General, Volcanic Ash and Tropical Cyclone) that are available for the FIR and or UIR.*

Note (4): *Due to the lack of an ICAO identifier in the message, the reply to a FV/FK request, and where available to an FN request, will contain all valid FV/FK/FN messages at the time of the request. Therefore, a dummy ICAO indicator "XXXX" is used in the request (see further for the request format)*

Note (5): *Not yet available in IWXXM format.*

2.4.2. Only valid TAC and IWXXM data exchanged via the RODEX schema will be made available via the RODBs. In case of data missing in one of the formats, there will be no translation performed by the RODB. In such cases the user will receive a message, that the requested data is not available.

2.5. Formal Syntax Notation Convention

2.5.1. The below is a description of the notation used to describe the request syntax.

<item>	:	item to be further defined
=::	:	definition symbol
n*m<item>	:	at least n but at most m instances of item
		default values for n and m are 0 and infinity; e.g. 1*<item> means at least 1
|	:	separator for alternative definitions (OR)
[ ]	:	optional
"xyz"	:	terminal symbol xyz
+	:	followed by
-	:	comment.

2.6. Formal Syntax Notation for EUR OPMET Databank Requests

2.6.1. A EUR OPMET Database Request line shall contain a maximum of 69 characters and/or spaces (ref. AICAO ANNEX 10-Vol II-paragraph 4.4.9.1.1).

<request>	=::	["RQM"|"RQX"]+1*<group>+"="
<group>	=::	"/"+<group_detail>
<group_detail>	=::	<TT>+<report>+*[","<TT>]
<report>	=::	<CCCC>+ *[","<CCCC>]
$<T_iT_i>$	=::	- the requested data type (for supported data types : see paragraph A.2.4.1)
$<C_iC_iC_iC_i>$	=::	- ICAO 4-letter location indicator (see Doc. 7910):

- of an aerodrome for METAR, TAF
- of an FIR and/or UIR for SIGMET, AIRMET, GAMET and, if supported by the RODB, Special AIREP
- "XXXX" for FV/FK requests and, if supported by the RODB, FN requests

2.6.2. Request lines for TAC data start with "RQM", request lines for IWXXM data start with "RQX"

2.6.3. Examples for TAC-requests (RQM) can be found under paragraph A.3.4, examples for IWXXM-requests under paragraph A.4.3.

3. Request/Reply Message Format: TAC

3.1. General

3.1.1. Request messages for OPMET data in TAC format can be sent either via AFTN or via AMHS.

3.1.2. Validation of query messages (RQM/) will strictly follow the Standardized Query Language as defined in the formal syntax notation in paragraph A.2.5 & 2.6 and shown in the examples for the request line in paragraph A.3.4.

3.1.3. An RQM-request line shall not exceed 69 characters including "RQM/" and the "=" signal. Only one request line shall be included in one AFTN/AMHS message.

3.1.4. Queries or part of queries which do not conform to that notation will result in an error message returned to the originator of the query as described in paragraph A.3.6.

3.1.5. Queries or part of queries which are not authorized or for which the data is not available will result in an information message returned to the originator of the query as described in paragraph A.3.6.

3.2. Request messages sent via AFTN

3.2.1. Request messages sent via AFTN should follow the AFTN standard telecommunication procedures as defined in ICAO Annex 10, volume II. The text part of the messages shall adhere to the rules defined in this document.

3.2.2. The standard AFTN message start and end characters and alignment characters (SOH, STX and ETX for ITA-5 format or ZCZC and NNNN for ITA-2 format) have been omitted for clarity in the following examples.

3.2.3. Request messages should use the AFTN priority GG.

3.2.4. The general format of the request message is as follows:

```
GG xxxxxxxx
ddhhmm yyyyyyyy
REQUEST LINE =
```

Where:

xxxxxxxx	*is the AFTN address of the databank (as given in paragraph A.2.3.2)*
ddhhmm	*is the message origination date-time-group*
yyyyyyyy	*is the AFTN address of the message originator*
REQUEST LINE	*as defined in paragraph A.2.6*
=	*indicates the end of the request line.*

3.3. Request messages sent via AMHS

3.3.1. Request messages for TAC data sent via AMHS shall follow the AMHS standard telecommunication procedures as defined in ICAO Annex 10, volume II and ICAO Doc 9880 "Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards" – Part II.

3.3.2. The request message should be sent as Text Body Part. The Text Body Part should contain a single REQUEST LINE as defined in A.2.6.

3.4. RQM-request examples

Example	Type of Request
RQM/SALOWW=	One request of single report of type SA
RQM/WSEBBU=	One request of all valid SIGMET messages in a single FIR/UIR
RQM/FTEBBR,LFPO=	One request of two reports of type FT
RQM/SALOWW/FTEBBR,LFPO/WSEBBU=	Three requests of above combined
RQM/SAEBBR,FT=	A request of a SA type and a FT type report for the same station
RQM/UAEBBU=	One request of all valid ARS messages in a single FIR or UIR (not supported yet by all RODBs)
RQM/FVXXXX=	Request for all valid FV messages ; XXXX is a dummy ICAO indicator
RQM/FKXXXX	Request for all valid FK messages ; XXXX is a dummy ICAO indicator
RQM/FNXXXX=	Request for all valid FN messages ; XXXX is a dummy ICAO indicator (not supported yet by all RODBs)

3.4.1. Example of an RQM embedded in an AFTN request message:

```
GG EBBRYZYX
181808 EGKKYMYX
RQM/SALOWW/WSEBBU,LFFF/FTLOWW=
```

3.5. Databank Reply Format

3.5.1. If the originator AFTN/AMHS address is authorized, the databank will automatically reply to the AFTN/AMHS originator address given in the request message.

3.5.2. Valid requests will produce an answer, which will be returned in a standard WMO bulletin format embedded as text in a standard AFTN message or as a Text Body Part of an AMHS message. Each bulletin will be sent as a separate AFTN/AMHS message.

3.5.3. Per group of valid requested reports belonging to the same type, one or more bulletins will be generated.

3.5.4. For regular messages (METAR, TAF,..) the reply will consist of the latest valid, not NIL reports.

3.5.5. For non-regular messages (SIGMET) the reply will consist of all valid SIGMET-messages for the requested FIR.

3.5.6. For ARS, if supported by the RODB, the reply will consist of all ARS messages received during the last hour and containing phenomena reported within the lateral boundaries of the requested FIR or UIR, not taking into consideration the height/flight level of the report. This means, that a ARS may be replied for an FIR as well as for an UIR above.

3.5.7. Only ARS which include co-ordinates as position are supported by the RODBs.

3.5.8. For advisory messages the reply will contain the most recent valid message for each volcano, tropical cyclone or the valid Space Weather Advisories.

3.5.9. The abbreviated heading of a reply message will be constructed as TTAAii **CCCC YYGGgg** where:

TT	=	the requested data type
AA	=	**XX** : fixed geographical designator for databank reply
ii	=	**99** : fixed bulletin number for databank reply
CCCC	=	location indicator of the replying databank (e.g. EBBR, LFPW, LOWM)
YYGGgg	=	depending on the original DTG of the Bulletin Header

3.5.10. The Report(s) within the collective bulletin are copied as received. Reports which result to have the same DTG will be grouped in one or more collective bulletins with a maximum length of 1800 characters (see ref.: ICAO Annex10 Vol II section 4.4.5.7). Where necessary, consecutive messages will be generated with the same header and will start with a complete report (reports will not be split).

3.6. Error/Information replies

3.6.1. An appropriate error/information reply will be sent to the user in the following cases:
   − the request line contains a syntax error
   − the user is not allowed to request this information
   − the station(s) for which data is requested is (are) unkown
   − the data is unavailable

3.6.2. Error/Information replies will be sent in WMO message format as a
   − Text Body Part of a AMHS message in case the request was received via AMHS
   − AFTN message in case the request was received via AFTN

3.6.3. The abbreviated heading of an *Information* or *Error Reply* message will be constructed as **TTAAii CCCC YYGGgg**, where:

TT	=	**ZZ**
AA	=	**XX** : fixed geographical designator for databank reply
ii	=	**99** : fixed bulletin number for databank reply
CCCC	=	location indicator of the replying databank (e.g. EBBR, LFPW, LOWM)
YYGGgg	=	DTG corresponding to the issuing time of the Information or Error Reply

4. Request/Reply Message Format: IWXXM

   4.1. General

      4.1.1. Request messages for OPMET data in IWXXM format can be sent via AMHS only.

      4.1.2. Validation of query messages (RQM/) will strictly follow the Standardized Query Language as defined in the formal syntax notation in paragraph A.2.5 & 2.6 and shown in the examples for the request line in paragraph A.4.3.

      4.1.3. Queries or part of queries which do not conform to that notation will result in an error message returned to the originator of the query as described in paragraph A.4.5.

      4.1.4. Queries or part of queries which are not authorized or for which the data is not available will result in an information message returned to the originator of the query as described in paragraph A.4.5.

   4.2. Request messages

      4.2.1. Request messages for OPMET data in IWXXM format shall be sent via AMHS and shall follow the AMHS standard telecommunication procedures as defined in ICAO Annex 10, volume II, the EUR AMHS Manual (EUR Doc 20) and ICAO Doc 9880 Part II. The user requesting IWXXM data shall make sure that a full AMHS path with Extended Services exists to the EUR OPMET Databank.

      4.2.2. The request message should be sent as Text Body Part. The Text Body Part should contain a single REQUEST LINE as defined below.

   4.3. RQX-request examples

Example	Type of Request
RQX/LALOWW=	One request of single report of type LA
RQX/LSEBBU=	One request of all valid SIGMET messages in a single FIR and/or UIR
RQX/LTEBBR,LFPO=	One request of two reports of type LT
RQX/LALOWW/LTEBBR,LFPO/LSEBBU=	Three requests of above combined
RQX/LAEBBR,LT=	A request of a LA type and a LT type report for the same station

   4.4. Databank reply format

      4.4.1. If the originator AMHS address is authorized, the databank will automatically reply to the AMHS originator address given in the request message.

      4.4.2. Valid requests will produce an answer, which will be returned as one or more standard WMO IWXXM bulletins that are sent as a File Transfer Body Part of an AMHS message. Each AMHS reply message will contain only one single FTBP and an FTBP will only contain one single OPMET bulletin.

      4.4.3. Per group of valid requested reports belonging to the same type, one or more bulletins will be generated.

4.4.4. For regular messages (METAR, TAF,..) the reply will consist of the latest valid, not NIL reports.

4.4.5. For non-regular messages (SIGMET) the reply will consist of all valid SIGMET-messages for the requested FIR.

4.4.6. For advisory messages the reply will contain the most recent valid message for each volcano or tropical cyclone or the valid Space Weather Advisories.

4.4.7. There is no distinction made between "operational" and "non-operational" data as defined by the XML-attribute "permissibleUsage". The reply will contain actually available data.

4.4.8. The file name and bulletin identifier will be constructed as:

A_TTAAiiCCCCYYGGgg_**C**_CCCC_YYYYMMddhhmmss**.xml.[compression_suffix]**

where the elements in black and bold are fixed elements and:

TT	=	the requested data type
AA	=	XX : fixed geographical designator for databank reply
ii	=	**99** : fixed bulletin number for databank reply
CCCC	=	location indicator of the replying databank (e.g. EBBR, LFPW, LOWM)
YYGGgg	=	depending on the original DTG of the Bulletin Header
YYYYMMddhhmmss		is the date/time group

4.5. Error/Information replies

4.5.1. An appropriate error/information reply will be sent to the user in the following cases:
− the request line contains a syntax error
− the user is not allowed to request this information
− the station(s) for which data is requested is (are) unknown
− the data is unavailable in IWXXM format
− the request was received via AFTN
− the reply cannot be sent as there is no AMHS path with extended services to the user

4.5.2. Error/Information replies will be sent in WMO message format as a
− Text Body Part of a AMHS message, in case the request was received via AMHS
− AFTN message, in case the request was received via AFTN

4.5.3. The abbreviated heading of an *Information* or *Error Reply* message will be constructed as **TTAAii CCCC YYGGgg**, where:

TT	=	**ZZ**
AA	=	**XX**: fixed geographical designator for databank reply
ii	=	**99** : fixed bulletin number for databank reply
CCCC	=	location indicator of the replying databank (e.g. EBBR, LFPW, LOWM)
YYGGgg	=	DTG corresponding to the issuing time of the Information or Error Reply

5. Message Validation and Storage Criteria

5.1. Definition

5.1.1. The EUR OPMET Databank message validation and storage criteria are based on message validation procedures described in the EUR OPMET Data Management Handbook, with the following specifications:
- NIL reports are rejected
- Corrected or amended reports replace the original ones
- For regular message types: a report is rejected if a report for the same station with a more recent report time is already stored in the DB. If a report does not contain a valid report or issuing time (YYGGggZ), the date/time of the WMO header is used instead

5.2. Aging Process

5.2.1. Furthermore, the EUR OPMET Databanks will have an aging process which regularly deletes messages for which the expiration time has been exceeded.

5.2.2. For messages of type METAR/SPECI the expiration time is 3 hours, for ARS (if supported by the RODB) the expiration time is 1 hour, for all other types, the messages expire at the end of their validity period.

6. Databank Access Control

6.1. Definition

6.1.1. Two different levels of access control will be provided:

a) Implicit and statistical access control by the monitoring of the AFTN/AMHS originator indicators of the request messages (**off-line** Databank Access Control - see paragraph Databank Query Monitoring).
b) Explicit access control by checking the received AFTN/AMHS originator indicator against two databank access tables containing a permissive and/or denial list of AFTN/AMHS addressee indicators or part of it (**on-line** Databank Access Control). *Optionally a databank agent may decide to implement the possibility to limit user access to certain types of products and/or stations.*

6.1.2. If a retrieval request does not have an authorised AFTN/AMHS originator indicator, then an automatic concerned **Information** Reply will be returned. Details of this procedure can be found in paragraphs A.3.6 (RQM) and A.4.5.1 (RQX) dealing with "Error/Information Replies". An example can be found under paragraph A.10.2.2.

7. Databank Request Monitoring

  7.1. Definition

    7.1.1. The databank agents will, on a continuous basis or ad-hoc, monitor all the requests received from AFTN/AMHS-users.

    7.1.2. These databank monitoring results will be used for:

      - access control
      - improvement of the exchange of data
      - detection of abnormal use or misuse of the databank

8. Monitoring of the availability of data

  8.1. Definition

    8.1.1. Databank availability monitoring exercises are performed at least once every year.

  8.2. Data Availability Monitoring Items

    8.2.1. The availability of the data, for each station in the EUR OPMET DB Catalogue, will be monitored for the data types SA/SP, FC and FT.

  8.3. Data Availability Monitoring Results Publication

    8.3.1. The results of the EUR OPMET DB data availability monitoring are presented to the DMG and will be included in the yearly DMG report to METG.

9. Databank Misuse and Abuse

  9.1. In order to determine possible abuse or misuse of the EUR Infrastructure (EUR OPMET Databank and network), a detailed investigation may be performed for all frequent users detected during the databank request monitoring.

  9.2. A frequent user is a user performing 100 requests or more per day, on a regular basis.

  9.3. These investigations might lead to the detection of **misuse** or **abuse** of the DB.

  9.4. Definition of misuse and abuse

    9.4.1. The DB is **misused** if it is not used in the way it is intended.

    9.4.2. A typical example of misuse would be a user requesting on a regular basis (e.g. every hour) the same reports. In case of misuse of the databank, the databank user might be contacted by the ICAO Regional Office with the request to find, together with the responsible ROC, an alternative way to receive the required data. If a suitable solution is found to receive the data using the normal telecommunications procedures, but this solution is not accepted by the databank user (i.e. the misuse continues), then the databank agent could decide to limit *or block* the access to the EUR OPMET Databank for this user.

    9.4.3. The DB is **abused** if users are requesting data they are not entitled to receive, or it is suspected that users use the data for commercial purposes.

9.5. In case of abuse of the Databank is suspected, the databank user might be contacted by the ICAO Regional Office with a request for information on its databank use. After investigation, the databank agent could decide to limit or block the access to the EUR OPMET Databank for this user.

10. Examples for Databank Replies

10.1.   Examples of databank requests with the related reply

10.1.1. Example 1

request : RQM/SAEBBR,EGLL,LIRF=

reply messages :

SAXX99 EBBR 110850
METAR EBBR 110850Z 30008KT 9999 FEW020CB 13/08 Q1017 NOSIG=
METAR EGLL 110850Z 27010KT 9999 SCT200 15/10 Q1015 NOSIG=

and

SAXX99 EBBR 110820
METAR LIRF 110820Z 28008KT 9999 BKN100 14/09 Q1016 NOSIG=

(the 0850Z METAR for LIRF was not available)

10.1.2. Example 2

request : RQM/SALOWW,FT=

reply messages :

SAXX99 EBBR 110850
METAR LOWW 110850Z 30008KT 9999 FEW020CB 13/08 Q1017 NOSIG=

and

FTXX99 EBBR 110500
TAF LOWW 110530Z 1106/1212 30010KT SCT020 SCT040 PROB30
TEMPO 1110/1119 34015G25KT 5000 SHRA BKN016=

10.1.3. Example 3

request : RQM/WSEISN=

reply messages :

WSXX99 EBBR 061215
EISN SIGMET 02 VALID 061215/061600 EINN-
EISN SHANNON FIR/UIR SEV TURB FCST BTN GND/FL070 NC=

and

```
WSXX99 EBBR 061300
EISN SIGMET 03 VALID 061300/061900 EINN-
EISN SHANNON FIR/UIR VA ERUPTION MT EYJAFJALLAJOKULL LOC
N6338
     W01937 VA CLD OBS AT 1200Z SFC/FL200 W OF LINE N5416
W01155
      N5100 W01144 AND S OF LINE N5100 W01144 - N5204 W00712
- N5310
     W00530 FL200/350 W OF LINE N5410 W01320 - N5114 W01500
FCST
     VA CLD 1900Z SFC/FL200 W OF LINE N5414 W01310 - N5114
W01310
     AND S OF LINE N5100 W00800 - N5220 W00550 - N5212
W00550
 FL200/350 W OF SHANNON FIR=
```

10.2.   Examples with error/information replies

10.2.1. Syntax error

request: RQM/SAEBR/FCEBAW=

reply messages:

```
ZZXX99 EBBR 110912
RQM/SAEBR=
SYNTAX ERROR=
```

and

```
FCXX99 EBBR 110800
TAF EBAW 110830Z 1109/1118 35008KT 9999 SCT030=
```

10.2.2. Access not authorised

1)   *request:* RQM/SAEBBR=

reply message:

```
ZZXX99 EBBR 110915
RQM/SAEBBR
ACCESS NOT AUTHORISED
```

2)   *request:* RQM/SAEBBR/FTEHAM=

reply messages:

```
ZZXX99 EBBR 110905
RQM/FTEHAM
ACCESS NOT AUTHORISED=
```
and
```
SAXX99 EBBR 110850
METAR EBBR 110850Z 30008KT 9999 FEW020CB 13/08
Q1017 NOSIG=
```

(user is not authorised to retrieve TAF data)

10.2.3. Unknown data

request: `RQM/SAEBBB/FTLFPO=`

reply messages:

```
ZZXX99 EBBR 061221
RQM/SAEBBB=
UNKNOWN=
```

and

```
FTXX99 EBBR 061100
TAF LFPO 061100Z 0612/0718 35010KT 9999 SCT045
BECMG 0612/0614 CAVOK BECMG 0703/0705 33005KT
SCT008 BKN012 BECMG 0709/0712 03006KT BKN035
BECMG 0712/0714 CAVOK=
```

10.2.4. NIL-data

request: `RQM/SAEBBR,DATG,LOWW =`

reply messages:

```
SAXX99 EBBR 110850
METAR EBBR 110850Z 30008KT 9999 FEW020CB 13/08
Q1017 NOSIG=
METAR LOWW 110850Z 27010KT 9999 SCT200 15/10
Q1015 NOSIG=
```

and

```
ZZXX99 EBBR 110904
RQM/ SADATG=
METAR DATG NIL=
```

(no valid METAR available for DATG)

11. EUR OPMET Databank Catalogue

    11.1.   Contents

        11.1.1. The EUR OPMET Databank Catalogue consists of lists of OPMET products that are required to be available in the ICAO EUR OPMET Databanks.

These requirements are:

        a) <u>for message types METAR/SPECI, Long TAF and Short TAF:</u>
            required data as stated in the Regional eANP Volume II MET II-2 tables and agreed non-AOP data

        b) <u>for SIGMET messages:</u>
            all FIRs, as listed in the Regional SIGMET Guides.

12. Disclaimer

    12.1.   Usage of the EUR OPMET DB implies that the user has taken notice of the disclaimer below and accepts the associated consequences.

DISCLAIMER

The Stations and FIR lists of the EUR OPMET Databank only consist of lists of required data. It does not mean that these data are presently received in the EUR OPMET Databank or have been yet received.

The fact that there is no data found for one location and one type of message in the EUR OPMET Databank does not mean that a message has not been generated for such a location, but only means that no valid message concerning such a location and such a type of message has been received or stored by the EUR OPMET Databank.
The user assumes the entire risk related to its use of data.

APPENDIX B - EUR OPMET Data Update Procedure

1. Introduction

   1.1. The requirements for the provision of METAR as well as TAF for EUR-AOP aerodromes are defined in EUR eANP Doc 7754, Volume II, Table MET II-2. Additionally, OPMET data for several agreed non-AOP aerodromes is exchanged by EUR-States.

   1.2. All OPMET Data is exchanged within bulletins. In order to know which report is exchanged within which bulletin, the DMG implemented the EUR OPMET Data Update Procedure.

   1.3. The EUR OPMET Data Update Procedure is to be applied for the registration of all TAC and IWXXM OPMET data disseminated in the EUR Region, including Inter-Regional OPMET data.

   1.4. Registering OPMET data will not just update DMG-internal working tables but will also trigger a so called METNO-message, aiming to inform all centres in the EUR-Region about any change in regard to exchanged OPMET data.

2. Supported OPMET Data Types

   2.1. The following list displays the data types supported by the EUR OPMET Data Update Procedure:

Type	T_1T_2-TAC	T_1T_2-IWXXM
Scheduled (Routine) Bulletins		
METAR	SA	LA
SPECI	SP	LP
"Short" TAF	FC	LC
"Long" TAF	FT	LT
GAMET	FA	*
Unscheduled (Non-Routine) Bulletins		
Tropical Cyclone Advisory	FK	LK
Volcanic Ash Advisory	FV	LU
AIRMET	WA	LW
Aviation Tropical Cyclone Warning	WC	LY
Aviation General Warning	WS	LS
Aviation Volcanic Ash Warning	WV	LV
Special AIREP	UA	*
Space Weather Advisory	FN	LN

   *) No IWXXM-schema defined.

   2.2. According to ICAO Annex 3, Amendments 76 till 78 as from November 2016 the international exchange of XML-formatted METAR/SPECI, TAF, AIRMET and SIGMET is recommended.

   2.3. ICAO requires the XML-format to be disseminated in parallel to the TAC-data for all OPMET data from November 2020 until November 2030 (foreseen TAC exchange of data cessation).

3. General Rules

   3.1. Every alteration of registered TAC OPMET Data by default must provoke the same action in regard to the IWXXM OPMET Data equivalent, if such already has been registered. If only a change for one of the two message types is announced by a NOC, the missing one will automatically be added to the METNO-message by the DMG focal point. This means that e.g.

a report is removed from a METAR collective bulletin SAXX31 XXXX, the same is expected to be the case for the IWXXM equivalent LAXX31 XXXX.

3.2. When adding / introducing new IWXXM OPMET Data by means of the EUR OPMET Data Update Procedure, the equivalent TAC OPMET Data by default will be registered automatically for the parallel distribution of (TAC and IWXXM) OPMET Data.

3.3. The registration of added / new TAC OPMET Data does not imply the automatic introduction of equivalent IWXXM OPMET Data. This will change from November 2020 onwards (see B.2.3) when the registration of added / new TAC OPMET Data will automatically imply the introduction of its equivalent IWXXM OPMET Data.

3.4. When removing / deleting IWXXM OPMET Data by means of the EUR OPMET Data Update Procedure, by default the equivalent TAC OPMET Data will be removed / deleted also. If ever the TAC OPMET Data has to be continued, they need to be re-introduced specifically to be registered in compliance with the Update Procedure.

3.5. The discontinuation of TAC OPMET Data by removing / deleting from the EUR OPMET Data register by default discontinuous the IWXXM equivalent OPMET Data from the list of registered OPMET Data for EUR distribution.

4. The AIRAC-cycle

4.1. The whole procedure is following the ICAO AIRAC (**A**eronautical **I**nformation **R**egulation **A**nd **C**ontrol) cycle. The AIRAC-cycle is a "series of common effective dates at intervals of 28 days" (ICAO ANNEX 15, Chapter 6).

4.2. A list of AIRAC Dates can be found in B.10-Attachment 3 to this procedure.

5. The DMG Update Procedure in detail

5.1. A graphical presentation (flow diagram) of the procedure can be found in B.9-Attachment 1 of this document.

5.2. Modification requests to the production of national OPMET-data shall be reported by the NOC (National OPMET Centre) to the ROC. The ROC then forwards the requests to the DMG FP (Focal Point) for publication, DMG evaluation and DMG FP processing accepted changes.

5.3. Modification requests for an upcoming AIRAC date have to be sent at the latest by the preceding AIRAC date. This will guarantee that all subsequent steps can be performed in time. For planning purposes modification requests should be announced well in advance (between 30 and 60 days before the AIRAC date) to allow full assessment by the DMG and to confirm to the originator that all changes will be made at the required date.

5.4. The DMG FP will summarize all requests and present those via email to the DMG members at the latest 7 days after the preceding AIRAC date.

5.5. The DMG members will review the requests and shall communicate any comments to the FP at the latest 14 days after the preceding (*thus 14 days before the upcoming*) AIRAC date. Nil comments shall be considered as a positive response.

5.6. At 21 days after the preceding (*7 days before the upcoming*) AIRAC date, the FP shall announce the list of accepted amendments to the ICAO Regional Office, the NOCs and SADIS by means of a standard GTS formatted METNO message for routine meteorological information sent via AFS.

5.7. The involved NOCs in turn shall notify users in their State about their requested modifications.

5.8. In addition, all DMG members and contacts will receive a confirmation by email. Subscription requests to the AIRAC EUR OPMET Data Update Procedure METNO bulletins can be submitted to the DMG via the METG or directly by utilizing the contact form provided on the EUR DMG Website.

5.9. The modifications shall be implemented by all affected centres on AIRAC date, at 11:00 UTC.

5.10. The AIRAC OPMET data updates shall be applied by:

– the Regional OPMET Centres (ROCs) for routing the current OPMET data in accordance with the EUR RODEX schema.
– The DMG Focal Point for the introduction of the AIRAC changes in the OPMET inventories. The OPMET inventories are the source for generating OPMET catalogues representing OPMET data distributed via AFS within the EUR Region known from the EUR OPMET Data Update Procedure and also reflecting results from the DMG OPMET data monitoring. The OPMET catalogues can be generated in the context of the DMG Terms of References and on authorized request via the ICAO EUR/EASPG/METG/DMG parental organisations.

5.11. In order to avoid difficulties in processing EUR OPMET Data modifications during major holidays, the DMG can decide to skip a particular AIRAC Cycle occurring in these periods.

5.12. OPMET Data modifications to the distribution of beyond the AIRAC cycle can be organised to the convenience of EUR NOCs/ROCs and Non-EUR IROGs. In practice, planned changes to the list of "TTAAii CCCC" bulletin headers registered to be routed by the ROCs can be notified by an EXTRA METNO message in between the AIRAC dates. Changes to the contents of METNO registered OPMET bulletins can be included in any next following AIRAC/EXTRA METNO message.

6. Format and Content of the METNO-message

6.1. The METNO Syntax

6.1.1. The syntax of a METNO statement is presented in a compact form in B.11 – Attachment 3. It also includes the list of AFS addressees actually used as well as examples for the various OPMET data update METNO statements.

6.2. The METNO Header

6.2.1. The header of the METNO bulletin is: **NOA$_1$A$_2$99 CCCC YYGGgg**, where
- A$_1$A$_2$ is a general area/country designator of the issuing centre (currently BX)
- CCCC is the ICAO location indicator of the DMG FP Centre (currently EBBR)

6.3. The METNO Statements

6.3.1. The METNO statements for registration and updating of OPMET / IWXXM data are:
- ADDRPT / RMVRPT: for adding / removing Routine OPMET data in an already registered bulletin.
- NEWBUL / DELBUL: for registering a new / unregistering an expiring (Non-)Routine OPMET bulletin and its contained data.

6.3.2. ADDRPT

6.3.2.1.   This statement is used when a new location indicator is added to an already METNO registered bulletin. It can be used for inserting METAR- or TAF-reports in an existing and registered bulletin.

6.3.2.2.   Adding TAC-formatted METARs/TAFs to a registered bulletin does not automatically register the IWXXM equivalent data. TAC data can exist without a IWXXM equivalent (mind paragraph B.2.3).

6.3.2.3.   Adding IWXXM METARs/TAFs to a registered bulletin will by default result in adding the equivalent TAC METARs/TAFs for their parallel distribution. There can be no IWXXM data without any equivalent TAC-formatted version of the data.

6.3.3. RMVRPT

6.3.3.1.   This statement is used for METARs/TAFs planned to be removed from an already METNO registered bulletin. Removed reports possibly can be registered for allocation in other existing or in new to be registered bulletins.

6.3.3.2.   Removing TAC-formatted METARs/TAFs from a METNO registered bulletin will also remove the equivalent IWXXM data from the OPMET data register in case it has been registered earlier. There is no IWXXM data without equivalent TAC-formatted data.

6.3.3.3.   Removing IWXXM METARs/TAFs will by default result in removing equivalent TAC METARs/TAFs from the OPMET data register. When the TAC data need to be continued, it has to be re-registered explicitly, using ADDRPT.

6.3.4. NEWBUL

6.3.4.1.   This statement is used for the registration of a new bulletin. It can be used for all supported data types (see list under paragraph B.2.1).

6.3.4.2.   The registration of a new IWXXM bulletin by default implies the introduction of the TAC equivalent.

6.3.4.3.   The registration of a new TAC OPMET bulletin does not automatically trigger the registration of an IWXXM bulletin equivalent.

6.3.5. DELBUL

6.3.5.1.   This statement is used for the deletion of a METNO registered bulletin. It can be used for all supported data types (see list under paragraph B.2.1).

6.3.5.2.   The deletion of a registered IWXXM bulletin implies automatically the deletion of the TAC equivalent. TAC equivalents which are meant to be continued have to be re-introduced explicitly by applying NEWBUL.

6.3.5.3.   Deletion of TAC OPMET bulletin by default also deletes the IWXXM equivalent.

6.4. The EUR OPMET Data Update Procedure AIRAC METNO bulletin is distributed via AFS.

6.5. On AIRAC-date -7 days, the DMG FP sends the METNO bulletin via AMHS as IA-5 formatted IPM Text Body Part to:
- the EUR ROCs and IROGs for further distribution within its AoR
- the U.K. SADIS Provider for dissemination on SADIS FTP

And via eMail to:
- ICAO Paris
- DMG Members
- The centres that submitted the OPMET changes
- Other interested organisations on explicit request via the DMG.

6.6. The DMG FP maintains a list of registered, as well as a list of known but not registered OPMET data resulting from all times AIRAC METNOs. This list can be found on the DMG-Website (MetnoOverviewAll.docx).

7. EUR RODB Interface Control Document Amendments

7.1. General Information

7.1.1. The DMG FP shall proclaim changes to the operational status of the RODB and to the standardized OPMET database access procedure (TAC & IWXXM) via AFS by a METNO notification message. RODB status changes and ICD access procedure amendments will be announced following the EUR OPMET Data Update Procedure AIRAC cycle or as soon as necessary. The DMG Members receive a confirmation by e-mail.

7.1.2. The syntax of this special METNO statement for ICD Amendments is presented in a compact form in B.12– Attachment 6.

7.1.3. The METNO bulletin is distributed:
via AMHS as IA-5 formatted IPM Text Body Part to:
- the EUR ROCs and IROGs for further distribution within its AoR
- the U.K. SADIS Provider for dissemination on SADIS FTP

And via email to:
- ICAO Paris
- DMG Members

7.1.4. The actual version of the EUR OPMET Database Interface Control Document (ICD) can be found as EUR DOC 018, Appendix A.

8. Regional and Inter-Regional OPMET Data Requests

8.1. General

8.1.1. Additional OPMET data are data for which no requirements have been specified in the current ICAO Doc 7754 eANP Volume II Table MET II-2 (formerly known as SADIS User Guide (SUG) Annex 1 and the FASID Tables) yet. This data is also known as agreed non-AOP.

8.1.2. To request additional OPMET data the application form, presented in B.13Attachment 5, should be used.

8.1.3. Slightly different procedures have to be used for requesting data from the ICAO EUR Region and Inter-Regional data from Non-EUR Regions. This is reflected in the different flow charts which can be found in Attachment 6 (EUR Region) and Attachment 7 (non-EUR Region).

8.1.4. This procedure can be applied to request all OPMET data types (routine and non-routine) for aerodromes as well as FIRs/UIRs.

8.1.5. The Regional OPMET Centre collects the requirements from its AoR and submits it to the DMG Focal Point by using the dedicated form.

8.1.6. For EUR OPMET data, the DMG Focal Point submits the form to the EUR ICAO Office and to the Regional OPMET Centre responsible for the distribution of the requested OPMET data (from its AoR).

8.1.7. For non-EUR OPMET data, the DMG Focal Point passes the form further on to the EUR ICAO Office, which will in turn send it to the relevant Regional ICAO Office of the State concerned.

8.1.8. Following the procedures to request EUR as well as Non-EUR OPMET data are explained.

8.2. Requesting additional EUR-Region OPMET data

8.2.1. The procedure for requesting additional European OPMET data (not in the eANP Volume II MET II-2 Table) is illustrated by an example. It is assumed that Norrkoping (ESSP) applies for METARs from Koksijde (EBFN). EBFN is a Belgian Air Force base for mixed military and civil Search and Rescue.

8.2.2. ESSP (Norrkoping) inquires for the availability of EBFN METARs at Norrkoping (SMHI), being the Swedish National Aviation MET-Authority.

8.2.3. EBFN METARs are not specified in the eANP Volume II MET II-2 Table. Therefore, SMHI forwards the request to the EGGY, being the responsible ROC for distributing all OPMET data to Sweden.

8.2.4. ROC EGGY is filling in the following fields of the application form:
  − Requesting User;
  − Part 1 (containing details on the requested data)

8.2.5. After that ROC EGGY will send the application form to the DMG Focal Point. The Focal Point will fill in the following fields of the application form:
  − Application Reference Number

－ Part 2 (containing details about addressing of new data if request is granted. In this example Belgium OPMET shall be sent to ROC EGGY (via AMHS XX/ICAO/EG/AFTN/EGZZWPXX) for further routing to Sweden)

8.2.6. After completing the above tasks, the DMG FP sends the application form to the ICAO Office in Paris. The ICAO Office will forward it as an official request to the national Aviation MET-Authority responsible for the requested EBFN Koksijde data. In this example, Paris will forward the application form to the Belgian Aviation MET-Authority.

8.2.7. The Belgian Aviation MET-Authority deliberates over the ESSP request for EBFN METAR data and enters its decision on the application form by filling in:

－ Part 3 (information about granting or not accepting the request)

8.2.8. After the application form has been completed, it will be returned to the ICAO Office Paris.

8.2.9. If the request has been accepted the completed application form will be sent to:
1. ICAO Montreal, for inclusion of the new OPMET specifications to the SUG Annex 1 (for AOP aerodrome OPMET requirements only)
2. DMG Focal Point to introduce the new EUR data through the OPMET Update Cycle in a bulletin for AOP or Non-AOP aerodrome data as appropriate to the requested data.
3. The DMG Focal Point will inform the responsible ROC Centre (EGGY in this example) as well as the national Aviation MET-Authority that requested the additional EUR OPMET data (SMHI in this example)
4. The national Aviation MET-Authority will inform the user (ESSP in the example)

8.2.10. If the request concerns Non-AOP aerodrome OPMET data or has been declined, the flow of information will be the same as if granted. There is just one difference, that ICAO Montreal will not get any information.

8.3. Requesting additional Non-EUR OPMET Data

8.3.1. The procedure for requesting additional Non-European OPMET data is illustrated by an example. It is assumed that the national airline of Poland (LOT) is stating a request for the provision of METAR and FT messages from Campo Grande (SBCG) in Brazil.

8.3.2. The User (LOT) states the request to the national Aviation MET-Authority (or the national Meteorological Service, when applicable) as published in the Polish AIP.

8.3.3. The national Aviation MET-Authority will forward this request to the ROC Centre Vienna (LOWM), which is responsible for Poland.

8.3.4. At the ROC Centre the following fields of the APPLICATION FORM are filled in:
－ Requesting User
－ Part 1 (containing details on the requested data)

8.3.5. After that, ROC LOWM will send the application form to the DMG Focal Point. The Focal Point will fill in the following fields of the application form:
－ Application Reference Number
－ Part 2 (containing details about addressing of new data if request is granted. In this example the data from SAM-Region should be sent to the I/R Gateway Centre in London. Therefore "XX/ICAO/EG/AFTN/EGZZM..." will be ticked and the address will be completed by adding "SAM")

8.3.6. Now the APPLICATION FORM will be sent to the ICAO Office in Paris and to the relevant I/R Gateway Centre in EUR. Paris will forward it as an official request to the Regional ICAO Office in Peru.

8.3.7. The Regional ICAO Office in Peru has to transmit the request to the responsible organisation in Brazil, asking them to provide the information asked for in part 3 of the application form. The gathered information has to be filled out either by the Regional ICAO Office in Peru or the addressed centre.

8.3.8. After the application form has been filled out completely, it will be returned to the ICAO Office Paris.

8.3.9. If the request has been accepted and SBCG is an AOP-aerodrome or is planned to become one, the information will be forwarded to:

8.3.10. ICAO, for inclusion to the eANP Volume II Table Met II-2 of OPMET Data Requirements, SAM Region.
1. DMG Focal Point to introduce the new data in EUR through the OPMET Update Cycle
2. Via the DMG Focal Point to the ROC Centre that has relayed the request and to the I/R gateway centres in EUR
3. The ROC Centre will inform the national Aviation MET-Authority in Poland which in turn will inform user (LOT).

8.3.11. In case SBCG is a non-AOP-Aerodrome ICAO will not be informed.

8.3.12. If the request has not been accepted the information will go to:
1. DMG Focal Point
2. Via the DMG Focal Point to the ROC Centre that has relayed the request and to the I/R Gateway Centres in EUR
3. The ROC centre will inform the national Aviation MET-Authority in Poland which in turn will inform user (LOT).

9. ATTACHMENT 1 - EUR OPMET Data Update Procedure Flow Diagram
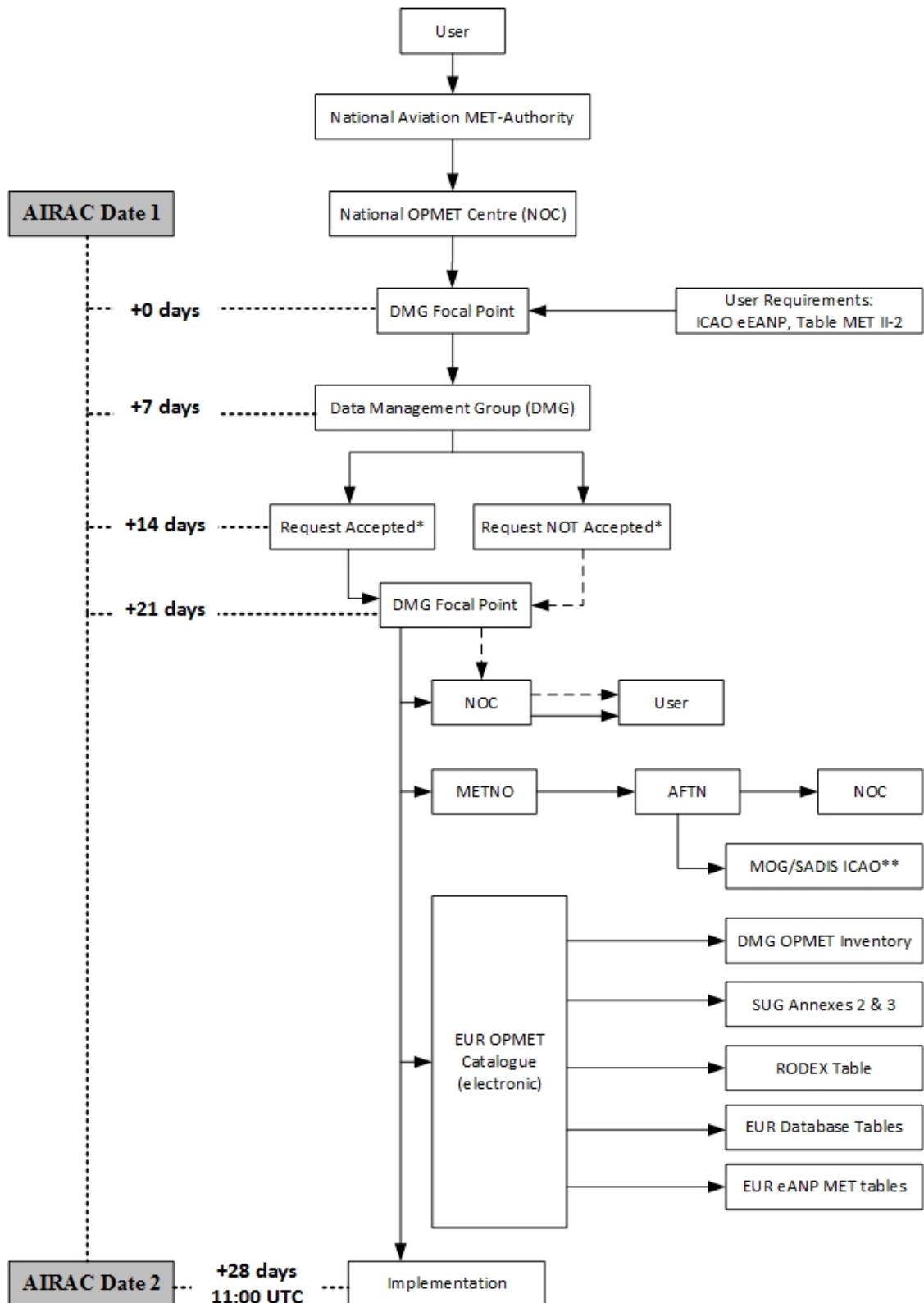
* "Request Accepted" and "Request Not Accepted" refer to AOP aerodromes listed in the EUR ICAO eANP Table MET II-2.
** Via the SADIS Provider State on behalf of the MOG/SADIS.

10. ATTACHMENT 2 – AIRAC Dates

Schedule of AIRAC effective dates, 2023 – 2026

2023	2024	2025	2026
26. January	25. January	23. January	22. January
23. February	22. February	20. February	19. February
23. March	21. March	20. March	19. March
20. April	18. April	17. April	16. April
18. May	16. May	15. May	14. May
15. June	13. June	12. June	11. June
13. July	11. July	10. July	9. July
10. August	8. August	7. August	6. August
7. September	5. September	4. September	3. September
5. October	3. October	2. October	1. October
2. November	31. October	30. October	29. October
30. November	28. November	27. November	26. November
28. December	26. December	25. December	24. December

Greyed dates: No EUR OPMET Catalogue Updates.

11. ATTACHMENT 3 – Syntax of the METNO Message with Example

Item	Example (fictitious): AFS
AMHS Priority	`Normal`

AMHS Addressees of ROC Centres+
ICAO European Office
	`C=XX/A=ICAO/P=EG/O=AFTN/OU1=EGZZWPXX`
	`C=XX/A=ICAO/P=FRANCE/O=LFLF/OU1=LFLF/C`
	`N=LFLFYBYX`
	`C=XX/A=ICAO/P=AUSTRIA/O=LOVV/OU1=LOWM/`
	`CN=LOWMMMXX`
	`C=XX/A=ICAO/P=RUSSIA/O=UU/OU1=UUUJYZYA`

AMHS Origin	`C=XX/A=ICAO/P=BELGIUM/O=EBBR/OU1=EBBB/` `CN=EBBBYFYX`
Abbreviated header	`NOBX99 EBBR YYGGgg`
Message Identifier (METNO)+ Product Description (EUR OPMET)+ AIRAC Date (YYMMDD)	`METNO EUR OPMET YYMMDD`
New Bulletin: **NEWBUL TTAAii CCCC Locind**(s), or **NEWBUL TTAAii CCCC FIR/UIR** for Non-Routine bulletin where applicable	`NEWBUL FCMJ31 LWSK LWSK LWOH` `NEWBUL WVCZ31 LKPR LKAA`
Delete Bulletin: **DELBUL TTAAii CCCC,** or **DELBUL TTAAii CCCC FIR/UIR** for Non-Routine bulletin where applicable	`DELBUL FTOS31 LOWM` `DELBUL WSRA31 ALAK UATT`
Add Report to existing Bulletin: **ADDRPT TTAAii CCCC Locind**(s)	`ADDRPT FCTU33 LTAA LTAJ LTCF LTCI LTFH`
Remove Report from existing Bulletin: **RMVRPT TTAAii CCCC Locind**(s)	`RMVRPT FCSN31 ESWI ESOW ESSA ESSB ESSP` `ESSV`
End of METNO	`END`

```
GG EBZZYBYX EGZZWPXX LFLFYBYX LOWMMMXX LFPSYAYU
121420 EBBBYFYX
NOBX99 EBBR 121420
METNO EUR OPMET 060119
NEWBUL FCMJ31 LWSK LWSK LWOH
NEWBUL WVCZ31 LKPR LKAA
DELBUL FTOS31 LOWM
DELBUL WSRA31 ALAK UATT
ADDRPT FCTU33 LTAA LTAJ LTCF LTCI LTFH
RMVRPT FCSN31 ESWI ESOW ESSA ESSB ESSP ESSV
END
```

12. ATTACHMENT 4 – Syntax of the EUR RODB METNO bulletins with Example

Item	Example (fictitious): AFS - AFTN
Priority	GG
Addressees of ROC Centres + ICAO European Office	EBZZYBYX EGZZWPXX LFPWYMEU LOWMMMXX LFPSYAYU UUUJYZYA
Origin	ddhhmm EBBBYFYX
Abbreviated header	NOBX98 EBBR YYGGgg
Message Identifier (METNO)+ Product Description (EUR OPMET DB)+ AIRAC Date (YYMMDD)	METNO EUR OPMET DB YYMMDD
Reference number [1]	ICD AMD YYYY/xxx
AFTN Address of the EBBR DB Amendment or NONE	EBBRYZYX: THE BRUSSELS EUR OPMET DATABASE REPORTS THAT ...
AFTN Address of the LFPW DB Amendment or NONE	LFPWYZYX: THE TOULOUSE EUR OPMET DATABASE REPORTS THAT ...
AFTN Address of the LOWM DB Amendment or NONE	LOWMYZYX: THE VIENNA EUR OPMET DATABASE REPORTS THAT ...
End of METNO	END

(*1) **YYYY** = 4 digits year and **xxx** = sequence number of the amendments of the year **YYYY**.

12.1.   The message always includes all three EUR OPMET Databases. If there are not any changes to be mentioned, it shall be indicated by "**NONE"** for the concerned Database, as shown in the following example.

```
GG EBZZYBYX EGZZWPXX LFLFYBYX LIIBYMYI LOWMMMXX LFPSYAYU
131100 EBBBYFYX
NOBX98 EBBR 131100
METNO EUR OPMET DB 030220
ICD AMD 2003/001
EBBRYZYX:
THE BRUSSELS EUR OPMET DATABASE REPORTS THAT THE FORMAT OF THEIR
DATABASE REPLIES WILL BE MODIFIED ON AIRAC DATE 20/02/2003.

IN ACCORDANCE WITH THE WMO/ICAO CODE CHANGES OF NOVEMBER 2001,
THE METAR/TAF REPLIES WILL, FROM THAT DATE ONWARDS, ALWAYS
CONTAIN THE KEYWORDS METAR, TAF OR TAF AMD FOR EVERY STATION IN
THE REPLY.

LFPWYZYX:
NONE

LOWMYZYX:
NONE
END
```

13. ATTACHMENT 5 – Form for requesting additional OPMET Data

13.1.   Explanations to the application form

13.1.1. **Requesting User:** Company or National OPMET Centre (NOC) that is requesting the information.

13.1.2. **Application Reference Number:** EUR OPMET Req A_1A_2–YYYY/MM/DD–nnn (to be filled in by the DMG focal point)

  − A1A2: WMO Area designator of the applying NOC Centre, for example "GR" for Greece;
  − YYYY/MM/DD: Application date;
  − nnn: Number of requests at that specific day.

13.1.3. Example: "EUR OPMET Req GR – 2007/01/30 – 001".

13.1.4. **Part 1:** part to be filled out by the ROC Centre based on the request received by the NOC

13.1.5. **Part 2:** the DMG FP specifies the most appropriate AFTN or AMHS Address of the ROC or the I/R Gateway Centre for the EUR distribution of the OPMET Data applied for.

13.1.6. **Part 3:** part to be filled in by the relevant Regional ICAO Office, specifying:

  13.1.6.1.   The Provider State and Region;

  13.1.6.2.   On acceptance:
    − The Bulletin Header used for the EUR distribution: TTAAii CCCC;
    − The nearest following AIRAC Date by which the data will be provided via the ROC or IROG: DD/MM/YYYY;
    − All useful information on the availability and the regularity of the required OPMET Data;

  13.1.6.3.   If the request is declined:
    − Explanation for rejecting the EUR distribution of the OPMET Data applied for.

13.1.7. **Date:** Deliberation date, DD/MM/YYYY.

13.1.8. **Name:** Name of the person endorsing the decision.

REQUEST FOR OPMET DATA FROM AERODROMES OR FIRs/UIRs

Requesting User: ....

European and North Atlantic

Application Reference Number: EUR OPMET Req A_1A_2 – YYYY/MM/DD – nnn

Part 1 To be completed by: applying ROC Centre **(Mark requested data type(s))**	Requested ICAO-Location Indicator(s): .... Name(s) of requested aerodrome / FIR, UIR or CTA: .... Requested Report: TAC or (TAC and IWXXM) formatted OPMET data TAC: ☐: SA / SP ☐: FC ☐: FT(24 or 30) ☐: WS/WV/WC and IWXXM: ☐: LA / LP ☐: LC ☐: LT(24 or 30) ☐: LS/LV/LY Other: .... Reasons: ....
Part 2 To be completed by: **DMG Focal Point**	**FOR Non-EUR OPMET Data**
Select IROG AFTN Address	AFTN – Destination Address to the European I/R OPMET Gateway Centre: (The AFTN Address to be used by the originating Compiling Centre to make available the requested OPMET data.)
	Choose the IROG AFTN-AddressChoose the IROG AFTN-AddressChoose the IROG AFTN-Address
Select IROG AMHS Address	AMHS – Destination Address to the I/R OPMET Gateway Centre: (The AMHS Address to be used by the originating Compiling Centre in order to make available the requested OPMET data.)
	Choose the IROG AMHS-AddressChoose the IROG AMHS-AddressChoose the IROG AMHS-Address
	FOR EUR OPMET Data
(Select ROC AFTN / AMHS Address)	AFTN/AMHS – Destination Address of the Regional OPMET Centre: (The AFTN/AMHS Address of the Responsible ROC Centre to be used by the originating Compiling Centre for the European distribution of the requested OPMET data.)
	Choose the ROC AFTN/AMHS-AddressChoose the ROC AFTN/AMHS-AddressChoose the ROC AFTN/AMHS-Address
Part 3 To be completed by: **Regional ICAO Office / National Aviation MET-Authority / National OPMET Centre / Responsible ROC Centre of requested OPMET data**	Regional ICAO Office: (ICAO Region/State/Location Indicator) Region of Provider State : - For the Provider State: Organization:.. 　　　　　　　　Name:………………………………Phone:……………………… 　　　　　　　　………… 　　　　　　　　E-Mail:……………………………... a)　The request is accepted: 　　Bulletin Header used (TTAAii CCCC): .... 　　Start AIRAC Date: (DD/MM/YYYY) 　　(Any useful information on the requested data) ....

	b) The request is declined: (Because)
	→ Please return to ICAO Office PARIS

Date: (DD/MM/YYYY)   **Name:**

14. ATTACHMENT 6 – Flow chart for requests of EUR OPMET Data
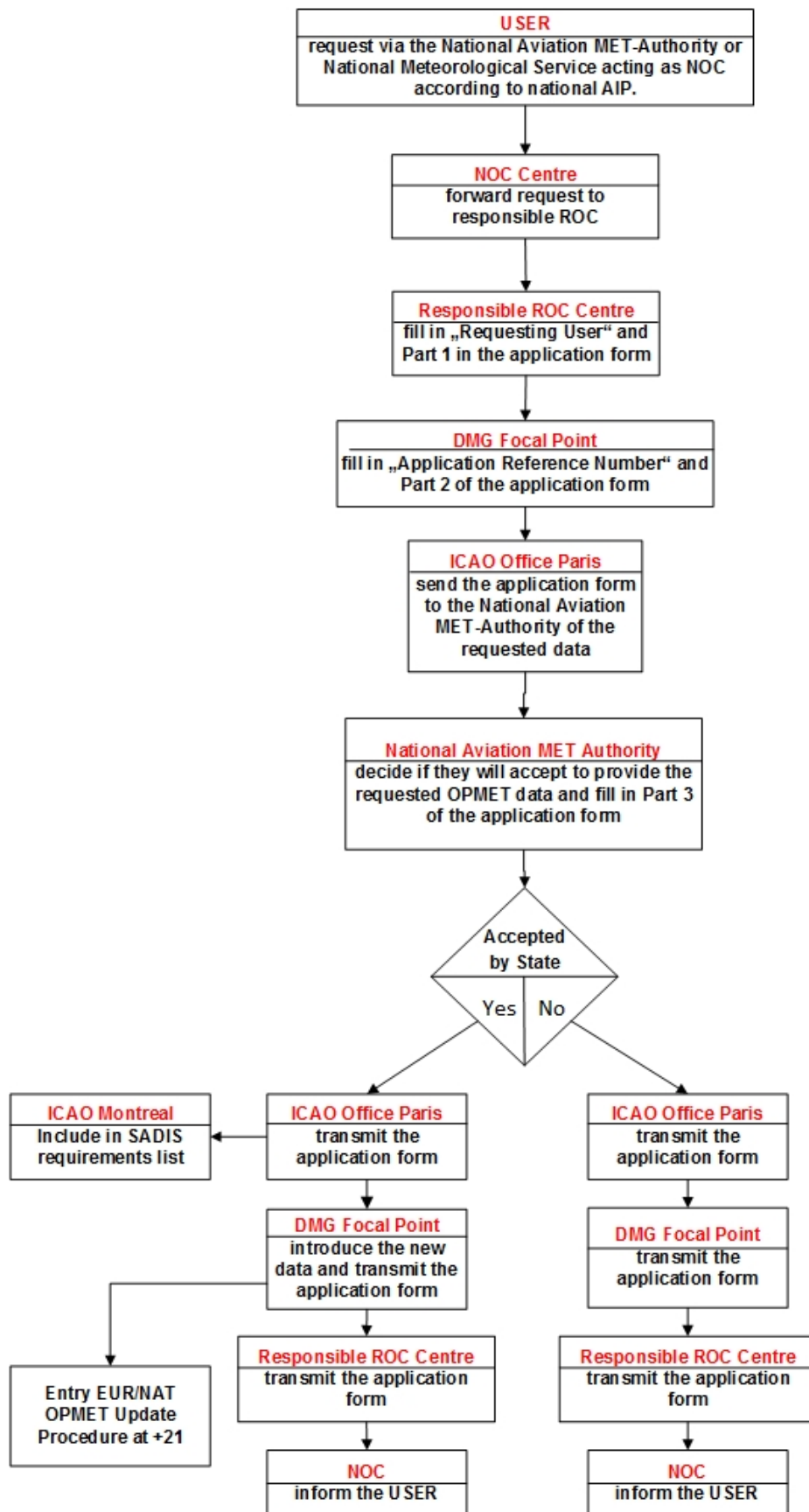
15. ATTACHMENT 7 – Flow chart for requests of Non-EUR OPMET Data

```
┌─────────────────────────────────────┐
│              USER                    │
│ request via the National Aviation    │
│ MET-Authority or National            │
│ Meteorological Service acting as NOC  │
│ according to national AIP.           │
└─────────────────────────────────────┘
                 │
┌─────────────────────────────────────┐
│           NOC Centre                 │
│      forward request to              │
│        responsible ROC               │
└─────────────────────────────────────┘
                 │
┌─────────────────────────────────────┐
│      Responsible ROC Centre          │
│   fill in „Requesting User" and       │
│   Part 1 in the application form     │
└─────────────────────────────────────┘
                 │
┌─────────────────────────────┐     ┌──────────────────────────┐
│       DMG Focal Point        │────▶│       I/R-Gateway        │
│ fill in „Application          │     │   the concerned I/R-     │
│ Reference Number" and         │     │   Gateway will be         │
│ Part 2 of the application form│     │   informed about the      │
└─────────────────────────────┘     │        request           │
                 │                   └──────────────────────────┘
┌─────────────────────────────┐
│       ICAO Office Paris       │
│    send an official letter to │
│   concerened regional office  │
└─────────────────────────────┘
                 │
┌─────────────────────────────┐
│      Regional ICAO Office     │
│  Send the request to the      │
│  National Aviation MET-       │
│ Authority of the requested data│
└─────────────────────────────┘
                 │
┌─────────────────────────────────┐
│  National Aviation MET Authority │
│ decide if they will accept to    │
│ provide the requested OPMET data │
│ and fill in Part 3 of the        │
│ application form                 │
└─────────────────────────────────┘
                 │
             ◇ Accepted
               by State
          Yes ◇ No
```

Accepted by State — Yes / No

Yes branch:

ICAO Montreal — Include in SADIS requirements list

ICAO Office Paris — transmit the application form

I/R-Gateway — the concerned I/R-Gateway will be informed about the result

DMG Focal Point — introduce the new data and transmit the application form

Entry EUR/NAT OPMET Update Procedure at +21

Responsible ROC Centre — transmit the application form

NOC — inform the USER

No branch:

ICAO Office Paris — transmit the application form

DMG Focal Point — transmit the application form

I/R-Gateway — the concerned I/R-Gateway will be informed about the result

Responsible ROC Centre — transmit the application form

NOC — inform the USER

APPENDIX C - EUR OPMET Data Monitoring Procedure

1. Introduction

   1.1. The DMG established the OPMET Monitoring Procedure for the European AFS network (Aeronautical Fixed Service: AFS) and the SADIS (**S**ecure **A**viation **D**ata **I**nformation **S**ervice).

   1.2. The OPMET Data Monitoring Procedure regulates the DMG EUR monitoring exercises for TAC (Traditional Alphanumeric Code Form)-formatted data:
      - Scheduling of co-ordinated monitoring exercises and periodicity
      - Format of OPMET data monitoring results;
      - Collection of OPMET data monitoring results;
      - Processing of OPMET data monitoring results;
      - Reporting of co-ordinated OPMET data monitoring results.

   1.3. The DMG recognizes the need for IWXXM (XML formatted) data monitoring. The development of tools for IWXXM data monitoring are subject to common specifications still to be defined.

   1.4. The procedure organises joined monitoring of the dissemination of TAC-formatted OPMET data over AFS (AFTN/AMHS) and SADIS. Whenever possible WIFS is also included.

   1.5. The following OPMET data will be monitored:
      - Routine OPMET data: TT = SA (SP), FA, FC and FT bulletins on report level, including NIL reports;
      - Non-Routine OPMET data: TT = FK, FV, WA, WC, WS, WV and UA bulletins.

   1.6. The key subjects for the monitoring exercises are:
      - The compliance to the ICAO eANP Vol. II Table Met II-2 (formerly known as FASID MET2A) requirements and
      - The OPMET data distribution in the EUR Region and also to the other Regions.
      - The OPMET data performance indices: Availability and Timeliness, reported in the ICAO eANP Vol. III Tables MET 3-5, MET 3-6 and MET 3-7.

   1.7. Deficiencies to the OPMET data availability and their distribution may lead to the issuance of a Problem Ticket in the Problem Handling Procedure application and to be handled by the DMG.

   1.8. The DMG performs one EUR OPMET monitoring exercise per year.

   1.9. The Regional OPMET Databases (the RODBs are: EBBR, LFPW and LOWM) have synchronized their monitoring of OPMET data to the terms and periods of the DMG to enable the results to be compared for optimisation of actions where necessary.

2. DMG EUR OPMET Monitoring Exercise Participation

   2.1. The Regional OPMET Centres (ROCs) as well as the InterRegional OPMET Gateways (IROGs) are required to participate to the DMG monitoring exercises in order to enable any remedial actions in terms of the availability of ICAO eANP Vol II Table Met II-2 required OPMET data and their efficient regional and inter-regional distribution.

2.2. National OPMET Centres (NOCs) may participate to the scheduled DMG OPMET monitoring exercises on a voluntary basis.

2.3. The EUR RODBs not hosted by a ROC are expected to join the DMG periodical OPMET data monitoring exercises.

2.4. The SADIS OPMET programme monitoring is performed by London (EGGY) for the SADIS Provider and by Brussels (EBBR) and Bucharest (LROM) as SADIS Users.

2.5. NOCs / MWOs participation to the periodical DMG (Test) warning monitoring (SIGMET & ARS) are an ICAO EUR requirement. Details can be found in sections C.8 and C.9.

3. DMG EUR TAC OPMET Monitoring Exercises

   3.1. General

      3.1.1. The DMG co-ordinated OPMET monitoring exercises are subject to the ICAO International eANP Vol. II Table Met II-2 updates and to the scheduling of parental/related ICAO Working Group meetings.

      3.1.2. Apart from the fixed EUR OPMET monitoring periods, the DMG is able to comply with special requests for flexible extra monitoring to the interest of exceptional events, such as for example Volcanic Ash SIGMET (TT = WV) tests.

   3.2. Routine OPMET data monitoring:
      - 3 days, first day starting at 00:00 UTC until last day 24:00 UTC.
      - For generating OPMET Performance Indices, which are in detail explained in Appendix F.

   3.3. Non-Routine OPMET data monitoring:
      - 14 days, starting the first day at 00:00 UTC till 24:00 UTC the last day.

      3.3.1. WS-(Test) SIGMET and ARS-(Test; with ii=60-69) bulletins monitoring:
      - 1 day, between 08:00 and 12:00 UTC

      3.3.2. WV-(Test) SIGMET, ARS-(Test; with ii=70-79) and FV-(Test) Volcanic Ash Advisory bulletins monitoring:
      - 1 day, between 08:00 and 12:00 UTC

      3.3.3. WC-(Test) SIGMET and FK-(Test) Tropical Cyclone Advisory bulletins monitoring:
      - 1 day, between 05:00 and 13:00 UTC

      3.3.4. FN-(Test) Space Weather Advisory bulletins monitoring:
      - 1 day between 03:00 and 17:00 UTC

4. Announcement of DMG EUR Monitoring Exercises

   4.1. The scheduled DMG OPMET monitoring exercises are published and updated in the present EUR OPMET Monitoring Procedure document. Deeming monitoring periods are announced to the NOCs via the EUR OPMET Data Update Procedure emails.

4.2. MWOs receive an invitation to participate to the EUR Warning Monitoring ((Test) SIGMET and (Test) ARS bulletin transmission) and/or monitoring together with an information on the format of the monitoring results that should be used for. The invitation is distributed via e-mail by the DMG Warning Messages Monitoring Focal Point.

5. OPMET Monitoring Tools

5.1. Monitoring Tool for TAC-formatted OPMET Data

5.1.1. Centres can use local available monitoring tools. In order to enable comparison of monitoring results from different centres, the DMG defined the requirements that an AFS monitoring tool needs to comply with in the Appendix D - EUR OPMET Data Monitoring Tool Specification.

5.1.2. The EUR OPMET Data Monitoring Tool Specification standardized three levels or modes for monitoring, differentiated by incremental details to be registered in the results:

- WMO Monitoring;
- Transmission Network Monitoring;
- Real Time Monitoring.

5.1.3. The details or fields obtained and registered in the monitoring results are subject to the minimum validation rules as imposed by the specifications.

5.2. Monitoring Tool for IWXXM OPMET Data

5.2.1. The IWXXM OPMET data are emerging. IWXXM OPMET data monitoring is required. However, there have not been made any specifications for the standardisation of an IWXXM OPMET data monitoring tool as yet.

6. EUR OPMET Monitoring Results

6.1. Routine and Non-Routine OPMET data monitoring

6.1.1. The DMG Focal Point collects the NOCs' results of the scheduled OPMET monitoring exercises. NOCs that participated to a DMG monitoring exercise are requested to send their results to the DMG FP (Contact details to be found on the ICAO Portal).

6.1.2. The DMG FP can only process NOC OPMET monitoring result files in compliance with the standardized output formats as implemented in the EUR OPMET Data Monitoring Tool Specification.

6.1.3. Considering the sizes of the monitoring output files, the resulting files shall be compressed to enable exchange via email whenever possible. For large volumes of files, exchange via Internet FTP shall be considered. It is recommended that tools register monitored OPMET data in result files per day or in files shifting every 12 hours (AM/PM).

6.1.4. Peripheral MWOs that participated to the EUR OPMET monitoring exercises shall forward the results to their responsible NOC for feedback to the DMG.

6.2. Warning Monitoring

6.2.1. The DMG Warning Monitoring Focal Point (@ SPAM Protection) collects the NOCs' monitoring results, created by participants in a defined format, for analysing and deriving action plans. This format is described in chapter C.9.

6.3. EUR OPMET monitoring results requirements

6.3.1. The minimum of required details to be validated and registered is (ref.: D.2 WMO Monitoring):

- TT: Type of report SA, SP, FA, FC, FT for Routine OPMET data and FK, FV, FN, NO, WA, WC, WS, WV and UA for Non-Routine OPMET data;
- AAii: bulletin WMO-area and number;
- CCCC: Compiling Station;
- YYGGgg: date and time from the Abbreviated Header;
- BBB: Remark Group, if occurring in the Abbreviated Header;
- Report Station / FIR: the report ICAO Location Indicator or FIR / UIR / CTA as applicable;
- Report Time: Report-Date-Time Group for Routine OPMET data;
- TAF Validity Period: for FC and FT TAFs
- NIL or TEST: indication of NIL Routine reports or Test Non-Routine bulletins.

6.4. EUR OPMET monitoring results delivery

6.4.1. The output format of the monitoring results should be in compliance with the requirements as specified in the Appendix D - EUR OPMET Data Monitoring Tool Specification.

6.4.2. NOCs / MWOs shall send the OPMET monitoring results at the latest 14 days after the DMG monitoring period.

7. Scope of the EUR OPMET Monitoring Exercises

7.1. The results of the DMG OPMET monitoring exercises can be used as the input for dedicated Work Packages and special quality and quantity inquiries like the following:
- The compliancy of OPMET data monitored in the EUR-Region with the EUR OPMET Data Update Procedure;
- The efficient distribution of regional and inter-regional OPMET data in the EUR Region in accordance with the EUR OPMET Data Distribution Determination Procedure: distribution responsibilities, routeing, AFTN-formats;
- EUR OPMET Databases Brussels, Toulouse and Vienna: Interface Control Document, storage and retrieval of OPMET data, eANP-Tables, database catalogues;
- Optimisation of OPMET bulletins: duplication of data, WMO-formats, compilation and re-compilation of bulletins, separation of AOP required and Non-AOP OPMET data in different bulletins;
- AFS and SADIS Performance Indices: availability and timeliness of OPMET data on the EUR AFS-network and SADIS;
- Routeing and formatting of safety related OPMET Data: Advisory Messages, WS-, WC, WV-SIGMETs and ARS;
- The efficiency of the Volcanic Ash procedure at European ATC Centres;
- Compilation and updating of various OPMET catalogues: SADIS User Guide Annexes 2 & 3, DMG working tables, registers and inventories all kinds.

7.2. The DMG evaluates the monitoring results and proposes corrective actions in order to improve the OPMET data exchanges. The DMG also refines the procedures for OPMET Data Monitoring as appropriate.

7.3. Beyond the DMG scheduled monitoring period, monitoring, in accordance with the DMG specifications, can be asked for by the METG to check or reveal potential problems, as for example:

- RMK-group monitoring
- Runway State Group monitoring
- METAR Observation Time monitoring.

7.4. The OPMET Performance Indices are generated based on the scheduled DMG Routine OPMET data monitoring results, for which a co-ordinated fourteen days period (performed by the SADIS Provider and the EBBB AFTN/AMHS COM Centre) is required.

7.5. The EBBR and EGGY AMHS Routine OPMET data monitoring results are taken as the reference for AFS in Europe.

7.6. For SADIS, the Performance Indices are based on the EGGY, the EBBR/LROM SADIS Routine OPMET data monitoring results.

7.7. The SADIS User Guide Annexes 2 & 3 are generated based on the EGGY and/or EBBR SADIS monitoring results of the scheduled DMG EUR OPMET monitoring exercises.

8. DMG EUR OPMET Monitoring Periods Scheduled

8.1. The DMG plans the EUR OPMET monitoring periods with respect to established correlations to

- The annual METG meeting;
- The MET Panel meeting;
- The DMG meetings, three times per year;
- The scheduled updates of the EUR eANP Table Met II-2 OPMET data requirements.

8.2. and the output expected from the monitoring exercises:
- RODB Catalogue updates;
- SUG Annexes 2 & 3 updates;
- Performance Indices: AFS and SADIS;
- DMG action plans.

9. The EUR OPMET monitoring exercises schedule

DMG EUR OPMET Monitoring Exercises: yearly			
Routine data	**Non-Routine data**	**Warning message monitoring**	
		(Test) WS SIGMET and (Test) ARS (ii=[60-69])	**(Test) TCA, SWXA, VAA, WV SIGMET and (Test) ARS (ii=[70-79])**
01–03 February	01–14 February	first Wednesday of the monitoring period between 08:00 and 12:00 UTC	Thursday after the WS SIGMET test, between 03:00 and 17:00 UTC
ICAO OPMET Performance Indices			
METAR and TAFs	eANP METAR and FC/FT TAF requirements monitoring	01 – 14 February	
SIGMETs	eANP SIGMET requirements monitoring	5 Months: September - January	

9.1. Routine OPMET Data monitoring period: TT = SA, SP, FC and FT

9.1.1. 01 – 03 February: monitoring receipt of all Routine OPMET Data via AFS (AFTN over AMHS).

9.1.2. For eANP required data, the DMG can report on deficiencies by means of remedial actions, raising Problem Tickets via the Problem Handling Procedure application.

9.2. Non-Routine OPMET Data monitoring period: TT = FK, FV, FN, NO, WA, WC, WS, WV and UA

9.2.1. 01 – 14 February: monitoring of all Non-Routine OPMET Data received via AFS (AFTN over AMHS).

9.2.2. Deficiencies can be reported in the Problem Handling Procedure application to be dealt with by the DMG.

9.3. Warning message monitoring: Test messages for WS, WV, WC, FV, FK, FN and UAs

9.3.1. On the first Wednesday and the subsequent Thursday of the DMG Data monitoring period : monitoring of (TEST) WS-SIGMETS, (TEST) WV-SIGMETs, (TEST) WC-SIGMETs, (TEST) ARS, (TEST) Volcanic Ash (VAA), Space Weather (SWXA) and Tropical Cyclone (TCA) Advisories.

9.3.2. Further details can be found in chapter C.9.

9.3.3. The DMG reports on perceived deficiencies by means of PHP (Problem Handling Procedure) application tickets for remedial action.

9.4. ICAO OPMET Performance Indices monitoring period

9.4.1. For the calculation of the eANP Volume III ICAO EUR OPMET Performance Indices: Availability and Timeliness, the DMG registers the receipt and time of required METARs, TAFs and SIGMETS during relevant periods:

- For ICAO Doc 7754 Volume II Table MET II-2 eANP AOP required SA-METAR and FC/FT-TAFs: EBBR 14-day monitoring on AFS (AFTN via AMHS) from 01 till 14 February.
- SIGMETs: LFPW 5 month monitoring on AFS (AFTN via AMHS) from September till January.

9.4.2. The DMG reports the ICAO OPMET Performance Indices to the yearly METG meeting for quality and possible remedial actions.

10. DMG Warning Monitoring Procedure

10.1. Reminding action

10.1.1. The Warning Monitoring Focal Point always informs the national focal points at least 2 weeks prior to the actual exercise via e-mail. In case of any updates to the procedure the focal point will highlight those accordingly.

10.1.2. To enable the FP to inform the right people at the NOCs, it is vital that the contact details of the national focal points are up to date. This list can either be found on the ICAO Paris website (EUR/NAT documents/EUR Documents/EUR Documents/MET Guidance/EURNAT SIGMET test focal points.pdf) or on the DMG-website (https://eur-rodex.austrocontrol.at/monitoring.php?choose=general#MonRes).

10.2. General Information

10.2.1. Regular SIGMET and ARS Monitoring Exercises are used to check the availability of these messages at the EUR-ROCs, the EUR-RODBs as well as on SADIS.

10.2.2. The results will be made available to all NOCs in the EUR-region, enabling them to check themselves whether all warning messages needed were received during the exercise.

10.2.3. Based on the results any identified deficiency will be taken care of by the ROCs in close co-ordination with the NOCs.

10.2.4. The SIGMET, ARS and Advisory Monitoring Exercise is conducted on a yearly basis during the Data Management Group (DMG) OPMET Monitoring period (**1 to 14 February**).

10.2.5. The **WS-SIGMET** and **ARS** (ii=60-69) monitoring test is conducted on the **first Wednesday** of the DMG OPMET Monitoring period.

10.2.6. The **WV-SIGMET**, (**VA) ARS** (ii=70-79) and **VA-Advisory** monitoring is conducted on the **day immediately after** the WS-SIGMET monitoring exercise together with the **WC-SIGMET**, **TC-Advisory** and the **SWX-Advisory** monitoring.

10.2.7. The exact date is promulgated by the Warning Monitoring Focal Point two weeks in advance to all Warning Monitoring Focal Points via e-mail.

10.3. Monitoring Centres

10.3.1. The following centres shall provide monitoring results:

- The 4 EUR ROCs (EGGY, LFPW, LOWM, UUUJ)
- NOC/RODB EBBR
- NOC LROM (SADIS-User reference point)

10.3.2. Monitoring results shall be provided either for the whole day or at least for the following periods:

- on the first days at 0800 UTC and ends at 1200 UTC
- on the second day at 0300 UTC and ends at 1700 UTC

10.3.3. The format to provide the results is described in C.9.10.

10.4. Provision of Test-Messages

10.4.1. First Day of the Exercise

10.4.1.1. For the WS-SIGMET and ARS (ii=60-69) monitoring, the Meteorological Watch Offices (MWOs) are requested to send their test ARS message(s) at 1000 UTC, immediately followed by (a) WS-SIGMET bulletin(s). One SIGMET should be issued for each FIR/UIR. The format for a ARS-message is explained under paragraph C.9.5, the format of the WS-test messages under paragraph C.9.6.

10.4.2. Second Day of the Exercise

10.4.2.1. For the WV-SIGMET and ARS for Volcanic Ash (ii=70-79) monitoring as well as the WC-SIGMET, the responsible Meteorological Watch Offices (MWOs) are requested to send, independent of any test advisory message, their test ARS message(s) at 1000 UTC, immediately followed by (a) test WV-SIGMET bulletin(s) and, where applicable, a test WC-SIGMET. One SIGMET should be issued for each FIR and/or UIR. The format for an ARS test-message is explained under paragraph C.9.5, the format for a SIGMET-test message under paragraph C.9.6.

10.4.2.2. Volcanic Ash Advisory Centres (VAAC) Toulouse and London will send a test Volcanic Ash Advisory (FV-bulletin) at 1000 UTC on the second day of the exercise. An example of the FV-test message is presented under paragraph C.9.7.

10.4.2.3. Tropical Advisory Centre (TCAC) Tokyo will send a test Tropical Cyclone Advisory (FK-bulletin) at 0600 UTC and TCAC Miami at 1200 UTC on the second day of the exercise. An example of the FK-test message is presented under paragraph

10.4.2.4. Additionally, the Space Weather Centres (SWXC) are invited to send a test Space Weather Advisory (FN-bulletin) within the period 03 UTC and 17 UTC. This time range is necessary as only the active SWXC is operational on a H24-basis. The other centres are only available during the day. The SWXC are spread over the whole globe making it therefore impossible that all centres send the test message at the same time. An example of the FN-test message is presented under paragraph C.9.6.

10.5. Format of the ARS Test Message

10.5.1. There are a few rules that a ARS message should adhere to.

o   Only **one** Test ARS should be issued per monitoring day;
o   The correct ii should be used:
▪   ii=60-69 on Wednesday for UAs regarding non-volcanic ash reports
▪   ii=70-79 on Thursday for UAs regarding volcanic ash reports
o   The correct test format should be used (see examples below);
o   It should be sent at 1000 UTC;

10.5.2. Examples of ARS for non-volcanic ash reports

```
UADN61 EKCH 061000
ARS
TEST SPECIAL AIREP PLEASE DISREGARD=
```

Or

```
UARA61 RUHB 061000
ARS
TEST SPECIAL AIREP PLEASE DISREGARD=
```

10.5.3. Examples of ARS for volcanic ash reports

```
UADN71 EKCH 071000
ARS
TEST SPECIAL VA-AIREP PLEASE DISREGARD=
```

Or

```
UARA71 RUHB 071000
ARS
TEST SPECIAL VA-AIREP PLEASE DISREGARD=
```

10.6.   Format of WS/WV-SIGMET Test Messages

10.6.1. There are a few rules that test WS/WV-SIGMET messages should adhere to:

o   One test SIGMET should be issued for each Flight Information Region (FIR) and Upper Flight Information Region (UIR) under the area of responsibility of the MWO;
o   The **correct test format** should be used (see examples further below);
o   It should be sent at **1000 UTC** immediately **after** the UA-test message; and
o   The validity period should be from **1100 to 1105** in order to prevent discarding of delayed test messages.

10.6.2. Usage of the sequence number

10.6.2.1.   Generally, the sequence number is the sequence number for all SIGMET types (WS, WV and WC) for one flight information region. Within States for which Regulation (EU) 2017/373 and its amendments are applicable it is only permitted to use a phenomenon-specific SIGMET sequence numbering which consists of one letter and two numbers (e.g. A01, A02). Refer to AMC1.MET.TR.250(c) SIGMET.

10.6.2.2. If there is no current or previously valid SIGMET for the FIR/UIR concerned (i.e. if no SIGMET has been issued prior to the test), then a test SIGMET shall be transmitted with sequence number "**1**" or "**01**" or **"Z01" (WS) or "Y01" (WV) or "X01" (WC)**.

10.6.2.3. Furthermore, it is important to take care of including the **FIR/UIR-Indicator and the FIR/UIR name** in the <u>third line</u> as this is the correct format for SIGMET messages according to ICAO Annex 3 – *Meteorological Service for International Air Navigation and the EUR Doc 014 (EUR SIGMET and AIRMET Guide).*

Example:

```
WSTU31 LTBA 061000
LTBB SIGMET 1 VALID 061100/061105 LTBA-
LTBB ISTANBUL FIR TEST=

WVDL32 EDZF 071000
EDUU SIGMET Y01 VALID 071100/071105 EDZF-
EDUU RHEIN UIR TEST=

WCCR31 LEMM 071000
GCCC SIGMET X01 VALID 071100/071105 GCGC-
GCCC CANARIAS FIR TEST=
```

10.6.2.4. If there is a currently valid SIGMET, independent of the type (WS, WV, WC) in force for the FIR/UIR concerned and no characters are used within the sequence number, the test SIGMET must be issued with the next consecutive sequence number.

Example valid WS-SIGMET:

```
WSAL31 DAAA 060750
DAAA SIGMET 2 VALID 060800/061200 DAMM-
DAAA ALGER FIR SEV TURB FCST…=
```

Example TEST WS-SIGMET:

```
WSAL31 DAAA 061000
DAAA SIGMET 3 VALID 061100/061105 DAMM-
DAAA ALGER FIR TEST=
```

Example valid WS-SIGMET:

```
WSUR31 UKBW 070950
UKBV SIGMET 01 VALID 071000/071400 UKBW-
UKBV KYIV FIR/UIR SEV ICE FCST…=
```

Example TEST WV-SIGMET:

```
WVUR31 UKBW 071000
UKBV SIGMET 02 VALID 071100/071105 UKBW-
UKBV KYIV FIR/UIR TEST=
```

10.6.2.5. If there is a currently valid SIGMET in force for the FIR/UIR concerned and characters are used within the sequence number, the test SIGMET should be issued

by using the characters described under C.9.6.2.2. Only if there has already been issued a test-message that day, the sequence number must be increased.

Example TEST WS-SIGMET:

```
WSUK31 EGRR 061000
EGTT SIGMET Z01 VALID 060800/060835 EGRR-
EGTT LONDON FIR TEST=
```


```
WSUK31 EGRR 061000
EGTT SIGMET Z02 VALID 061100/061105 EGRR-
EGTT LONDON FIR TEST=
```

Example TEST WV-SIGMET:

```
WVDL32 EDZH 071000
EDVV SIGMET Y01 VALID 071100/071105 EDZH-
EDVV HANNOVER UIR TEST=
```

Example TEST WC-SIGMET:

```
WCFR32 LFPW 071000
LFBB SIGMET X01 VALID 071100/071105 LFPW-
LFBB BORDEAUX FIR/UIR TEST=
```

10.7.   Format of Volcanic Ash Advisory Test Message

   10.7.1. On the second monitoring day (Volcanic Ash SIGMET and ARS), the VAACs Toulouse and VAAC London are asked to send test FV- messages.

   10.7.2. This should be done around 1000 UTC. The message itself will look like the following example. **Note that the ii used for those messages can vary between 01 and 05**.

   10.7.3. Example FV-message

```
FVXX01 LFPW 071000
VA ADVISORY
STATUS: TEST
DTG: 20200206/1020
VAAC: TOULOUSE
VOLCANO: UNKNOWN
PSN: UNKNOWN
AREA: EUR REGION
SUMMIT ELEV: UNKNOWN
ADVISORY NR: 2020/00
INFO SOURCE: TEST EUR DMG
AVIATION COLOUR CODE: UNKNOWN
ERUPTION DETAILS: TEST EUR DMG
OBS VA DTG: 06/1020Z
OBS VA CLD: NO VA EXP
FCST VA CLD +6 HR: 06/1620Z NO VA EXP
FCST VA CLD +12 HR: 06/2220Z NO VA EXP
FCST VA CLD +18 HR: 07/0420Z NO VA EXP
RMK: REGULAR DMG VA TEST TEST TEST TEST TEST TEST TEST TEST TEST
NXT ADVISORY: NO FURTHER ADVISORIES=
```

10.8. Format of Tropical Cyclone Advisory Message

10.8.1. On the second monitoring day, the TCACs Tokyo and Miami are asked to send FK-messages at 06 UTC (TCAC Tokyo) and 12 UTC (TCAC Miami). One of the following headers per TCAC can be expected:

- FKPQ3[0-5] RJTD
- FKNT2[1-4] KNHC

10.8.2. Example FK-message

```
FKPQ30 RJTD 070600
TC ADVISORY
STATUS: TEST
DTG: 20210512/0600Z
TCAC: TOKYO
TC: TEST
ADVISORY NR: 2021/01
OBS PSN: NIL
CB: NIL
MOV: NIL
INTST CHANGE: NIL
C: NIL
MAX WIND: NIL
FCST PSN +6HR: NIL
FCST MAX WIND +6HR: NIL
FCST PSN +12HR: NIL
FCST MAX WIND +12HR: NIL
FCST PSN +18HR: NIL
FCST MAX WIND +18HR: NIL
FCST PSN +24HR: NIL
FCST MAX WIND +24HR: NIL
RMK: THIS IS A TC ADVISORY TEST MSG. PLEASE DISREGARD.
NXT MSG: NO MSG EXP=
```

10.9. Format of Space Weather Advisory Test Message

10.9.1. On the second monitoring day, all Space Weather Advisory Centres (PECASUS, NOAA/SWPC, ACFJ) are asked to send test FN- messages.

10.9.2. Due to the fact that the SWX-centres are distributed globally, the test messages can't be provided by all of them at 1000 UTC. Therefore, the following times were agreed upon:

Issuing State /Centre	Possible Headers	Expected Time
Australia	FNXX0[1-4] YMMC	around 04:00 UTC
China	FNXX0[1-4] ZBBB	around 07:00 UTC
Russia	FNXX0[1-4] UUAG	around 09:00 UTC
France	FNXX0[1-4] LFPW	around 10:00 UTC
Finland	FNXX0[1-4] EFKL	around 11:00 UTC
UK	FNXX0[1-4] EGRR	around 12:00 UTC
USA	FNXX0[1-4] KWNP	around 16:00 UTC

10.9.3. Example FN-message

```
FNXX01 EFKL 070810
SWX ADVISORY
STATUS: TEST
DTG: 20200207/0810Z
SWXC: PECASUS
ADVISORY NR: 2020/1
SWX EFFECT: GNSS SEV
OBS SWX: 06/0810Z HNH HSH W180-E180
FCST SWX + 6 HR: 06/1400Z NO SWX EXP
FCST SWX + 12 HR: 06/2000Z NO SWX EXP
FCST SWX + 18 HR: 07/0200Z NO SWX EXP
FCST SWX + 24 HR: 07/0800Z NO SWX EXP
RMK: TEST TEST TEST. THIS IS A TEST SPACE WEATHER ADVISORY.
NXT ADVISORY: NO FURTHER ADVISORIES=
```

10.10. Guidelines for SIGMET Test Message Monitoring Results

10.10.1. The format to be used for providing the results to the Warning Monitoring Focal Point is the same as for the DMG-Non-Routine Data Monitoring. Details on this format can be found in "Attachment D, para. D.2.8".

10.10.2. Monitoring centres are asked to send the monitored data in **one** dedicated .csv formatted file **per** monitoring day:

- One file for the first Warning-Monitoring-Day, with all monitored WS- and UA-messages
- One file for the second Warning Monitoring-Day, with all monitored FV-, FN-, FK-, WV, WC- and UA-messages

10.10.3. One message shall be included as often in the results as it has been received to identify duplicated routing from other sources.

10.10.4. There are no restrictions to just monitor EUR-messages. All warning messages received during the monitoring period can be reported. Any filtering will be done by the Warning Monitoring FP.

10.11. File Naming

10.11.1. The .csv file holding the results for the WS-monitoring day **shall be** named as follows:

WS-Monitoring-YYYYMMDD-CCCC.csv (e.g. WS-Monitoring-20160902-EDZW.csv)

10.11.2. Similarly, the results for the WV-monitoring shall be named as follows:

WV-Monitoring-YYYYMMDD-CCCC.csv

10.12. It would be very much appreciated if the monitoring results are sent as soon as possible to the SIGMET monitoring focal point and in any case **NO LATER THAN ONE MONTH AFTER THE MONITORING DATE**.

10.13. As soon as all results of the different monitoring centres have been received those will be available from the DMG-website (https://eur-rodex.austrocontrol.at/monitoring.php) for review. Information about the availability will be sent by e-mail.

APPENDIX D - EUR OPMET Data Monitoring Tool Specification

1. Introduction

   1.1. This specification is the result of a 3-phased development of a DMG TAC OPMET data AFTN monitoring tool: 1 - the WMO bulletin, 2 - the monitoring of the transmission network envelope and 3 - real-time monitoring. Each phase built upon the previous in terms of what data is to be parsed and logged from WMO formatted bulletins distributed over AFS.

   1.2. The Regional OPMET Centres (ROCs) and Regional OPMET Data Bases (RODBs) are expected to participate in the DMG scheduled OPMET Data Monitoring exercises (Ref.: EUR Doc 018, APPENDIX C EUR OPMET Data Monitoring Procedure.) The output of the monitoring tools in use has to be compliant to the DMG EUR OPMET Data Monitoring Tool Specification for comparability and to enable automated processing. National OPMET Centres can contribute to the DMG monitoring exercises voluntarily and when compliant with the specification. Also, the output of monitoring TAC OPMET data on SADIS has to be compliant.

   1.3. The output of the TAC OPMET Data Monitoring Tools is to serve the DMG Terms of References regarding the efficient, optimised distribution of TAC OPMET data and for the validation of its standardised WMO-format enabling automated processing for multi-domain purposes. The meteorological content of the OPMET data is beyond the scope of the monitoring tools.

   1.4. Amendment 77 recommends the international exchange of XML-formatted METAR/SPECI, TAF, AIRMET and SIGMET, VAA and TCA from November 2016. Ever since, there is a need for a IWXXM data monitoring tool in parallel of the established TAC OPMET Data Monitoring Tools.

   1.5. Because the IWXXM data are a translation of the equivalent TAC OPMET bulletins, the IWXXM fields of interest include those of the corresponding fields in the original TAC formatted bulletins.

   1.6. Tables 1 and 2 show the WMO OPMET message data types to be monitored together with the corresponding IWXXM data types.

Type	Bulletin	IWXXM
FC	9 Hour TAF Short Term Forecast report	LC
FT	24/30 TAF Hour Long Term Forecast report	LT
SA	METAR observation	LA
SP	SPECI, special METAR observation	LP

Table 1: Routine OPMET and IWXXM Data Types

Type	Bulletin	IWXXM
FA	GAMET	--
FK	Tropical Cyclone Advisory	LK
FV	Volcanic Ash Advisory	LU
FN	Space Weather Advisory	LN
NO	System administration message	--
WA	AIRMET	LW
WC	Tropical Cyclone SIGMET	LY
WS	SIGMET	LS
WT	Tropical Cyclone (Typhoon/Hurricane)	--
WV	Volcanic Ash SIGMET	LV
UA	Special AIREP (ARS)	--

Table 2: Non-Routine OPMET and IWXXM Data Types

2. TAC OPMET Data Monitoring Tool Requirements

   2.1. General Requirements

      2.1.1. The application shall be able to read AFTN/AMHS, GTS and SADIS media. The definitions of these media are found in
         • International Standards, Recommended Practices and Procedures for Air Navigation Services; Annex 10, Volume II, Chapter 4. ➔ for AFTN
         • Manual of the Global Telecommunication System; WMO No. 386 ➔ for GTS
         • Manual on Codes, Volume I.1 – Part A; WMO No. 306 ➔ for alphanumeric code forms in general

      2.1.2. Any message decomposition shall be undertaken in accordance with these documents.

      2.1.3. Generally, data fields that can be parsed but are not defined in references listed under D.2.1.1 shall be ignored (e.g. AFTN envelope-fields).

      2.1.4. All times shall be in UTC.

      2.1.5. Bulletin boundaries shall be determined using one of the following criteria. The ability to determine either of the media: AFS, GTS or SADIS, at runtime may also be implemented.

         For AFTN formats:
         SOH -> ETX control characters.

         For SADIS/GTS formats:
         NNN 3-character sequence number; or
         STX -> ETX control characters.

      2.1.6. Only routine and non-routine OPMET data types (specified in Table 1 and Table 2) shall be monitored.

   2.2. Information Data Requirements

      2.2.1. For all data types the WMO Abbreviated Header Line (AHL) shall be decomposed into the following information data fields. The value of each field shall be recorded in the corresponding field of the output file(s).

2.2.2. Information Data Fields:
- TT: Type of record;
- AAii: Bulletin identifier;
- CCCC: Compiling station;
- YYGGgg: AHL date/time group;
- BBB: Optional remark group.

2.2.3. A NIL bulletin (i.e. a bulletin that contains only the single word 'NIL') shall be recorded in the monitoring results file as one entry with the word 'NIL' in the NIL output field and ' ' (four blanks) recorded in the station/FIR-field.

2.3. AFTN Data Requirements

2.3.1. The WMO AHL shall be defined as the line containing the STX control character.
  1.1.1.1. The following fields shall be obtained and recorded from the AFTN envelope:
  - Filing time;
  - Originator address.

2.3.2. The AFTN originator address (8 characters) or the AFTN-part of the AMHS (last 8 characters) shall be recorded in the Transmission Network data field (field name "Origin") of the resulting monitoring output file.

2.4. GTS/SADIS Data Requirements

2.4.1. The WMO AHL shall be defined as the first non-blank line following the sequence number (NNN).

2.4.2. In the Transmission Network data field (field name "Origin") SADIS or GTS shall be recorded. Incase the reception was via a different network OTHER shall be recorded.

2.5. Routine OPMET Data Requirements

2.5.1. Routine OPMET collective bulletins (TT as defined in Table 1) shall be broken down into their constituent reports and registered at the station level.

2.5.2. In a collective bulletin, the individual reports are separated by '=' followed by zero (or more) spaces, one (or more) CR and LF.

2.5.3. Each report in a collective bulletin shall be decomposed into the following output fields. Each field shall be recorded in the corresponding field of the output file(s).

  2.5.3.1. Routine OPMET data fields:
  - ReportBBB: If present any three-letter BBB type identifier, e.g. COR or AMD. *(OPTIONAL).*
  - CCCC: The ICAO location indicator of the observation or report;
  - The Report-Date-Time group.

  2.5.3.2. For TAF reports only (TT = 'FC' or 'FT')
  - the report validity period shall also be recorded.

2.5.4. A NIL report (i.e. where the word 'NIL' appears after the station identifier) shall have the word 'NIL' recorded in the NIL-field in addition to the other fields.

2.5.5. The following statistical information can optionally be gathered and recorded for each bulletin in a separate statistical result file:
- Bulletin length: The bulletin length, in bytes, including the start and end of message control characters (SOH/STX - ETX).
- Format error counts: The number of fatal errors (defined below) and the number of non-fatal errors (defined below).
- Bulletin type counters: The total number of received bulletins by type (TT).

2.5.6. Timeliness: For a specific set of stations the timeliness of each received observation can be calculated and recorded. The definitions of timeliness can be found in Appendix F.

2.6. Non-Routine OPMET Data Requirements

2.6.1. The FIR/UIR or CTA shall be obtained from Non-Routine OPMET bulletins (TT as defined in Table 2) where applicable. The FIR/UIR or CTA shall be recorded in the station-field of the output file.

2.6.2. If the word 'TEST' is found within the body of the bulletin, then the word 'TST' shall be recorded in the NIL-field of the output file.

2.6.3. The following statistical information may be gathered and recorded for each bulletin in a separate statistical result file:
- Bulletin length in bytes including SOH/STX and ETX control characters;
- Format error counts: The number of fatal errors (defined below) and the number of non-fatal errors (defined below).
- Bulletin type counters.

2.6.4. For monitoring of Non-Routine OPMET data, additional groups of interest for registration are:
- The ATSU Location Indicator;
- The MWO Location Indicator;
- The FIR/UIR name.

2.6.5. Relevant OPMET message types for parsing and registering the additional fields are:
- GAMET (TT = FA, Routine data with the format of Non-Routine SIGMETs);
- AIRMET (TT = WA);
- Tropical Cyclone SIGMET (TT = WC);
- Special Weather SIGMET (TT = WS);
- Volcanic Ash SIGMET (TT = WV);
- ARS (TT = UA).

2.7. OPMET Data Monitoring Modes

2.7.1. TAC OPMET data on AFTN can be monitored either offline or in real time.

2.7.2. An application operating in an offline mode shall use ASCII-text formatted files as the data source including sequentially logged OPMET bulletins as received. The log files containing received OPMET bulletins shall register the UTC receipt time from the AFS communication line per bulletin.

2.7.3. Real time monitoring application shall log UTC OPMET bulletin receipt time in the resulting log files.

2.7.4. While monitoring the OPMET data traffic, valuable statistics can be generated and registered about detected anomalies, data volumes, number of bulletins per data type, timeliness.

2.8. Validation Requirements

2.8.1. Fields obtained from the AFS/AFTN envelope shall be validated against the following:
- The Originator Address shall be eight alphabetical characters.

2.8.2. Limited validation shall be performed upon the WMO AHL:
- TT shall be two alphabetical characters;
- AAii shall be two alphabetical characters, excluding 'ZC', followed by 0, 1 or 2 digits and filled out with a blank character for every omitted digit;
- CCCC shall be four alphabetical characters excluding 'ZCZC' or 'NNNN';
- YYGGgg shall be six digits;
- BBB if present shall be three alphabetical characters. The first character shall be either 'A', 'C', 'P' or 'R'.

2.8.3. Bulletins that fail AHL validation shall be ignored.

2.8.4. Individual routine reports contained in a bulletin shall be validated against the following:
- Station identifiers shall be four alphabetical characters excluding 'ZCZC' or 'NNNN', 'DUPE', 'PART';
- Report time shall be six digits whether or not followed by 'Z';
- TAF Validity period shall be four digits, a slash (/) followed by another four digits.

2.8.5. Individual reports that fail validation may be recorded with the erroneous fields filled with 'X' characters according to the field size.

2.8.6. **Fatal errors** shall be defined as validation errors or missing data may be recorded within the following fields in the AHL:
- AAii,
- CCCC,
- YYGGgg;

2.8.7. For Non-Routine OPMET Data, where applicable: (AIRMET/GAMET/SIGMET-report), the following shall be captured as fatal error:
- Invalid or missing ATSU-group. When the ATSU cannot be identified in the report, other items become doubtful to be parsed: invalid ATSU may be recorded as 'XXXX';
- Missing hyphen (-) following the MWO location indicator (MWO, FIR and FIR name are blank);
- Invalid or missing MWO location indicator: invalid MWO may be registered as 'XXXX' (MWO, FIR and FIR name are blank);
- FIR/UIR/CTA keyword missing (FIR and FIR name are blank);
- CTA/FIR/UIR location indicator missing (FIR is blank);
- Invalid CTA/FIR/UIR location indicator (FIR is 'XXXX').

2.8.8. **Non-Fatal errors** may be reported as validation errors, or missing data within the following report fields:
- BBB-field of the AHL
- Station location indicator,
- Report-Date-Time,
- TAF validity period.

2.8.9. On detection of a Non-Fatal error while inspecting groups of interest, the relevant faulty group may be reported with 'X'-es filled field and possibly the subsequent groups of interest to be left blank for registration of the received reports in the bulletin.

2.8.10. The following format tolerances should be considered as non-fatal for the identification of the groups of interest:
- Excessive SPACEs used to separate groups of interest or keywords, also preceding the hyphen on the first line following the MWO Location Indicator;
- In a Non-Routine bulletin; missing Alignment Function (CRLF) following the hyphen at the end of the first line in the bulletin. Then the first hyphen found in the text part of the bulletin is used for enabling identification of the preceding MWO Location Indicator beyond extra SPACEs found.
- The occurrence of keywords " CTA " or " UIR " where expecting " FIR ".

2.9. Output Format

2.9.1. The output from the application shall be dedicated ASCII files with an extension appropriate to the field separator. The composition of the ASCII output files needs to be well documented and consistent over the DMG monitoring exercises for enabling automated processing to the extent possible.

2.9.2. Output format differences/errors lead to limited comparability of the monitoring results to the results of other centres.

2.9.3. The output format of the monitoring result files needs to be consistent as documented by the monitoring centre during the whole period of the monitoring exercise; to become permanent over subsequent monitoring exercises.

2.9.4. On every monitoring exercise and during the whole monitoring period, pertinent/persistent differences to the specifications shall be notified and documented by the monitoring centre to the DMG for interpretation on processing the results.

2.9.5. Occasional differences are monitoring errors shall be notified by the DMG for corrective action by the monitoring centre.

2.9.6. The exchange of the monitoring result files might be limited or restricted by a maximum size or volume for storage. The result files shall be generated in periods of minimum twelve (AM/PM: 2 files a day) or maximum twenty four (1 file per day) hours. Following are file name examples for both possibilities to send the monitoring results:

DMG-Monitoring-LOWM-01-02-2021-AM.TXT ➔ 00-12 UTC
DMG-Monitoring-LOWM-01-02-2021-PM.TXT ➔ 12-24 UTC

Or

DMG-Monitoring-LOWM-01-02-2021.TXT ➔ 00-24 UTC

2.9.7. The result file shall contain all fields as listed in Table 3. The order of the fields are not important, but have to be consistent. Only, it is recommended that the FIR_Name-field and the RMK-field are the latest fields per record in this order.

2.9.8. The result files shall contain only validated data. Separate files may be used to log data that fails validation.

2.9.9. The result file shall contain one record line per routine OPMET report, or one record line per non-routine OPMET bulletin.

2.9.10. Each field shall be separated with ';' semicolon

2.9.11. The first line of the output file shall contain the field identifying names correctly separated ';' semicolon.

2.9.12. A separate results file per data type may be used. In this case the TT-field may be omitted (for highly database normalised monitoring tools).

2.9.13. The NIL-field shall contain either three space characters, 'NIL', or 'TST' as appropriate.

Field	Name	Length	Comment
TT	TT	2	
AAii	AAii	4	
CCCC	CCCC	4	
YYGGgg	YYGGgg	6	Filing time
BBB	BBB	3	
Report "BBB"	ReportBBB	3	
Report Station / FIR	Locind	4	
Report Date Time	ReportTime	6	Only for routine types
TAF Validity Period	ValidityPeriod	9	Only required for FT and FC bulletins GGgg/GGgg
NIL or TEST	NIL	3	Either ' ', 'NIL' or 'TST'
Receipt Time	RxTime	8	End system UTC time on receipt: HH:MM:SS.
Transmission Network	Origin	8	Either AFTN origin address, 'SADIS', 'GTS' or 'OTHER'
ATSU Location Indicator	ATSU	4	Must be present and consist of 4 alphabetical capital letters.
MWO Location Indicator	MWO	4	Must consist of 4 alphabetical capital letters.
FIR/UIR name	FIR_Name	50	All characters between the FIR/UIR Location Indicator and preceding the "FIR" keyword are taken as parts of the FIR/UIR name.
Remarks	RMK	(30)	Any information the monitoring centre finds feasible

Table 3: TAC OPMET data monitoring Output Fields

4

2.9.14. Optionally, a monitoring centre may create statistical data. Such statistical data shall be logged in a separate results file. The fields in the results files will be separated in same manner as for the other results files. The statistical output file collects information gathered analysing the OPMET data traffic while monitoring and validating as suggested in the following table.

Field	Name	Comment
TTAAii CCCC	Header	
Bulletin Length	BullLen	The length in bytes
Type Counter	TypeCnt	The cumulative bulletin counter for the current bulletin type.
Format Error	FormErr	The cumulative number of format errors when this bulletin was received.
Invalid Bulletin	Inv_bulletin	Number of bulletins received with invalid AHL
Invalid Compiling Station	Inv_CCCC	Number of bulletins with erroneous Compiling Station
Invalid Filing Time	Inv_YYGGgg	Number of bulletins with faulty YYGGgg in the AFTN originator line
Invalid BBB	Inv_bbb	Number of bulletins with unknown or faulty BBB Remark in the AHL
Invalid Location Indicator	Inv_locind	Number of observations / reports with erroneous station location indicator
Invalid Report Date Time	Inv_rep_date_time	Number of reports with non-compliant Report-Date-Time group
Invalid TAF Validity Period	Inv_taf_period	Number of TAF reports with non-compliant Validity Period group
Timeliness	Timeliness	Yes or No field whether this bulletin is timely.
…		

Table 5: Possible Statistical Output Fields

2.9.15. Statistical result files have to be documented by the centre.

2.9.16. The first line of the statistics file shall contain the field identifiers correctly separated.

2.9.17. The application may log all possible status information useful about:
- the running status,
- disk space requirements,
- periodical output files' creation,
- debugging statements

with time stamps in a dedicated Debug.txt file.

2.10.   Monitoring Tool Display

2.10.1. The application shall display, at least the following:
- Dynamic application status while running;
- OPMET message traffic on receipt;
- Application errors with date-time stamp for problem resolving.

3. IWXXM Data Monitoring Tool Requirements

3.1. General Requirements

3.1.1. Reference documents
- Manual on Codes (WMO No. 306) Volume I.3
- The ICAO Annex 3, *Meteorological Service for International Air Navigation* contains the global standards and recommended practices (SARP) on the content and format of operational meteorological messages.
- Tables A and B7 of the Manual on the Global Telecommunication System (WMO No. 386)
- The ICAO Doc 10003, Manual on the Digital Exchange of Aeronautical Meteorological Information specifying the IWXXM data model.
- ICAO Doc 9880-AN/466, Part II: Ground-Ground Applications - Air Traffic Services Message Handling Services (ATSMHS).
- The ICAO EUR Doc 020 EUR AMHS Manual contains guidance on the AMHS. This document should be kept up-to-date by ICAO Regional Office Paris.
- https://wiswiki.wmo.int/tiki-index.php?page=IWXXM-2

3.1.2. Any message decomposition shall be undertaken in accordance with these documents.

3.1.3. Only IWXXM data types specified in Table 1 and Table 2 shall be monitored.

3.1.4. All times shall be in UTC.

3.2. Information Data Requirements

3.2.1. For all data types the filename of the FTBP (File Transfer Body Part), used to exchange IWXXM data via AMHS, shall be decomposed and, for the OPMET monitoring, necessary parts extracted.

3.2.2. The general structure of the filename is based on the WMO file naming convention. Following the general structure is displayed:

A_TTAAiiCCCCYYGGgg*BBB*_**C**_CCCC_YYYYMMddhhmmss**.xml.gz**

3.2.3. The elements in black and bold are fixed elements. Those are not relevant for the monitoring.

3.2.4. The following elements shall be extracted from the filename:
- TT
- AAii
- CCCC
- YYGGgg
- BBB ➔ will only be present in case of retarded (RRx), amended (AAx) or corrected (CCx) messages

3.3. General Metadata Information to be captured

3.3.1. An IWXXM message contains certain metadata which should be captured by the monitoring centre. The to be captured report attributes are:

- reportStatus   (NORMAL/AMENDMENT/ CANCELLATION/CORRECTION/ MISSING)
- automatedStation   (true/false)
- permissibleUsage   (OPERATIONAL/NON-OPERATIONAL)
- permissibleUsageReason   (TEST/EXERCISE)
- translatedBulletinID
- translatedBulletinReceptionTime   (YYYY-MM-DDTHH:MM:SS)
- translationCentreDesignator   CCCC
- translationCentreName
- translationTime   (YYYY-MM-DDTHH:MM:SS)
- translationFailedTAC

3.4. Routine IWXXM Data Requirements

3.4.1. In regard to METAR/SPECI message the following elements are of interest to be monitored:

3.4.1.1. Location Indicator and name of the airport

```
<iwxxm:aerodrome>
 <aixm:AirportHeliport gml:id="uuid.b5b583b8-6862-4ab0-9b8b-ee59b3d6fd04">
  <aixm:timeSlice>
   <aixm:AirportHeliportTimeSlice gml:id="uuid.cb0f11de-1d2d-46bd-94a0-3249d7e84492">
    <gml:validTime/>
    <aixm:interpretation>SNAPSHOT</aixm:interpretation>
    <aixm:designator>EBBR</aixm:designator>
    <aixm:name>BRUSSELS/BRUSSELS-NATIONAL</aixm:name>
    <aixm:locationIndicatorICAO>EBBR</aixm:locationIndicatorICAO>
    <aixm:ARP>
     <aixm:ElevatedPoint gml:id="uuid.e5d4f4cd-21a8-4881-96da-347712f82b01">
      <gml:pos>50.9000  4.5333</gml:pos>
     </aixm:ElevatedPoint>
    </aixm:ARP>
   </aixm:AirportHeliportTimeSlice>
  </aixm:timeSlice>
 </aixm:AirportHeliport>
</iwxxm:aerodrome>
```

3.4.1.2. Issuing Time

3.4.1.2.1. There are several time stamps in an IWXXM message. For the purpose of the "Report Date Time" the following should be extracted from the IWXXM-message:

```
<iwxxm:issueTime>
    <gml:TimeInstant gml:id="uuid.51c259bc-9dbe-41b4-9e5f-ac70ff798154">
        <gml:timePosition>2022-05-04T02:20:00Z</gml:timePosition>
    </gml:TimeInstant>
</iwxxm:issueTime>
```

3.4.2.In regard to TAF-messages the following elements are of interest to be monitored in addition to those already mentioned for METAR/SPECI:

3.4.2.1.   Issuing Time

```
<iwxxm:issueTime>
   <gml:TimeInstant gml:id="ti-EBBR1040-202001301040Z">
      <gml:timePosition>2020-01-30T10:40:00Z</gml:timePosition>
   </gml:TimeInstant>
         </iwxxm:issueTime>
```

3.4.2.2.   Start and End of the Validity Period

```
<iwxxm:validPeriod>
   <gml:TimePeriod gml:id="uuid.7c48485a-e68d-4db3-9761-d9cf2d474acc">
     <gml:beginPosition>2022-05-31T06:00:00Z</gml:beginPosition>
     <gml:endPosition>2022-06-01T12:00:00Z</gml:endPosition>
   </gml:TimePeriod>
 </iwxxm:validPeriod>
```

3.4.2.3.   NIL-messages indication

3.4.2.3.1.   If a NIL-message is included in the collection, it will contain the "Filing Time" as well as the "Location Indicator and name of the airport" information.

3.4.2.3.2.   The NIL-information itself can be found for
- METAR/SPECI as attribute of the iwxxm:observation element
- TAF as attribute of the iwxxm:baseForecast element

```
   </gml:TimeInstant>
  </iwxxm:observationTime>
  <iwxxm:observation nilReason="http://codes.wmo.int/common/nil/missing"/>
 </iwxxm:METAR>
</collect:meteorologicalInformation>

   </aixm:AirportHeliport>
  </iwxxm:aerodrome>
  <iwxxm:baseForecast nilReason="http://codes.wmo.int/common/nil/missing"/>
 </iwxxm:TAF>
</collect:meteorologicalInformation>
```

3.5. Non-Routine IWXXM Data Requirements

3.5.1.In regard to SIGMET-messages the following elements of interest are to be monitored:

3.5.1.1. ATSU (Air Traffic Services Unit) Indicator

```
<iwxxm:issuingAirTrafficServicesUnit>
    <aixm:Unit gml:id="fic-enbd-uuid.98087cf1720d96336faaacd6019fa891-enbd-310900311300">
        <aixm:timeSlice>
            <aixm:UnitTimeSlice    gml:id="fic-enbd-uuid.98087cf1720d96336faaacd6019fa891-enbd-
310900311300-ts-uuid.98087cf1720d96336faaacd6019fa891-enbd-310900311300">
                <gml:validTime/>
                <aixm:interpretation>SNAPSHOT</aixm:interpretation>
                <aixm:name>ENBD FIC</aixm:name>
                <aixm:type>FIC</aixm:type>
                <aixm:designator>ENBD</aixm:designator>
            </aixm:UnitTimeSlice>
        </aixm:timeSlice>
    </aixm:Unit>
</iwxxm:issuingAirTrafficServicesUnit>
```

3.5.1.2. Meteorological Watch Office (MWO)

```
<iwxxm:originatingMeteorologicalWatchOffice>
    <aixm:Unit gml:id="mwo-envn-uuid.98087cf1720d96336faaacd6019fa891-enbd-310900311300">
        <aixm:timeSlice>
            <aixm:UnitTimeSlice  gml:id="mwo-envn-uuid.98087cf1720d96336faaacd6019fa891-enbd-
310900311300-ts-uuid.98087cf1720d96336faaacd6019fa891-enbd-310900311300">
                <gml:validTime/>
                <aixm:interpretation>SNAPSHOT</aixm:interpretation>
                <aixm:name>ENVN MWO</aixm:name>
                <aixm:type>MWO</aixm:type>
                <aixm:designator>ENVN</aixm:designator>
            </aixm:UnitTimeSlice>
        </aixm:timeSlice>
    </aixm:Unit>
</iwxxm:originatingMeteorologicalWatchOffice>
```

3.5.1.3.   FIR/UIR-Indicator and FIR/UIR-Name

```
<om:featureOfInterest>
   <sams:SF_SpatialSamplingFeature                    gml:id="sampling-point-03839-
uuid.98087cf1720d96336faaacd6019fa891-enbd-310900311300">
      <sf:type                    xlink:href="http://www.opengis.net/def/samplingFeatureType/OGC-
OM/2.0/SF_SamplingPoint"/>
      <sf:sampledFeature>
         <aixm:Airspace        gml:id="fir-ENOR-uuid.98087cf1720d96336faaacd6019fa891-enbd-
310900311300">
            <aixm:timeSlice>
               <aixm:AirspaceTimeSlice                           gml:id="fir-ENOR-ts-
uuid.98087cf1720d96336faaacd6019fa891-enbd-310900311300">
                  <gml:validTime/>
                  <aixm:interpretation>SNAPSHOT</aixm:interpretation>
                  <aixm:type>FIR</aixm:type>
                  <aixm:designator>ENOR</aixm:designator>
                  <aixm:name>NORWAY FIR</aixm:name>
                  <aixm:designatorICAO>YES</aixm:designatorICAO>
               </aixm:AirspaceTimeSlice>
            </aixm:timeSlice>
         </aixm:Airspace>
      </sf:sampledFeature>
      <sams:shape nilReason="withheld"/>
   </sams:SF_SpatialSamplingFeature>
</om:featureOfInterest>
```

3.5.1.4.   Validity

```
<iwxxm:validPeriod>
   <gml:TimePeriod gml:id="tp-202001310900-202001311300-
uuid.98087cf1720d96336faaacd6019fa891-enbd-310900311300">
      <gml:beginPosition>2020-01-31T09:00:00Z</gml:beginPosition>
      <gml:endPosition>2020-01-31T13:00:00Z</gml:endPosition>
   </gml:TimePeriod>
</iwxxm:validPeriod>
```

3.6. AMHS Data Requirements

3.6.1. The following information are optional to be extracted from the AMHS envelope:

3.6.1.1.   Originator Address; For the AMHS originator address field the CN (Common Name) respectively the OU (Organizational Unit) of the AMHS-Address, being the 8 letter AFTN-address, is optional to be extracted and recorded in the Originator field of the resulting monitoring output file.

/CN=LFPWMVIE/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX

/OU=EGZZXVIE/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX

3.7. Validation Requirements

3.7.1. No validation is required by the monitoring tool. The only validation performed by a monitoring tool is syntax validation and in no case validation of the meteorological contents. As with IWXXM, the syntax validation has to been performed at the origin, by the production/translation centre, before issuance of the message, it can be assumed that the syntax of all elements of interest to the monitoring tool is correct and does not require any extra syntax validation by the tool.

3.7.2. For example: "K7XT" is not defined in ICAO Doc 7910 and should already be intercepted at the IWXXM production/translation centre before issuance. Therefore, no extra syntax validation of the ICAO Location Indicator by the monitoring tool is required.

3.8. Output Format

3.8.1. Files resulting from the IWXXM data monitoring tool shall be in ASCII-format.

3.8.2. The result files shall be generated in periods of twelve hours (AM/PM: 2 files a day). Following are file name examples for sending the monitoring results:

DMG-IWXXM-Monitoring-LOWM-01-02-2021-AM.txt ➔ 00-12 UTC
DMG-IWXXM-Monitoring-LOWM-01-02-2021-PM.txt ➔ 12-24 UTC

3.8.3. The result file shall contain **all** fields as listed in **Table 6**.

3.8.4. Each field shall be separated with ';': semicolons .

3.8.5. The first line of the output file shall contain the field identifiers correctly separated using above mentioned characters.

3.8.6. The output file shall contain one line per routine IWXXM report, or one line per non-routine IWXXM bulletin.

Field	Name	Length	Comment
TT	TT	2	
AAii	AAii	4	
CCCC	CCCC	4	Compiling Station
YYGGgg	FilingTime	6	Filing time
BBB	BBB	3	
Permissible Usage	PermUsage	2	(**OP**)erational (**NO**)n-Operational
Permissible Usage Reason	PermReason	1	(**T**)est (**E**)xercise (**N**)ot applicable
Status (former Report "BBB")	Status	3	NORMAL (**NOR**) AMENDMENT (**AMD**) CORRECTION (**COR**)
NIL	NIL	1	(**T**)rue (**F**)alse
Automated Station	Auto	1	(**T**)rue (**F**)alse
Report Station / FIR	Locind	4	
Report Date Time	ReportTime	20	Only for routine types: **YYYY-MM-DDTHH:MM:SSZ**

Field	Name	Length	Comment
Beginning of Validity Period	ValBegin	20	YYYY-MM-DDTHH:MM:SSZ
End of Validity Period	ValEnd	20	YYYY-MM-DDTHH:MM:SSZ
IWXXM Version	IWXXM-Version	3	Example: 2.1, 3.0
Translation Failed	TransFail	1	(**T**)rue (**F**)alse
Receipt Time	RxTime	6	End system UTC time on receipt: HHMMSS.
Transmission Network	Origin	1	(**A**)FS = AFTN or AMHS (**S**)ADIS (**G**)TS
Translation Centre Designator	TranslationCentre	4	
IWXXM-Extension	Extension	1	(**T**)rue (**F**)alse
ATSU Location Indicator	ATSU CCCC	4	
MWO Location Indicator	MWO CCCC	4	
FIR/UIR name	FIR_Name NAME	50	
Remarks	RMK	(30)	

Table 6: IWXXM data elements monitoring Output Fields.

4. IWXXM Offline Data Monitoring Tool Requirements

4.1. Besides the yearly DMG-monitoring, which also covers elements of IWXXM-messages (see chapter D.3), EUR ICAO Doc 033, chapter 8 asks for the provision of additional statistics on the exchanged IWXXM-data.

4.2. The following list summarizes the requested statistics:

- IWXXM data volumes
    - per type
    - per time interval
- Compression ratio
- IWXXM numbers of data per type
- IWXXM version
- IWXXM data performance
- Availability
- Timeliness
- Statistics on IWXXM-schema validation

4.3. Due to several open questions in regard to the above required statistics, the development of detailed specifications is on hold until more clear guidelines are available.

APPENDIX E - Distribution Determination for OPMET Data

1. Introduction

   1.1. Appendix E exposes the distribution criteria for Routine and Non-Routine OPMET data as well as AFTN address details to be used in the EUR Region.

   1.2. The distribution of OPMET data in the European Region is delegated to the National OPMET Centres (NOCs) and the Regional OPMET Centres (ROCs) Centres. Interregional OPMET data exchange is delegated to the Interregional OPMET Gateways (IROG). The principles of those entities can be found in the main part of this document:

   - NOC ➔ Paragraph 3.3
   - ROC ➔ Paragraph 3.4
   - IROG ➔ Paragraph 3.5

2. OPMET data Distribution Modes

   2.1. General

   2.1.1. The OPMET data Distribution Modes is utilizing the OPMET bulletin's WMO Abbreviate Header $T_1T_2A_1A_2ii$ CCCC. The ii–number determines the (inter)national Distribution Mode of the bulletin and was defined for the EUR-RODEX schema as follows:

ii	Use
01-19, 20-39	Global, regional and inter-regional distribution
40-89	National and bilateral distribution = restricted distribution ***Noting:*** GAMET using series 50-59 should be distributed to regional OPMET databanks ***Noting:*** ARS using series 60-69 and ARS for volcanic ash using series 70-79 should be distributed to regional OPMET databanks and distributed globally
90-99	Reserved

   2.1.2. The restricted Distribution Mode of bulletins with ii–numbers above 39 (see above table for details) is local and based on national and/or bilateral agreements. The restricted distribution is to be applied for OPMET data of partial-operational aerodromes for specific aviation purposes such as military aviation, gliders, helicopters, balloons, scientific flights, SAR-bases, drones, …

   2.2. SADIS (Secure Aviation Data Information Service) OPMET Programme

   2.2.1. All OPMET data distributed on the European AFTN/AMHS (AFS – Aeronautical Fixed Service) network shall also be available via SADIS and vice versa.

3. RODEX-tables and AFS Addressing

   3.1. General

      3.1.1. RODEX stands for the Regional OPMET Data Exchange. The tables presented in this appendix determine the Distribution Mode and AFS addressing of OPMET Data as applied by the EUR-Region ROCs/IROGs.

      3.1.2. The RODEX-tables define the ROCs'/IROGs' AoR and AFS Addressing for the distribution of the TAC as well as IWXXM OPMET data.

      3.1.3. The DMG manages the RODEX-tables:
      - to define the EUR ROCs/IROGs Area of Responsibility;
      - to determine the appropriate Distribution Mode for OPMET Bulletins, and
      - to apply the AFS Addressing of OPMET (EUR and Non-EUR) Data for its distribution in the EUR Region and Inter-Regionally.

   3.2. Responsibilities within the RODEX schema

      3.2.1. The following table shows the AoRs (Area of Responsibility) of the four ROCs, including some details for the NOCs. Also, the responsibilities of the IROGs are listed.

ROC/ IROG	Name	CCCC	NOC/ IROG	State/Region	Name	CCCC	AA
ROC	London	EGGY	NOC	Belgium	Brussels	EBBR	BX
			NOC	Denmark	Copenhagen	EKCH	DN
							FA
			NOC	Estonia	Tallinn	EETN	EO
			NOC	Finland	Helsinki	EFHK	FI
			NOC	Greenland	Nuuk	BGGH	GL
			NOC	Iceland	Reykjavik	BIRK	IL
			NOC	Ireland	Dublin	EIDB	IE
			NOC	Latvia	Riga	EVRA	LV
			NOC	Lithuania	Vilnius	EYVI	LT
			NOC	Luxembourg	Brussels	EBBR	BX
			NOC	Netherlands	De Bilt	EHDB	NL
			NOC	Norway	Oslo	ENMI	NO
			NOC	Sweden	Norrkoping	ESWI	SN
			NOC	United Kingdom	London	EGGY[1)]	UK
							BE
							NT
							GI
IROG	London	EGGY	IROG	NAM	Washington	--	--
			IROG	CAR	Washington	--	--
			IROG	ASI	Singapore	--	--
			IROG	PAC	Singapore	--	--
			IROG	SAM	Brasilia	--	--
ROC	Moscow	UUUJ	NOC	Armenia	Yerevan	UDSG	AY
			NOC	Belarus	Minsk	UMMN	BY
			NOC	Kazakhstan	Astana	UACC	KZ
			NOC	Kyrgyzstan	Bishkek	UCFM	KY
			NOC	Russian Federation	Moscow	UUUJ	RA

						RS
			NOC	Tajikistan	Dushanbe	UTDD	TA
			NOC	Turkmenistan	Ashgabat	UTAA	TR
			NOC	Uzbekistan	Tashkent	UTTW	UZ
ROC	Toulouse	LFPW	NOC	Algeria	Algiers	DAAG	AL
			NOC	Italy	Rome	LIIB	IY
			NOC	Malta	Malta	LMMM	MP
			NOC	Morocco	Casablanca	GMMC	MC
			NOC	Portugal	Lisbon	LPMG	PO
							AZ
							EW
			NOC	Spain	Madrid	LEMM	SP
							CR
			NOC	Tunisia	Tunis	DTTA	TS
IROG	Toulouse	LFPW	IROG	AFI	Dakar	--	--
			IROG	AFI	Pretoria	--	--
ROC	Vienna	LOWM	NOC	Albania	Tirana	LATI	AB
			NOC	Austria	Vienna	LOWM[2]	OS
			NOC	Azerbaijan	Baku	UBBB	AJ
			NOC	Bosnia & Herzegovina	Banja Luka	LQBK	QB
			NOC	Bulgaria	Sofia	LBSF	BU
			NOC	Croatia	Zagreb	LDZM	RH
			NOC	Cyprus	Larnaca	LCLK	CY
			NOC	Czechia	Prague	LKPW	CZ
			NOC	Georgia	Tbilisi	UGTB	GG
			NOC	Germany	Offenbach	EDZO[3]	DL
			NOC	Greece	Athens	LGAT	GR
			NOC	Hungary	Budapest	LHBM	HU
			NOC	Israel	Tel Aviv	LLBD[4]	IS
			NOC	North Macedonia	Skopje	LWSK	MJ
			NOC	Poland	Warsaw	EPWA	PL
			NOC	Rep. of Moldova	Chisinau	LUKK	RM
			NOC	Romania	Bucharest	LROM	RO
			NOC	Serbia & Montenegro	Belgrade	LYBM	YG
			NOC	Slovakia	Bratislava	LZIB	SQ
			NOC	Slovenia	Ljubljana	LJLJ	LJ
			NOC	Switzerland	Zurich	LSSW	SW
			NOC	Turkey	Ankara	LTAA	TU
			NOC	Ukraine	Kiev	UKMS[5]	UR
IROG	Vienna	LOWM	IROG	Saudi Arabia	Jeddah	OEJD	--

[1] Some bulletins are issued with CCCC=EGRR

[2] Some bulletins are issued with CCCC=LOWW

[3] Some bulletins are issued with CCCC=EDZF

[4] Some bulletins are issued with CCCC=LLBG

[5] Some bulletins are issued with CCCC=UKBW, UKDW, UKLW, UKOW

3.3. AFS Addressing.

3.3.1. The Aeronautical Fixed Service AFTN- and CIDIN- data distribution networks are being replaced by AFTN/AMHS networks managed by the national telecommunication centres (COM-Centres).

3.3.2. The Regional OPMET Centres exchange OPMET data from within their AoR with all other Regional OPMET Centres and send the data to the EUR OPMET Databases (Brussels, Toulouse and Vienna).

3.3.3. AMHS Addressing is applied for national and international (Regional and Inter-Regional) distribution of data, such as OPMET data.

3.3.4. The IWXXM data shall be distributed over AMHS only.

3.3.5. The AFS Addresses to be used are co-ordinated specifically for

- AFTN Service Messages (SVC AFTN)

- OPMET related Service Messages (SVC OPMET)

- European & North Atlantic TAC OPMET data (EUR/NAT Routine OPMET) on AMHS

- European & North Atlantic IWXXM OPMET data (EUR/NAT Non-Routine OPMET)

- The DMG EUR OPMET Data Update Procedure METNO messages on AMHS (to be found under paragraph E.):
  o The AIRAC METNO NO(AA)98 CCCC, currently NOBX98 EBBR, for changes to the standardized EUR OPMET Database Interface Control Document (ICD);
  o The AIRAC METNO NO(AA)99 CCCC, currently NOBX99 EBBR, for amendments to current OPMET data, new and expiring OPMET data available in the European Region.

- Non-European & North Atlantic OPMET data (Non EUR/NAT OPMET);

- The European Regional OPMET Databases: Brussels, Toulouse and Vienna (addressing information to be found under paragraph A.2.3)

3.3.6. The AFS Addresses for the distribution of restricted OPMET data are defined nationally or by bilateral agreements.

3.3.7. The DMG defined and co-ordinated AFS addresses, to be used for sending OPMET-messages, are presented in the following tables. Only AMHS (as applicable for international distribution) are indicated.

3.3.8. For sending TAC data via AFTN, just use the details within the field CN (CAAS form➔ CN=LOWMYZYX) or OU (XF form ➔ OU=EGZZWPXX).

3.3.9. IWXXM-data shall only be sent via AMHS, using the addresses indicated for IWXXM-data.

Table Under Construction

Albania – NOC Tirana - LATI	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Algeria – NOC Algiers - DAAG	
TAC (Traditional Alphanumeric Code form)	
From ROC LFPW	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LFPW	
SVC Messages	
Armenia – NOC Yerevan - UDSG	
TAC (Traditional Alphanumeric Code form)	
From ROC UUUJ	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC UUUJ	
SVC Messages	
Austria – ROC/IROG/RODB/NOC Vienna - LOWM	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	/CN=LOZZMLON/OU=LOZZ/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
From ROC LFPW	/CN=LOZZMTOU/OU=LOZZ/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
From ROC UUUJ	/CN=LOZZMMOS/OU=LOZZ/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
From IROG OEJD	/CN=LOZZMMID/OU=LOZZ/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
From AoR	/CN=LOWMMMXX/OU=LOWM/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
RODB TAC-Requests	/CN=LOWMYZYX/OU=LOWM/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
SVC Messages	/CN=LOWMYBYX/OU=LOWM/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC EGGY	/CN=LOZZXLON/OU=LOZZ/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
From ROC LFPW	/CN=LOZZXTOU/OU=LOZZ/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
From ROC UUUJ	/CN=LOZZXMOS/OU=LOZZ/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
From IROG OEJD	/CN=LOZZXMID/OU=LOZZ/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
From AoR	/CN=LOWMXAOR/OU=LOWM/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
RODB Requests	/CN=LOWMYZYA/OU=LOWM/O=LOVV/PRMD=AUSTRIA/ADMD=ICAO/C=XX/
SVC Messages	???
Azerbaijan – NOC Baku - UBBB	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Belarus – NOC Minsk - UMMN	
TAC (Traditional Alphanumeric Code form)	
From ROC UUUJ	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC UUUJ	
SVC Messages	
Belgium – RODB/NOC Brussels - EBBR	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	/CN=EBZZYBYX/OU=EBZZ/O=EBBR/PRMD=BELGIUM/ADMD=ICAO/C=XX/

`RODB Requests`	`/CN=EBBRYZYX/OU=EBBR/O=EBBR/PRMD=BELGIUM/ADMD=ICAO/C=XX/`
`SVC Messages`	`/CN=EBBRYMYX/OU=EBBR/O=EBBR/PRMD=BELGIUM/ADMD=ICAO/C=XX/`
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
`From ROC EGGY`	`/CN=EBZZYBYA/OU=EBZZ/O=EBBR/PRMD=BELGIUM/ADMD=ICAO/C=XX/`
`RODB Requests`	`/CN=EBBRYZYA/OU=EBBR/O=EBBR/PRMD=BELGIUM/ADMD=ICAO/C=XX/`
`SVC Messages`	`/CN=EBBRYMYX/OU=EBBR/O=EBBR/PRMD=BELGIUM/ADMD=ICAO/C=XX/`
Bosnia & Herzegovina – NOC Banja Luka - LQBK	
TAC (Traditional Alphanumeric Code form)	
`From ROC LOWM`	
`SVC Messages`	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
`From ROC LOWM`	
`SVC Messages`	
Bulgaria – NOC Sofia - LBSM	
TAC (Traditional Alphanumeric Code form)	
`From ROC LOWM`	
`SVC Messages`	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
`From ROC LOWM`	
`SVC Messages`	
Croatia – NOC Zagreb - LDZM	
TAC (Traditional Alphanumeric Code form)	
`From ROC LOWM`	
`SVC Messages`	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
`From ROC LOWM`	
`SVC Messages`	
Cyprus – NOC Larnaca - LCLK	
TAC (Traditional Alphanumeric Code form)	
`From ROC LOWM`	
`SVC Messages`	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
`From ROC LOWM`	
`SVC Messages`	
Czechia – NOC Prague - LKPW	
TAC (Traditional Alphanumeric Code form)	
`From ROC LOWM`	
`SVC Messages`	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
`From ROC LOWM`	
`SVC Messages`	
Denmark – NOC Copenhagen - EKCH	
TAC (Traditional Alphanumeric Code form)	
`From ROC EGGY`	
`SVC Messages`	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
`From ROC EGGY`	
`SVC Messages`	
Estonia – NOC Tallinn - EETN	
TAC (Traditional Alphanumeric Code form)	
`From ROC EGGY`	
`SVC Messages`	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
`From ROC EGGY`	
`SVC Messages`	
Finland – NOC Helsinki - EFKL	

TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC EGGY	
SVC Messages	
France – ROC/IROG/RODB/NOC Toulouse - LFPW	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	/CN=LFPWMLON/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
From ROC LOWM	/CN=LFPWMVIE/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
From ROC UUUJ	/CN=LFPWMMOS/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
From IROG	/CN=LFZZMAFI/OU=LFZZ/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
From AoR	/CN=LFPWYMEU/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
RODB Requests	/CN=LFPWYZYX/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
SVC Messages	/CN=LFPWYMEU/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC EGGY	/CN=LFPWXLON/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
From ROC LOWM	/CN=LFPWXTOU/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
From ROC UUUJ	/CN=LFPWXMOS/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
From IROG	/CN=LFPWXAFI/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
From AoR	/CN=LFPWXMEU/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
RODB Requests	/CN=LFPWYZYA/OU=LFPW/O=LFLF/PRMD=FRANCE/ADMD=ICAO/C=XX/
SVC Messages	???
Georgia – NOC Tbilisi - UGTB	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Germany – NOC Offenbach - EDZO	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Greece – NOC Athens - LGAT	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Greenland – NOC Nuuk - BGGH	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC EGGY	
SVC Messages	
Hungary – NOC Budapest - LHBM	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	

From ROC LOWM	
SVC Messages	
Iceland – NOC Reykjavik - BIRK	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC EGGY	
SVC Messages	
Ireland – NOC Dublin - EIDB	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC EGGY	
SVC Messages	
Israel – NOC Tel Aviv – LLBG/LLBD	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Italy – NOC Rome - LIIB	
TAC (Traditional Alphanumeric Code form)	
From ROC LFPW	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LFPW	
SVC Messages	
Kazakhstan – NOC Astana - UACC	
TAC (Traditional Alphanumeric Code form)	
From ROC UUUJ	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC UUUJ	
SVC Messages	
Kyrgyzstan – NOC Bishkek - UCFM	
TAC (Traditional Alphanumeric Code form)	
From ROC UUUJ	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC UUUJ	
SVC Messages	
Latvia – NOC Riga - EVRA	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC EGGY	
SVC Messages	
Lithuania – NOC Vilnius - EYVI	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	

From ROC EGGY	
SVC Messages	
Luxembourg – NOC Luxembourg - ELLX	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC EGGY	
SVC Messages	
Malta – NOC Malta - LMMM	
TAC (Traditional Alphanumeric Code form)	
From ROC LFPW	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LFPW	
SVC Messages	
Moldova, Rep. of – NOC Chisinau - LUKK	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Morocco – NOC Casblanca - GMMC	
TAC (Traditional Alphanumeric Code form)	
From ROC LFPW	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LFPW	
SVC Messages	
Netherlands – NOC De Bilt - EHDB	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC EGGY	
SVC Messages	
North Macedonia – NOC Skopje - LWSK	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Norway – NOC Oslo - ENMI	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC EGGY	
SVC Messages	
Poland – NOC Warsaw - EPWA	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	

From ROC LOWM	
SVC Messages	
Portugal – NOC Lisbon - LPMG	
TAC (Traditional Alphanumeric Code form)	
From ROC LFPW	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LFPW	
SVC Messages	
Romania – NOC Bucharest - LROM	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Russian Federation – ROC/NOC Moscow - UUUJ	
TAC (Traditional Alphanumeric Code form)	
From ROC LFPW	/CN=UUUJMTOU/OU=UUUJ/O=UU/PRMD=RUSSIA/ADMD=ICAO/C=XX/
From ROC LOWM	/CN=UUUJMVIE/OU=UUUJ/O=UU/PRMD=RUSSIA/ADMD=ICAO/C=XX/
From ROC EGGY	/CN=UUUJMLON/OU=UUUJ/O=UU/PRMD=RUSSIA/ADMD=ICAO/C=XX/
From AoR	/CN=UUUJ????/OU=UUUJ/O=UU/PRMD=RUSSIA/ADMD=ICAO/C=XX/
SVC Messages	???
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LFPW	/CN=UUUJXTOU/OU=UUUJ/O=UU/PRMD=RUSSIA/ADMD=ICAO/C=XX/
From ROC LOWM	/CN=UUUJXVIE/OU=UUUJ/O=UU/PRMD=RUSSIA/ADMD=ICAO/C=XX/
From ROC UUUJ	/CN=UUUJXLON/OU=UUUJ/O=UU/PRMD=RUSSIA/ADMD=ICAO/C=XX/
From AoR	/CN=UUUJ????/OU=UUUJ/O=UU/PRMD=RUSSIA/ADMD=ICAO/C=XX/
SVC Messages	???
Serbia & Montenegro – NOC Belgrade - LYBM	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Slovakia – NOC Bratislava - LZIB	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Slovenia – NOC Ljubljana - LJLJ	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Spain – NOC Madrid - LEMM	
TAC (Traditional Alphanumeric Code form)	
From ROC LFPW	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LFPW	

SVC Messages	
Sweden – NOC Norrkoping - ESWI	
TAC (Traditional Alphanumeric Code form)	
From ROC EGGY	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC EGGY	
SVC Messages	
Switzerland – NOC Zurich - LSSW	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Tajikistan – NOC Dushanbe - UTDD	
TAC (Traditional Alphanumeric Code form)	
From ROC UUUJ	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC UUUJ	
SVC Messages	
Tunisia – NOC Tunis - DTTA	
TAC (Traditional Alphanumeric Code form)	
From ROC LFPW	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LFPW	
SVC Messages	
Turkey – NOC Ankara - LTAA	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
Turkmenistan – NOC Ashgabat - UTAA	
TAC (Traditional Alphanumeric Code form)	
From ROC UUUJ	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC UUUJ	
SVC Messages	
Ukraine – NOC Kiev - UKMS	
TAC (Traditional Alphanumeric Code form)	
From ROC LOWM	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LOWM	
SVC Messages	
United Kingdom – ROC/IROG/NOC London - EGGY	
TAC (Traditional Alphanumeric Code form)	
From ROC LFPW	/OU=EGZZMTOU/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From ROC LOWM	/OU=EGZZMVIE/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From ROC UUUJ	/OU=EGZZMMOS/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From IROG ASI	/OU=EGZZMASI/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/

From IROG CAR	/OU=EGZZMCAR/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From IROG NAM	/OU=EGZZMNAM/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From IROG NAT	/OU=EGZZMNAT/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From IROG SAM	/OU=EGZZMSAM/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From AoR	/OU=EGZZWPXX/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
SVC Messages	/OU=EGZZMMOS/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC LFPW	/OU=EGZZXTOU/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From ROC LOWM	/OU=EGZZXVIE/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From ROC UUUJ	/OU=EGZZXMOS/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From IROG ASI	/OU=EGZZXASI/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From IROG CAR	/OU=EGZZXCAR/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From IROG NAM	/OU=EGZZXNAM/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From IROG NAT	/OU=EGZZXNAT/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From IROG SAM	/OU=EGZZXSAM/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
From AoR	/OU=EGZZ????/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
SVC Messages	/OU=EGZZMMOS/O=AFTN/PRMD=EG/ADMD=ICAO/C=XX/
Uzbekistan – NOC Tashkent - UTTW	
TAC (Traditional Alphanumeric Code form)	
From ROC UUUJ	
SVC Messages	
IWXXM (ICAO Weather Exchange Model – Data in GML/XML-format)	
From ROC UUUJ	
SVC Messages	

3.4. Distribution Modes for Non-OPMET Data

3.4.1. The next table includes directives for the AFS addressing of defined, OPMET data related, Non-OPMET messages, such as messages with a reserved WMO Abbreviated Heading TTAAii CCCC.

3.4.2. METNO Messages concerning the Regional OPMET Database status (see APPENDIX A) and the EUR OPMET Data Update Procedure (see APPENDIX B) are to be addressed to the ROCs over AMHS.

EUR ROC	RODEX schema AFS Address for METNOs
EGGY	C=XX/A=ICAO/P=EG/O=AFTN/OU1=EGZZWPXX
LFPW	C=XX/A=ICAO/P=FRANCE/O=LFLF/OU1=LFLF/CN=LFLFYBYX
LOWM	C=XX/A=ICAO/P=AUSTRIA/O=LOVV/OU1=LOWM/CN=LOWMMMXX

3.4.3. The METNOs then are getting distributed by the ROCs to the NOCs and to the Non-EUR IROGs within its AoR, according to the RODEX schema AFS addressing tables.

APPENDIX F - OPMET Performance Indices

1. Introduction Performance Index Calculation

    1.1. The EUR Data Management Group (DMG) of the Meteorology Group (METG) of EASPG has been tasked to observe and monitor the OPMET distribution over the EUR AFS (AFTN/AMHS SADIS) network in terms of:

         - the coverage of the distribution and the consistency of the distribution;
         - availability and timeliness for EUR eANP Vol II Table MET II-2 required Routine OPMET data: METARs and TAFs;
         - EUR SIGMET availability and format as per requirements listed in the eANP Vol II Table MET II-1.

    1.2. The Routine OPMET data Availability and Timeliness indices that have been defined by the DMG provide a measure of the performance of the OPMET data. Each index is produced individually for each scheduled OPMET data type: METAR, Short and Long TAFs.

    1.3. The Routine OPMET data monitoring is performed each year during 14 days: 01 till 14 February by (NOC and RODB) Brussels or any other ROC/NOC - RODB provided that the monitoring results are compliant with the EUR Doc 018, APPENDIX D: EUR OPMET Data Monitoring Tool Specification.

    1.4. The DMG maintains the inventory of SIGMETs issued by States in the EUR Doc 014 – EUR SIGMET and AIRMET Guide. The EUR SIGMET Availability index observes and monitors OPMET deficiencies in terms of:

         - WS-SIGMET production and distribution.

    1.5. The SIGMET monitoring is performed by Regional OPMET Centre Toulouse for a 5-month period.

    1.6. The Routine OPMET data indices are also applied to the SADIS OPMET distribution. The results are expected to be shown on a website from the SADIS Provider.

    1.7. The DMG is tasked to report the OPMET Performance Indices yearly to the EASPG / METG for initiating remedial actions by States against deficiencies of:

         - Availability and Timeliness of eANP Vol II Table MET II-2 listed required METAR and TAF of full operational aerodromes.

    1.8. The Availability Indices for EUR Routine OPMET Data per State are presented in Table ASBU-EUR-B0-AMET 3-5.

    1.9. The EUR States' Timeliness Indices for Routine OPMET Data are presented in Table ASBU-EUR-B0-AMET 3-6.

    1.10. eANP Vol II Table MET II-1 listed WS-SIGMET Availability and format.

    1.11. The resulting indices are listed per EUR State in Table ASBU-EUR-B0-AMET 3-7.

    1.12. Progress shall be evaluated yearly by the METG resulting from the States' remedial actions taken based on the OPMET Performance Indices presented by the DMG against the most current eANP OPMET Data Requirements available to the DMG from:

- The yearly February DMG Routine OPMET Data Monitoring Exercises
- The ROC Toulouse SIGMET monitoring (5 months period).

1.13.   Changes in the eANP requirements do not affect how the Performance Indices are calculated but the reader should be aware that:

1.14.   The DMG is not responsible for the contents nor the maintenance of the OPMET data requirements as listed in the eANP Tables.

1.15.   Following next, the metrics for generating the OPMET Availability and Timeliness Indices for Routine OPMET Data are presented for enabling readers to interpret the results for their State. The DMG is capable of investigating the results per State, per OPMET Data Type (TT= SA/FC/FT), per eANP full operational aerodrome, per monitoring day

2.   Performance Indices

2.1. Definitions

eANP = The ICAO International electronic Air Navigation Plan.

eANP Volume II Table MET II-2 = ICAO Doc 7754 including the Routine OPMET Data, METAR and TAF requirements for AOP aerodromes; full time or partial operational.

eANP_Av = Aerodrome operability as reported in eANP Volume II Table MET II-2: "F" = Full time, "P" = Partially.

AOP = Aerodrome Operational Planning.

AHL = OPMET Bulletin Abbreviated Header Line (TTAAii CCCC YYGGgg BBB)

YYGGgg = The date-time group in the OPMET bulletin Abbreviated Header Line.

RXTime = Time of receipt (HH:MM:SS) of the bulletin (TTAAii CCCC BBB) containing the aerodrome METAR Observation of TAF Report.

ICAO EUR OPMET Performance Indices:
  – The ICAO EUR OPMET METAR and TAF Performance Indices: Availability and Timeliness, are calculated for eANP Vol II, Table MET II-2 fully available aerodromes (ref.: Table MET II-2, column 12 = "F") and shall be reported per State. eANP partially available AOP aerodromes (based on Table MET II-2, column 12 = "P") are not included in the statistics.

  – The METAR and TAF Performance Indices are generated per eANP full-available aerodrome (Table MET II-2, column 12 = "F") day by day over a monitoring period of n days (n = 14). The average Performance Indices for the monitoring period are calculated for States from the daily results of its eANP full-available aerodromes.

  – *METAR Availability* = for eANP required aerodromes where METAR is issued full-time every half hour, on average over a monitoring period of n days (n=14) 45.6 (=95%) of 48 observations should be available

For eANP-listed aerodromes where METAR is issued full-time every hour, on average over a monitoring period of n days (n=14) 22.8 (=95%) of 24 observations should be available at each aerodrome.

For a partial operational eANP aerodrome producing METAR, regardless of how frequently it is issued, at least 1 observation must be available each day. Partial operational aerodromes are not considered for generating the overall average State METAR Availability.

NIL METARs and METAR bulletins where **in the Abbreviated Header** (TTAAii CCCC YYGGgg BBB) BBB = CC@ (COR) are ignored, thus excluded.

−   *METAR Timeliness* = on average 95% eANP required and available METAR observation reports (not including SPECI; no NIL, no AMD observations; including COR observations) is received maximum 6 minutes / 10 minutes after the observation time (MM observation time(s) from the YYGGgg-Group in the bulletin Abbreviated Header = DDHHMM based on monitoring): RX-Time ≤ HH:(MM + 6') and RX-Time ≤ HH:(MM + 10').

−   *TAF Availability* = for eANP required aerodromes where 24- or 30-hour TAF is issued full-time (based on eANP VOL II, Table MET II-2, column 12), on average 3.8 (= 95%) TAF should be available each day.

For eANP aerodromes where 9-hour TAF is issued full-time, on average 7.6 (= 95%) TAF reports should be available each day.

For eANP-listed aerodromes where TAF is available partially, at least 1 TAF (COR) report not NIL, not AMD must be available each day. Partial operational aerodromes are not considered for generating the overall average State TAF Availability.

NIL TAF reports and TAF bulletins where **in the Abbreviated Header** (TTAAii CCCC YYGGgg BBB) BBB = AA@ (AMD) or BBB = CC@ (COR) are not included, thus ignored.

−   *TAF Timeliness* = on average 95% eANP required and available TAF (excluding NIL and TAF reports with BBB = AMD; inclusive BBB = COR **reports**) is received within 60 minutes before the start period of validity of TAF (TAF validity period = GGGG based on monitoring): (GGGG – 60') ≤ RX-Time ≤ (GGGG + 0').

VPeriodx = GGGG-TAF Validity Period (1 .. x) based on monitoring.

Obsx = MM-METAR Observation Time (1 .. x) based on the monitored DDHHMM YYGGgg-Group in the Abbreviated Header Line (AHL).

REP_EXP = For an eANP aerodrome, the number of TAF reports and METAR observations expected according to the aerodrome operational hours indicated in the eANP Volume II Table MET II-2 column 12; "F" full or "P" partial.

REP_RX = Per eANP aerodrome, the number of received TAF VPeriodx reports: not NIL and not counting amendments (BBB = A@@), and the number of received METAR Obsx observations: not NIL and not including amendments (BBB = A@@).

FROM – TILL = For eANP aerodromes, operational hours observed by monitoring TAF-reports (also NIL and including BBB = C@@ but no BBB = A@@) and METAR-observations (also NIL, no BBB-

Remark), reading the YYGGgg-Group of first till last received report/observation per day of the monitoring reference period.

2.2. DMG Metrics for calculating the ICAO EUR OPMET Performance Indices

2.2.1. General

2.2.1.1. The DMG processing stages for generating the Routine OPMET Data Performance Indices are described next: Availability and Timelines Indices

- Fourteen days AFTN/AMHS OPMET monitoring against the eANP Volume II Table MET II-2 OPMET Data Requirements.
- Step 1: Determination of METAR MM-Observation Times / TAF GGGG-Validity Periods per eANP aerodrome per day based on monitoring.
- Step 2: Per day, for every eANP aerodrome generation of the METAR, FC-and FT-TAF ICAO OPMET Performance Indices.
- Step 3: Per day, per State generation of the METAR, FC- and FT-TAF ICAO OPMET Performance Indices based on the monitored eANP aerodrome performance.
- Step 4: Calculation of the averages for the State's daily OPMET Performance Indices: FC/FT/SA-Availability and -Timeliness, over the 14 day monitoring period.
- Step 5: Merge of FC- and FT-Indices to TAF-Indices per Station and per day. Generation of the final average State TAF Performance Indices per State for the (x = 14) days of the reference monitoring period = 01-14/02/YYYY.

2.2.2. OPMET Data Monitoring

2.2.2.1. The multiple purpose DMG OPMET monitoring exercise (see App. C) is applied for the development of the metrics for calculating the ICAO EUR OPMET Performance Indices:

- Monitoring period: 01 – 14 February YYYY.
- Monitoring Centre: EBBB AFTN/AMHS COM Centre or any other Centre.
- Monitored OPMET Data: all OPMET Data originating from ROC London to the EBBR Meteo via the EBBB COM Centre.
- Monitoring tool: the skeyes' OPMET Data monitoring tool online registering continuously the AMHS OPMET data traffic duplicated via AFTN to a monitoring PC day by day. The daily logs of the registered OPMET messages are processed off-line:
  - o for generating files in compliance to the DMG OPMET Monitoring Tool Specification
  - o for analysis by database scripts for DMG ToR purposes. Scripts for generating the ICAO OPMET Performance Indices are being developed.
- The off-line processing tool is applied for generating specific details on the received aerodrome-catalogue OPMET data registered in the day by day log files:
  - o Aerodrome catalogue used: eANP aerodromes.
  - o OPMET monitoring generated details: per eANP aerodrome
    - ▪ received reports/observations, NILs and not NILs, duplications, BBB-Remark, VPeriodx or Obsx, HHMMSS RXTime, AAii, CCCC, YYGGgg, AFTN Filing Time.
    - ▪ dedicated statistical files on Timeliness.

2.2.2.2. Special database scripts are being developed for analysing the resulting OPMET monitoring files for catalogue aerodromes, such as the eANP.

2.2.3. eANP Aerodrome METAR Observation Times and TAF Validity Periods

2.2.3.1.   For the eANP aerodromes regular METAR Observation Times (Obsx) and FC/FT TAF Validity Periods (VPeriodx) are being determined from the daily monitoring result files.

− METAR Observation Times: per day, per eANP aerodrome, if METAR required according to eANP.

Observed MM-Observation times: Obs1 … Obs16, from the YYGGgg-Group (where occurring) of received METARs (BBB = Blank). From the observed MM = Obsx, only the regular ones are retained for further processing:

- o eANP aerodromes with eANP_Av= "F": number of observed Obsx > **14** per day or Obsx not determined.
- o eANP aerodromes with eANP_Av = "P": number of observed Obsx > **7** per day or Obsx not determined.
- o FROM_TILL Operational hours: FROM = HHMM from first received, TILL = HHMM from last received aerodrome METAR Report-Date-Time per day.

− TAF Validity Periods: per day, per eANP aerodrome, if FC/FT-TAF required according to eANP.

From the received FC/FT-TAF Reports per eANP aerodrome (BBB != A@@): the $G_1G_1G_2G_2$ VPeriod1 … Vperiod15 of the TAF-report Validity Period Group. Only validated VPeriods are retained for further processing: valid VPeriodx = per monitored $G_1G_1G_2G_2$

- o The **GG** in the (FC/FT)AAii CCCC YY**GG**gg Bulletin Header of the (FC/FT)-report must be $<= G_1G_1$ in VPeriodx = $G_1G_1 G_2G_2$.
- o FROM_TILL Operational hours: FROM = HHMM from first received, TILL = HHMM from last received aerodrome (FC/FT)-report Report-Date-Time per day.

− The number of (regular) METAR Observation Times (Obsx) and the number of (regular) FC/FT TAF Validity Periods (VPeriodx) can vary day by day, depending on the aerodrome operations.

2.2.4. eANP Aerodrome OPMET Performance (Step 2)

2.2.4.1.   Per eANP aerodrome, the ICAO METAR/TAF Availability and Timeliness are calculated per day of the referenced OPMET monitoring period.

2.2.4.2.   Per monitoring day, only METAR observations and TAF reports from Bulletins with YY in YYGGgg from the Abbreviated Header Line (TTAAii CCCC YYGGgg) = that day are considered. Others are discarded for processing.

2.2.4.3.   The aerodrome OPMET Performance (re-)considers the operational hours on a daily basis.

− eANP Aerodrome METAR Availability:
Per monitoring day, only METAR observations from Bulletins with YY in YYGGgg from the Abbreviated Header Line (TTAAii CCCC YYGGgg) = that day are considered. Others are discarded for processing.

For every Obsx = MM the total number of received not NIL observations REP_RX is determined, BBB != A@@, excluding duplications.

REP_EXP Depends on the eANP_Av in the eANP: "F" or "P":

- o eANP_Av = "F" => REP_EXP = 48 for METARs issued every half hour;
  REP_EXP = 24 where METAR issued once per hour.
- o eANP_Av = "P" => REP_EXP = 1.

The aerodrome METAR Availability for the monitoring day becomes:

- o (REP_RX / REP_EXP) * 100,00 or 0,00 %. The maximum METAR
  Availability for an aerodrome = 100,00%.
- o If for an aerodrome, there are more Obsx than expected and the Availability
  Indix exceeds 100,00%, it becomes rounded down to 100,00%.

– eANP Aerodrome METAR Timeliness: RXTime and/or Obs
Δt = RXTime (HH:MM:SS) – HHMM in the observation Report-Date-Time Group.

An aerodrome METAR received later than 10 minutes after the HHMM from the
YYGGgg- Group (DDHHMM) is too late $\Delta t > 10'$): **reports**.
Per monitoring day (=YY in YYGGgg of the AHL), for all Obsx of the aerodrome, the
number of METAR observations for day = YY received on time, i.e. RXTime
(HH:MM:SS) no later than 10 minutes after the observation time HHMM(00) in the AHL
YYGGgg-Group ($\Delta t \leq 10'$):

- o The aerodrome timeliness on the monitored day becomes: Aerodrome METAR
  Timeliness = ((REP_RX - reports) / REP_RX) * 100,00 % and maximum
  100,00% or 0,00%
- o Per METAR Obsx, the earliest received is considered for the timeliness. Obsx
  duplications received later are discarded.
- o If for an aerodrome, there are more Obsx than expected, even the exceeding
  observations are being evaluated for the Aerodrome METAR Timeliness.

– eANP Aerodrome (FC/FT) TAF Availability:
For each VPeriodx = GGGG the number of received not NIL (FC/FT)-reports REP_RX is
determined, BBB != A@@, excluding duplications.

REP_EXP Depends on the TAF type TT = FC or FT and the eANP_Av in the eANP: "F"
or "P":
- o For TAF TT = FC and
  - **eANP_Av = "F" => REP_EXP = 8**
  - eANP_Av = "P" => REP_EXP = 1

- o For TAF TT = FT
  - **eANP_Av = "F" => REP_EXP = 4**
  - eANP_Av = "P" => REP_EXP = 1

The aerodrome (FC/FT) Availability for the monitoring day becomes:
- o (REP_RX / REP_EXP) * 100,00 or 0,00 %. The maximum (FC/FT)
  Availability for an aerodrome = 100,00%.
- o Per aerodrome the most optimized series of VPeriodx determined in Step 1 is
  applied for the calculation of its Availability Index. For FT-TAFs, the VPeriodx
  in the row are to start every 6 hours, maximum 24hours/6 = 4 per day. In a
  series of VPeriods, each VPeriod has the same result for G_1G_1 modulo 6.
  Maximum two series of VPeriods are considered (FT TAF every 3 hours, 8 per
  day). Per aerodrome the series with all VPeriods for the same day of monitoring
  is retained for the calculation of the Availability Index (also for the Timeliness
  Index), or else the longest series having the most 6 hourly VPeriods. Other FT
  VPeriodx are ignored.

- eANP Aerodrome (FC/FT) TAF Timeliness
Per monitoring day (=YY in YYGGgg of the AHL), only VPeriodx of the aerodrome from that day: Validity Period = YY@@/@@@@ or (YY+1)00/@@@@ are considered. Others are discarded for processing.

Δt = RXTime (HH:MM:SS) – start time of TAF Validity Period.

An Aerodrome TAF (FC or FT) received more than 60 minutes before the Validity Period is too early (Δt < -60') ; received later than the start of the Validity Period is too late (Δt > GGGG + 0') = **reports**.
A TAF-report received between **60** minutes (- 60' ≤ Δt ≤ GGGG) before, and till the start of its Validity Period is on time.
For all VPeriodx of the aerodrome, the number of reports received on time:
  o Aerodrome FC/FT Timeliness = ((REP_RX – reports) /REP_RX) * 100,00 %
  o Per FC- and FT-TAF, the earliest received is considered for the Timeliness. VPeriodx duplications received later are discarded.
  o Per aerodrome the most optimized row of VPeriodx determined in Step 1 is applied for the calculation of its Timeliness Index. For FT-TAFs, the VPeriodx in the row are to start every 6 hours, maximum 24hours/6 = 4 per day and each having the same result for G_1G_1 modulo 6. The series with the most VPeriodx G_1G_1 starting on the day of monitoring or else the longest series is applied for the calculation of the aerodrome FT-Timeliness (idem dito FT-Availability) Index. Other FT VPeriodx are ignored.

2.2.5. State OPMET Performance (Step 3)

2.2.5.1.   After generating the eANP aerodrome ICAO OPMET Performance Indices, the Performance Indices are calculated per State as the average of its eANP aerodromes' Performance Indices per day for the number of days of the monitoring period.

- State METAR Availability:
Per State, the average of METAR Availability of its eANP aerodromes is calculated day by day:

$$\frac{\text{SUM (\% Availability of eANP METAR required Aerodromes of the State)}}{\text{Number of eANP METAR required Aerodromes of the State}}$$

- State METAR Timeliness:
Per State, the average of METAR Timeliness of its eANP aerodromes is calculated per day:

$$\frac{\text{SUM (\% Timeliness of eANP METAR required Aerodromes of the State)}}{\text{Number of eANP METAR required Aerodromes of the State}}$$

- State (FC/FT) TAF Availability:
Per State, the average of FC/FT Availability of its eANP aerodromes is calculated per day:

$$\frac{\text{SUM (\% Availability of eANP FC or FT required Aerodromes of the State)}}{\text{Number of eANP FC or FTrequired Aerodromes of the State}}$$

- State (FC/FT) TAF Timeliness:

Per State, the average of FC/FT Timeliness of its eANP aerodromes is calculated day by day:

$$\frac{\text{SUM (\% Timeliness of eANP FC or FT required Aerodromes of the State)}}{\text{Number of eANP FC or FT required Aerodromes of the State}}$$

2.2.6. Average State FC/FT/SA-Availability and –Timeliness (Step 4)

2.2.6.1.   After generating the daily averages for the State's ICAO OPMET Performance Indices for all its eANP required locations, for each State the overall averages are calculated for the fourteen-day monitoring period referred to.

2.2.7. Average State TAF Performance Indices per State (Step 5)

2.2.7.1.   Merge of FC- and FT-Indices to TAF-Indices per Station and per day. For every Station, occurring FC-Performance is discarded where FT-TAFs are produced also. Hence, for those Locations the TAF-Performances in fact are the FT-Performances since the FC-Performances are discarded. From the daily TAF (FC and FT, FT where both FCs and FTs are issued) Location Availability and Timeliness Indices, for each day the State Performance Indices are getting generated. Then, the State average TAF Availability and Timeliness Indices are produced for the referenced monitoring period.

TAF = TT = FC and FT

2.2.7.2.   TAF Availability per State

Aerodrome = Aerodrome Full operational.

REP_RX = FC / FT TAF-Reports received per day not NIL; not counting BBB=A@@.

REP_EXP = TAF-Reports expected per day = 8 for TT = FC and 4 for TT = FT for Full operational aerodrome.

N = Number of aerodromes (Full operational) per State.

Day = monitoring day starting at 1 till 14.

Availability$_{aerodrome}$ = Aerodrome Availability per Day $=\left(\frac{\#REP\_RX}{\#REP\_EXP}\right)*100,00\%$, minimum 0,00% and maximum 100,00%.

Availability$_{State}$ = Average State Availability for number of monitoring days.

$$\text{Availability}_{State} = \frac{\sum_{aerodrome=1}^{N}\left(\frac{\sum_{day=1}^{14}\left(\left(Availability_{aerodrome}\right)_{Day}\right)}{N}\right)}{Day}\ \%$$

2.2.7.3. TAF Timeliness per State

Aerodrome = Aerodrome Full operational.

REP_RX = Received TAF-Reports per day, not NIL and not counting BBB=A@@.

reports = TAF-Reports per day received too early or too late: RXTime > 60' too early against the TAF Validity Period (@@G_1 G_1 G_1 G_1/@@ G_2 G_2 G_2 G_2) or TXTime later than the start of the TAF Validity Period @@G_1 G_1 G_1 G_1.

Timeliness$_{aerodrome}$ = Aerodrome Timeliness per Day = $\left(\frac{\#REP\_RX - reports}{\#REP\_RX}\right) * 100{,}00\%$

Timeliness$_{State}$ = Average State Timeliness for number of monitoring days.

$$\text{Timeliness}_{State} = \frac{\frac{\sum_{aerodrome=1}^{N}\left(\sum_{day=1}^{14}\left((Timeliness_{aerodrome})_{Day}\right)\right)}{N}}{Day} \%$$

2.2.7.4. METAR Availability per State

Aerodrome = Aerodrome Full operational.

REP_RX = Observations received per day not NIL; not counting BBB=C@@; not counting BBB=A@@.

REP_EXP = Observation expected per day = 24 or 48 for Full operational aerodrome.

N = Number of aerodromes (Full operational) per State.

day = monitoring day starting at 1 till 14.

Availability$_{aerodrome}$ = Aerodrome Availability per Day = $\left(\frac{\#REP\_RX}{\#REP\_EXP}\right) * 100{,}00\%$ minimum 0,00% and maximum 100,00%.

Availability$_{State}$ = Average State Availability for number of monitoring days.

$$\text{Availability}_{State} = \frac{\frac{\sum_{aerodrome=1}^{N}\left(\sum_{day=1}^{14}\left((Availability_{aerodrome})_{Day}\right)\right)}{N}}{Day} \%$$

2.2.7.5.   METAR Timeliness per State

Aerodrome = Aerodrome Full operational.

REP_RX = Observations received per day not NIL; not counting BBB=C@@; not counting BBB=A@@.

REP_EXP = Observation expected per day = 24 or 48 for Full operational aerodrome.

N = Number of aerodromes (Full operational) per State.

day = monitoring day starting at 1 till 14.

reports = Observations per day received too late: RXTime > 10' too late against the HHMM in the Report-Date-Time Group (DDHHMMZ).

$$\text{Timeliness}_{\text{aerodrome}} = \text{Aerodrome Timeliness per Day} = \left(\frac{\#REP\_RX - reports}{\#REP\_RX}\right) * 100,00\%$$

Timeliness$_{\text{State}}$ = Average State Timeliness for number of monitoring days.

$$\text{Timeliness}_{\text{State}} = \frac{\sum_{aerodrome=1}^{N}\left(\frac{\sum_{day=1}^{14}\left(\left(Timeliness_{aerodrome}\right)_{Day}\right)}{N}\right)}{Day}\ \%$$

2.2.8. Average State TAF Performance Indices per State

2.2.8.1.   Merge of FC- and FT-Indices to TAF-Indices per Station and per day. For every Station, occurring FC-Performance is discarded where FT-TAFs are produced also. Hence, for those Locations the TAF-Performances in fact are the FT-Performances since the FC-Performances are discarded. From the daily TAF (FC and FT, FT where both FCs and FTs are issued) Location Availability and Timeliness Indices, for each day the State Performance Indices are getting generated. Then, the State average TAF Availability and Timeliness Indices are produced for the referenced monitoring period.

2.3. Report for States

2.3.1. States that have not attained the 95% threshold for Availability and/or Timeliness are entitled to request for a report that shows the details for remedial or corrective actions. Possible actions are:
– Update the eANP Volume II Table MET II-2 OPMET data requirements also considering the METAR/SPECI and TAF Availability parameter (eANP Column 12) indicating Full or Partial Operability.
– Optimize the compilation and the distribution of data in terms of Availability and Timeliness.
– Resolve OPMET data format errors.
– DMG Monitoring corrective actions.
– DMG metrics for calculating the ICAO OPMET Performance Indices.

2.3.2. ICAO EUR, METG, DMG Members, ROCs can request reports from other States.

2.3.3. The DMG just calculates and reports the ICAO OPMET Performance Indices based on the yearly 01-14 February OPMET Data Monitoring Exercise.

2.3.4. The DMG does not interpret the resulting Performance Indices for States, nor does it initiate any actions on behalf of States.

2.3.5. The DMG can accommodate States' request for reporting the details of the Performance Indices results. The levels of details to be considered are related with the calculation metrics:

− Relevant monitoring details: data received or not; receipt time; NIL or not NIL; received CORs, RTDs, AMDs, format errors.
  − From Step 1, the monitored aerodrome METAR MM-Observation Times / TAF Validity Periods on daily basis.
  − From Step 2, per day of the referenced DMG OPMET data monitoring period: the figures of States' Availability and Timeliness Indices and of the eANP aerodromes per State.

2.3.6. Because of the large volumes of data involved and restricted time allowance, the intention is to anticipate to formal requests for information from States that have been reported with OPMET Performances below the thresholds. The presented information at first shall be limited to formal lists of details on the State's aerodromes that have not attained the Availability and/or Timeliness thresholds. This should be sufficient for States to investigate internally the production and distribution of eANP OPMET data.

2.3.6.1. First level of details includes: with reference to the DMG OPMET Data Monitoring Exercise, per State and all the State's eANP full-operational aerodromes with faulty Availability and/or Timeliness results.

2.3.6.2. For METAR:
− SAobstime_Catalogue_Mon_*DDMM_State*: For every day, all the State's full-operational aerodromes with faulty Availability and/or Timeliness results and the information determined by Step 1 of the metrics: regular Observation Times (MM = Obs1 ... Obs5); indicative Operational Hours (From – Till), percentages of Availability and Timeliness on that day.
− ICAO_OPMET_SA_FULL_FAULT_PERFORMANCE_ *DDMM_State*: Per day from the results of Step 2, for the State, from aerodromes with Available and/or Timeliness below 95% the monitored valid METARs are listed to show up shortcomings.

2.3.6.3. For TAF:
− (*FC/FT*)vPeriod_Catalogue_Mon_*DDMM_State*: For every day of the reference DMG monitoring period, from full-operational locations with insufficient TAF Availability and/or Timeliness (below 95%), the observed valid TAF Validity Periods (VPeriod1 ... VPeriod10 = $G_1G_1G_2G_2$); indicative Operational Hours (From – Till), percentages of Availability and Timeliness are listed.
− ICAO_OPMET_*(FC/FT)*_FULL_FAULT_PERFORMANCE_*DDMM_State*: from Step 2, list of received FC/FT-TAFs from aerodromes with low TAF Availability and/or low TAF Timeliness per day of the reference DMG monitoring period.

2.3.6.4. The DMG does also calculate the ICAO OPMET Performance Indices:
− for all Non-EUR Region States;
− for eANP Partial Available aerodromes.
Data missing because of format errors can be traced.
The information is available on explicit and motivated request to the DMG.

APPENDIX G - RODEX Backup Procedure

1. Introduction

   1.1. Purpose

      1.1.1. With the replacement of the MOTNE- by the RODEX schema (Regional OPMET Data Exchange), the possibility has been created to implement a backup functionality between the ROCs (Regional OPMET Centre). This document describes

      - the general principles of the backup-procedure
      - the scenarios in which backup will be applied
      - the procedures to be followed

      1.1.2. The purpose of the backup-procedure is to guarantee the provision of alphanumeric as well as IWXXM OPMET data via the AFS to all NOCs (National OPMET Centre) in case of a long-term outage of a ROC due to e.g. fire, flood or technical problems caused by a massive soft- or hardware failure.

   1.2. Backup in case of COM-Centre Outage

      1.2.1. No backup procedure is defined for a COM-Centre Outage.

      1.2.2. Any OPMET-Centre (NOC, ROC, IROG) is associated to its national AFS COM-centre, enabling the exchange of OPMET data via the AFS. A failure of the COM-centre causes the OPMET-Centre to get unreachable and therefore unable to exchange date.

      1.2.3. To be able to provide OPMET data backup in case of a failure of the COM-centre a ROC is connected to, it would be necessary that each centre in the AoR of that ROC manually alters the address of the failing ROC to the address of the backup-ROC.

      1.2.4. Apart from the high effort for co-ordination and the missing meteorological data, the impact of a COM-centre outage will be much higher on flight operations as this will also affect the dissemination of flight plans, NOTAMs and a lot of other important operational data.

      1.2.5. Therefore, such an outage is not handled by this procedure.

   1.3. Backup in case of RODB Outage

      1.3.1. No backup procedure is defined for a Regional OPMET-DB outage.

      1.3.2. If one of the three EUR-OPMET-DBs is not available, users can query one of the two remaining databases. All three databases hold almost the same content. Further details about the RODBs can be found in Appendix A (Interface Control Document).

1.4. Normal operation

1.4.1. The following picture gives a rough overview on the alphanumeric data flow in normal operations.
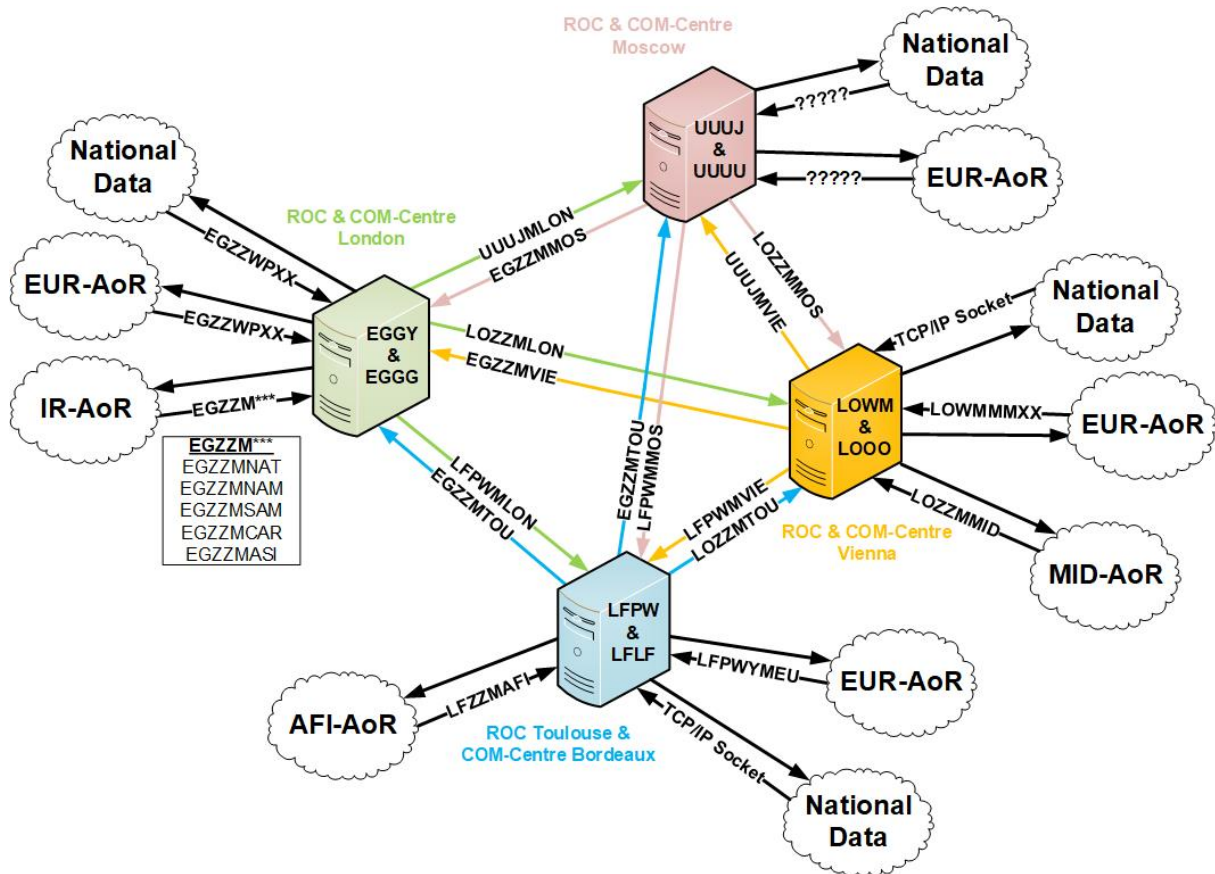

Figure 1: Alphanumerical OPMET Data flow in normal operations

1.4.2. The following table shows the addressing schema between the ROCs for exchanging TAC as well as IWXXM-OPMET-data:

From	To	TAC	IWXXM
London	Moscow	UUUJYZYM	UUUJYZYP
London	Toulouse	LFPWMLON	LFPWMLON
London	Vienna	LOZZMLON	LOZZXLON
Moscow	London	EGZZMMOS	EGZZXMOS
Moscow	Toulouse	LFPWMMOS	LFPWMMOS
Moscow	Vienna	LOZZMMOS	LOZZXMOS
Toulouse	London	EGZZMTOU	EGZZXTOU
Toulouse	Moscow	UUUJYZYN	UUUJYZYY
Toulouse	Vienna	LOZZMTOU	LOZZMTOU
Vienna	London	EGZZMVIE	EGZZXVIE
Vienna	Moscow	UUUJYZYO	UUUJYZYZ
Vienna	Toulouse	LFPWMVIE	LFPWMVIE

1.4.3. There are special AMHS-addresses used for data exchange between the three ROCs. These are different compared to those used by the NOCs to send data. This is to prevent looping of data in case of an outage. If e.g. ROC London would activate the backup procedure, the COM-Centre London will send all data addressed to EGZZWPXX and EGZZM*** directly to the three remaining ROCs. If the three remaining ROCs would also use EGZZWPXX, like the NOCs do, this could result in looping of data. Although suppression of double receptions is implemented at all four ROCs, looping of data can't be ruled out completely. Therefore these special addresses where implemented.

2. Rules to be Followed

   2.1. General

      2.1.1. The most important principal is the following:

The whole Backup Procedure is based on the usage of the ICAO AFS, exchanging data solely via AFTN and/or (ext.) AMHS.

      2.1.2. National procedures already in place, covering planned outages of the MET-Switch due to e.g. hard-/software changes, are not described within this document.

   2.2. When to activate the procedure?

      2.2.1. It is not possible to define specific values for when the backup procedure shall be initiated. This decision is up to ROC/IROG and must be considered, in situations where outages are likely to last longer than just a few hours, by the management in close coordination with the IT-department and operators.

      2.2.2. Nevertheless, if an outage occurs that lasts more than 30 minutes and it is obvious that the system will not be up and running again within a short period of time the respective ROC shall at least contact the remaining ROCs to inform them about the current situation.

      2.2.3. Further details on the initiation of the backup procedure can be found in paragraph G.10

   2.3. Which centre is the Backup?

      2.3.1. It has been agreed between the ROCs that the most efficient and effective setup is to define pairs of ROCs which will back up each other in case of a long-lasting outage.

      2.3.2. The following two pairs were defined:

   • Pair one: ROC London ⇔ ROC Toulouse
   • Pair two: ROC Moscow ⇔ ROC Vienna

3. ROC Routing Table format, content, exchange and update frequency

   3.1. In order to be able to provide the backup functionality, the ROC backup pairs should regularly exchange and update their routing information. It has been agreed that the backup routing tables will only consist of WMO headers for bulletins that have been agreed to be exchanged under the ICAO EUR DMG RODEX schema exchange mechanism.

   3.2. The routing information shall only contain the data and addresses for the NOCs in the AoR of a ROC as well as the address(es) of the IROGs in the other ICAO-region(s). Including also the

data normally sent to the other ROCs is not necessary as all incoming data from the AoR of a ROC will be forwarded by the associated COM-centre.

3.3. No backup routing for "national" or "bi-lateral" exchange will be provided. Backup for the NOC-functionalities of the MET-switch (e.g. national collective bulletins) have to be developed and co-ordinated separately.

3.4. The routing information should be provided as a field separated (e.g. csv) plain text file using an ASCII character set to allow for the automated insertion of the data into switching systems.

3.5. The content should consist of pairs of the AFTN-address where the data shall be sent to and the WMO bulletin header to be sent.

```
e.g.   EBZZYBYX,SAUK31 EGGY
       EFKLYMYX,FCUK31 EGGY
       BIRKYMYA,FCUK31 EGGY
       EKZZMOMO,FTUK31 EGGY
```

3.6. The routing tables to be used for a ROC backup should ideally be exchanged after each AIRAC date to reflect changes based on the latest METNO message.

Note – The exchange of the ROC routing tables is planned to be supported by the Regional OPMET Data Catalogue (RODC). This project is currently in a re-design phase.

4. General Impact in Case of an Outage

   4.1. Impact on NOC, ROC & IROG Functionalities

      4.1.1. In case of an outage of a ROC, also the functionalities as a NOC are impacted. Therefor the following services would be affected:

      - Compilation and distribution of national routine OPMET data by the NOC
      - Distribution of national non-routine OPMET data by the NOC
      - Providing centres in the AoR of the ROC with OPMET data
      - Receiving and disseminating of data from centres in the AoR of the ROC

      4.1.2. IWXXM translation service will not be taken over by the backup ROC. Therefore, OPMET data of States utilizing that service, will only be available in TAC-format.

      4.1.3. In case a ROC also provides IROG functionalities, the following services would in addition be affected:

      - Reception of OPMET data from outside the EUR/NAT region and dissemination within the region
      - Provision of EUR/NAT OPMET data to other ICAO-region(s)

   4.2. Impact on SADIS

      4.2.1. In case of a ROC London outage there is also an effect on SADIS as the UK Met Switch normally forwards all required OPMET data to the SADIS OPMET Gateway, which is also hosted by UK NATS. This means, that validated OPMET data (TAC & IWXXM) would not be provided to SADIS. As the UK Met Office also has a direct data feed from the WMO-network, this might be used to compensate the loss of data, with the disadvantage, that this data has not been validated. This is to be discussed with UK MET Office.

4.2.2. Another option for users is to use the 'WAFS Information File Service' (WIFS), provided by NOAA (National Oceanic and Atmospheric Administration). SADIS users who have arranged backup accounts with the WIFS provider may, subject to certain restrictions, access WIFS under contingency scenarios. The provision of EUR-OPMET data is guaranteed by the backup of ROC Toulouse to send data also to the IROG Washington.

5. Technical Setup of ROC London

5.1. The following figure depicts a high-level overview of the system set up at ROC London.
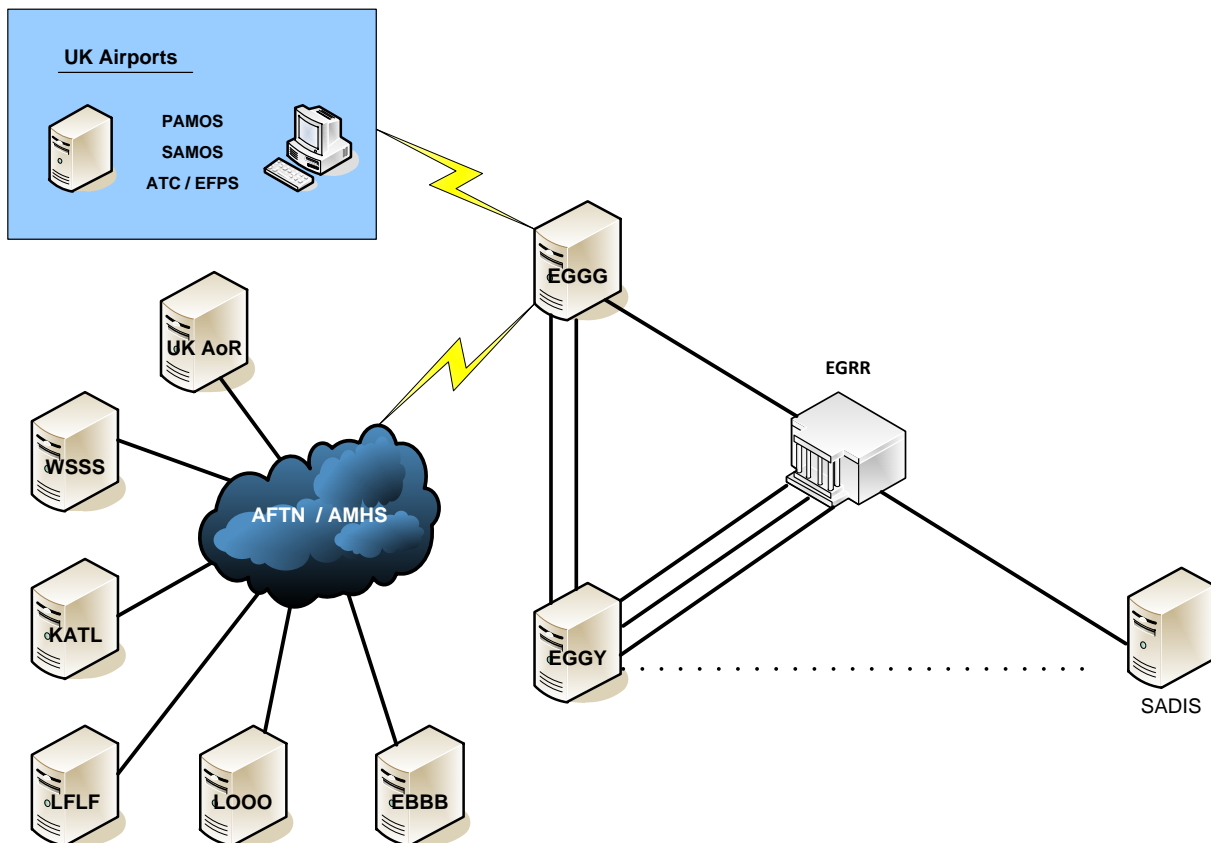

Figure 2: Technical Setup ROC London

5.2. The diagram should be self-explanatory, however it should be noted that currently ROC London is reliant on both the Com Switch, AMS-UK, and the OPMET Switch, CoreMet, to operate normally. Although the OPMET Switch has external connections, the primary method of OPMET distribution, excluding SADIS, is via AFTN.

5.3. All OPMET data sent to EGGY for distribution, whether from inside EUR/NAT, outside EUR/NAT or from the UK MWO, is received first by the Com Switch which forwards it to the OPMET switch. The OPMET switch then performs compilation and assigns onward routing. The OPMET switch currently assigns PDAIs to the OPMET data which is then translated at the Com switch for final distribution via AFTN PDAI.

5.4. This current method of distribution, PDAI distribution, is being withdrawn and the UK is moving toward multiple addresses for each bulletin.

6. Technical Setup ROC Toulouse

6.1. The following figure depicts a high-level overview of the system set up at ROC Toulouse.

Figure 3: Technical Setup ROC Toulouse

6.2. This overview shows that ROC Toulouse is exchanging OPMET data both via AFS and/or AMHS (extend) and GTS as back-up where feasible.

6.3. All States within the area of responsibility of ROC Toulouse send their data by AFTN/AMHS to ROC Toulouse and also by GTS as a permanent back-up link, using the duplicate erase functions of the TRANSMET MSS to avoid multiple dissemination of the same data.

6.4. All States within the area of responsibility of ROC Toulouse receive their data by AFTN/AMHS and by GTS, except from Portugal which is using SADIS for receiving OPMET-data.

6.5. Malta sends and receives OPMET data via AFTN only.

7. Technical Setup ROC Vienna

7.1. The following figure depicts a high-level overview of the system set up at ROC Vienna.
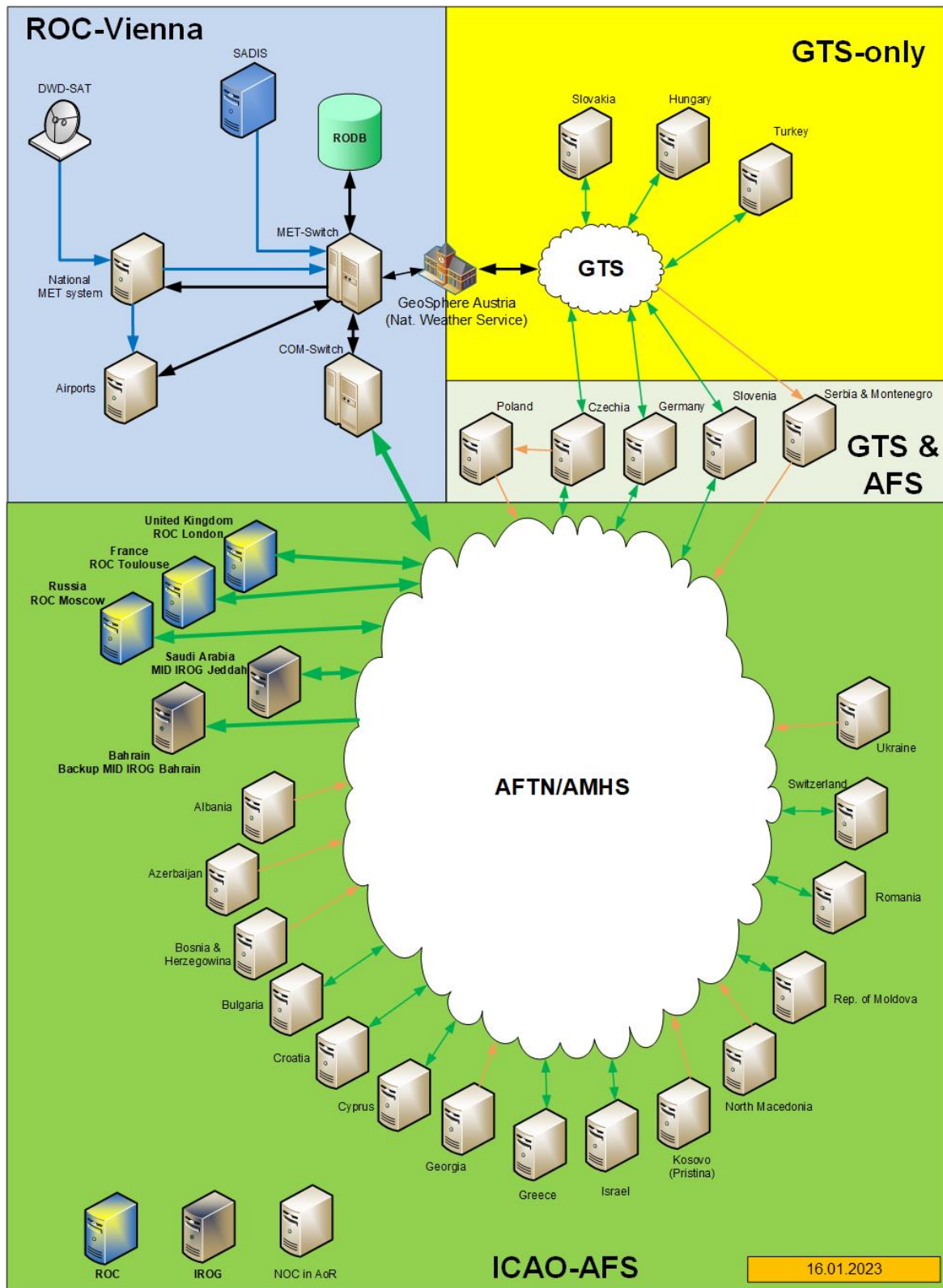

Figure 4: Technical Setup ROC Vienna

7.2. The MET-Switch as well as the OPMET-DB and the COM-Switch are located within the same network. The ATM-system, which is not depicted in the figure, is connected via AFTN to be supplied with needed OPMET-data.

7.3. There is also a WAN connection to the Austro Control internal MET-system MEDAS (Meteorological Database and Application Server). This system is used by meteorologist as well as observers for their daily work.

7.4. The MET-switch also has direct connection to SADIS as an alternative data source.

7.5. A leased line connection to ZAMG (Austrian National Weather Service) is used to achieve connectivity to the WMO-GTS network. This is mentioned due to the fact that some NOCs are not connected to the AFS but use GTS only to exchange OPMET-data.

7.6. As the whole backup procedure is based on the usage of the ICAO AFS, this leads to the problem that there is no possibility to exchange OPMET data via AFS with some centres in the AoR of ROC Vienna. For which States this is the case can be identified from the figure in G.7.1.

7.7. When looking at the Vienna AFS-connections depicted in the figure in G.7.1, it can be seen that there are a lot of countries that do send OPMET-data directly to ROC Vienna but are not supplied by the ROC. Those get their data from other sources like GTS or SADIS.

7.8. Due to the above-described situation, it is, in a backup scenario, not possible to provide backup for the whole AoR of ROC Vienna.

8. Technical Setup ROC Moscow

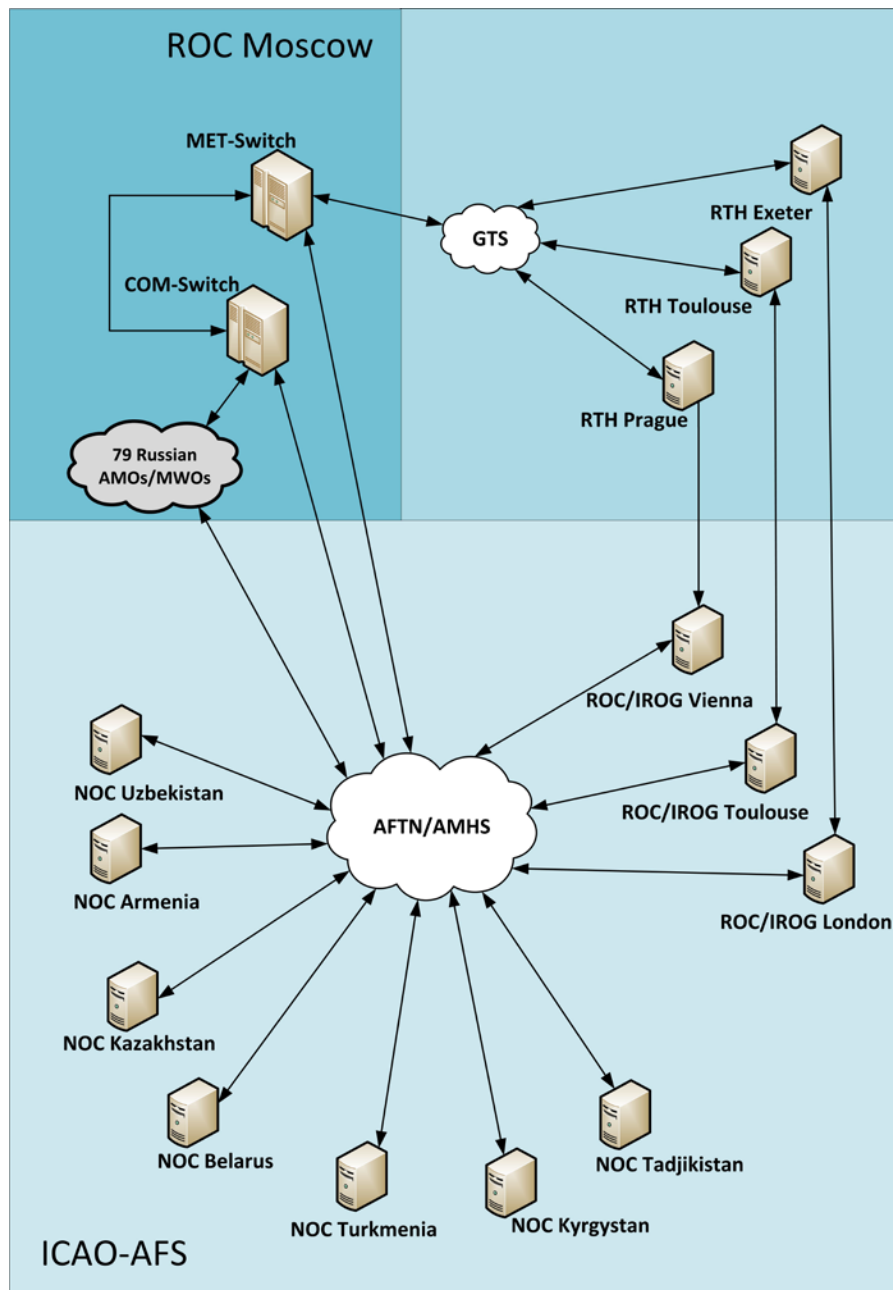8.1. The following figure depicts a high-level overview of the system set up at ROC Moscow.

Figure 5: Technical Setup ROC Moscow

9. ROC Outage Procedure

   9.1. Normal Operation - General

   9.1.1. The figure in paragraph G.1.4.1 depicts the routing between the ROCs in normal conditions.

   9.1.2. Differences in the technical implementation by the ROCs/IROGs can be found in the respective paragraphs G.5 (London), G.6 (Toulouse), G.7 (Vienna) and G.8 (Moscow).

   9.1.3. A ROC is receiving most TAC and IWXXM-OPMET data via the national COM-Centre. The same applies to IROGs receiving OPMET data from other ICAO-regions.

   9.1.4. National OPMET data is, in most cases, exchanged via dedicated national networks. Some centres use the COM-centre also for national data exchange, like ROC London.

   9.1.5. In some cases other networks (e.g. GTS) are used by NOCs to exchange OPMET data meaning that the backup procedure can't be applied due to the basic principal:

The whole Backup Procedure is based on the usage of the ICAO AFS, exchanging data solely via AFTN and/or (ext.) AMHS.

   9.1.6. The received OPMET data is sent via the COM-centre without any delay to the ROC/IROG where it is treated according to the "Message Validation Procedure" described in chapter 12 of the EUR OPMET Data Management Handbook.

   9.1.7. After this process, the data is disseminated according to the definitions in the local routing table to national users, ROCs and NOCs in the EUR-AoR as well as to I/R-Gateways in the other ICAO-regions. The data to be routed within the EUR-region is based on agreements between the ROC and the NOCs in their AoR.

   9.2. Procedure to start the backup

   9.2.1. This procedure is also displayed as a flow chart, which can be found under paragraph G.10 as Attachment A.

   9.2.2. If, due to technical or other reasons, a ROC is getting unavailable, all incoming messages routed to that ROC would queue at the dedicated COM-Centre which has to take care of that data according to national procedures. Hence, no data from the AoR (regional and interregional) of the failing ROC will be routed to the other ROCs. NOCs in the AoR of the failing ROC will as well receive no OPMET-data.

   9.2.3. Initial information about an outage should be given to the other ROCs if the outage is at least lasting 30 minutes and it can be foreseen that the system will not be up and running within a short time.

   9.2.4. The failing ROC will work on the recovery of the system based on local procedures. It is up to the management to decide whether the backup procedure must be activated.

   9.2.5. As a minimum, the remaining ROCs should be updated regularly about the current situation.

9.2.6. Once the management has decided, in situations where outages are likely to last longer than just a few hours, to activate the backup procedure, the designated Backup-ROC will be informed using the communication means defined between the two ROCs (phone, mail, FAX,…).

9.2.7. Actions by the Backup-ROC

1.1.1.2.   Once activated, the Backup-ROC shall conduct the following tasks:
−   activate the predefined backup routing
−   issue the following notification message

NO$A_1A_2$01 $C_AC_AC_AC_A$ YYGGgg
ATTENTION ALL CENTRES!!!!

DUE TO A TECHNICAL PROBLEM THE EUR-REGIONAL OPMET CENTRE $C_BC_BC_BC_B$ IS DOWN UNTIL FURTHER NOTICE.

REGIONAL OPMET CENTRE $C_AC_AC_AC_A$ HAS STARTED TO PROVIDE OPMET DATA BACKUP FOR CENTRES IN THE $C_BC_BC_BC_B$ AREA OF RESPONSIBILITY

A_1A_2	= Country Code of Backup-ROC (UK, FR, OS, RS)
$C_AC_AC_AC_A$	= Location Indicator of Backup ROC (EGGY, LFPW, LOWM, UUUJ)
$C_BC_BC_BC_B$	= Location Indicator of failing ROC (EGGY, LFPW, LOWM, UUUJ)

9.2.8. Actions by the failing ROC

1.1.1.3.   The failing ROC has to conduct the following tasks:
−   co-ordinate with the national COM-centre to alter distribution lists by adding the addresses of the remaining ROCs for all OPMET data addressed to the failing ROC, e.g. if ROC Vienna fails, COM-Centre Vienna shall rout all data as follows:

TAC-Data addressed to
    LOWMMMXX or LOZZMMID
shall be forwarded to
    EGZZMVIE, UUUJYZYO, LFPWMVIE

IWXXM-Data addressed to
    LOZZXAOR or LOZZAMID
shall be forwarded to
    EGZZXVIE, UUUJYZYZ, LFPWMVIE

−   Initiate the issuance of a NOTAM according to the following draft

Axxxx/YY NOTAMN
Q) xxxx/Qxxxx/IV/NBO/A/000/999/5129N00028W005
A) xxxx
B) YYMMDDhhmm
C) YYMMDDhhmm EST
E) DUE TO A TECHNICAL PROBLEM REGIONAL OPMET CENTRE [LONDON | TOULOUSE | VIENNA | MOSCOW] IS NOT AVAILABLE. BACKUP FOR OPMET-DATA IS PROVIDED BY REGIONAL OPMET CENTRE [LONDON | TOULOUSE | VIENNA | MOSCOW]. THIS MIGHT LEAD TO UNAVAILABILITY OF METEOROLOGICAL DATA

9.3. Backup in Operation

9.3.1.General

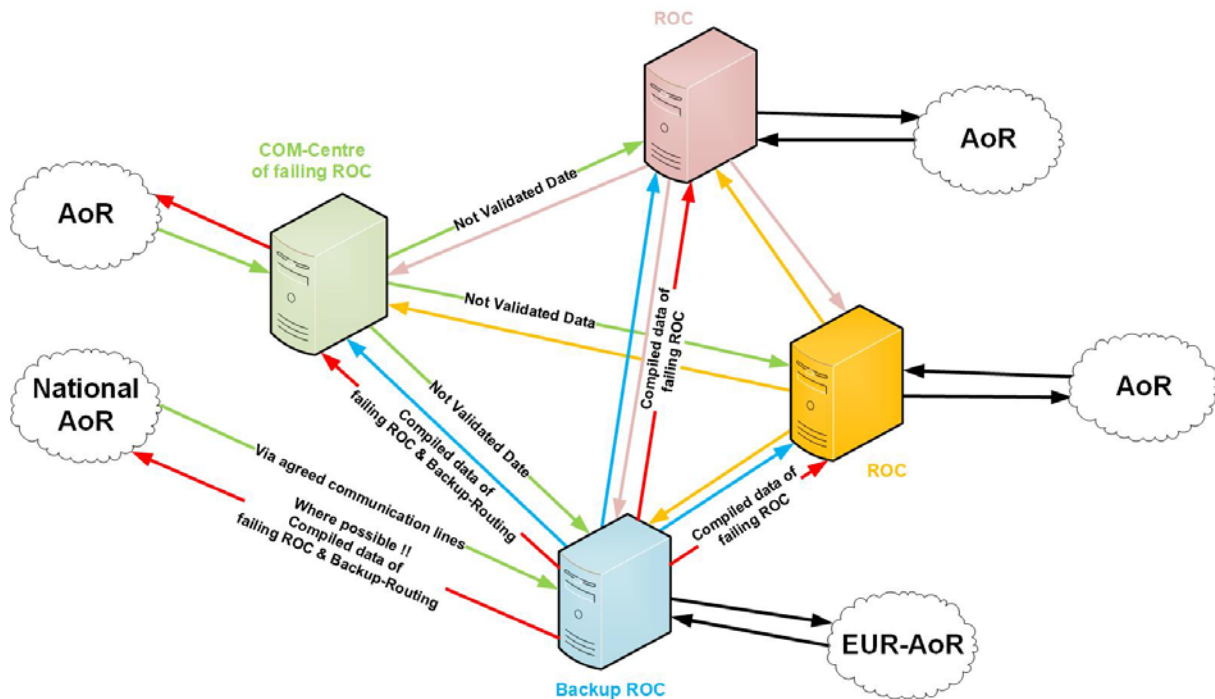   9.3.1.1.   The following figure depicts the situation after the backup procedure has been activated.

Figure 6: Data Exchange in Case of ROC-Backup

    9.3.1.2.   In this situation not validated data is relayed by the COM-Centre related to the failing ROC to the three remaining ROCs. This may have as a consequence that operators are facing additional message to be corrected if no functionalities are provided by the message switching system to exclude data of other AoRs from the validation process.

    9.3.1.3.   The Backup ROC is now not only serving the centres in its own AoR but also those in the AoR of the failing ROC. The data is sent via the AFS directly to the respective centres.

9.3.2.Effect on SADIS

    9.3.2.1.   SADIS is not seen as part of the AFS in regard to OPMET data exchange. Nevertheless, some States use SADIS as the main source for OPMET-data. The majority of States use SADIS as an additional source.

    9.3.2.2.   For centres using the AFS for OPMET data exchange, in most backup situations the availability of OPMET-data via SADIS is guaranteed. Centres using other communication lines only (e.g. GTS), will not be able to have their data exchanged in case of a failure of their responsible ROC due to the basic principal:

The whole Backup Procedure is based on the usage of the ICAO AFS, exchanging data solely via AFTN and/or (ext.) AMHS.

9.3.2.3.   In case of an outage of ROC London, no OPMET data is provided to UK Met Office for provision via SADIS. The provision of EUR-OPMET data to IROG Washington is provided in such a situation by ROC Toulouse and therefore all data should be available via WIFS.

9.4. Procedure to recover from Backup Operation

9.4.1. As soon as all problems have been solved and the failing ROC is ready to resume normal operation, the following actions (according to the flow chart in **Attachment D**) shall be performed:

– The failing ROC shall contact the Backup-ROC in order to co-ordinate the time to stop the Backup Procedure

9.4.2. It is recommended that this co-ordinated time will be after the compilation of the next planned METAR collective bulletin, in case this service was provided by the Backup-ROC.

9.4.3. At the coo-ordinated time the Backup-ROC will

– stop the backup routing and compilation of national data of the failing ROC
– issue a NO-message to inform all centres that the failing ROC is back in service

NO$A_1A_2$01 $C_AC_AC_AC_A$ YYGGgg
ATTENTION ALL CENTRES!!!!

THE EUR-REGIONAL OPMET CENTRE $C_BC_BC_BC_B$ WILL RESUME OPERATION AT HH:MM UTC.

REGIONAL OPMET CENTRE $C_AC_AC_AC_A$ WILL STOP BACKUP SERVICE.

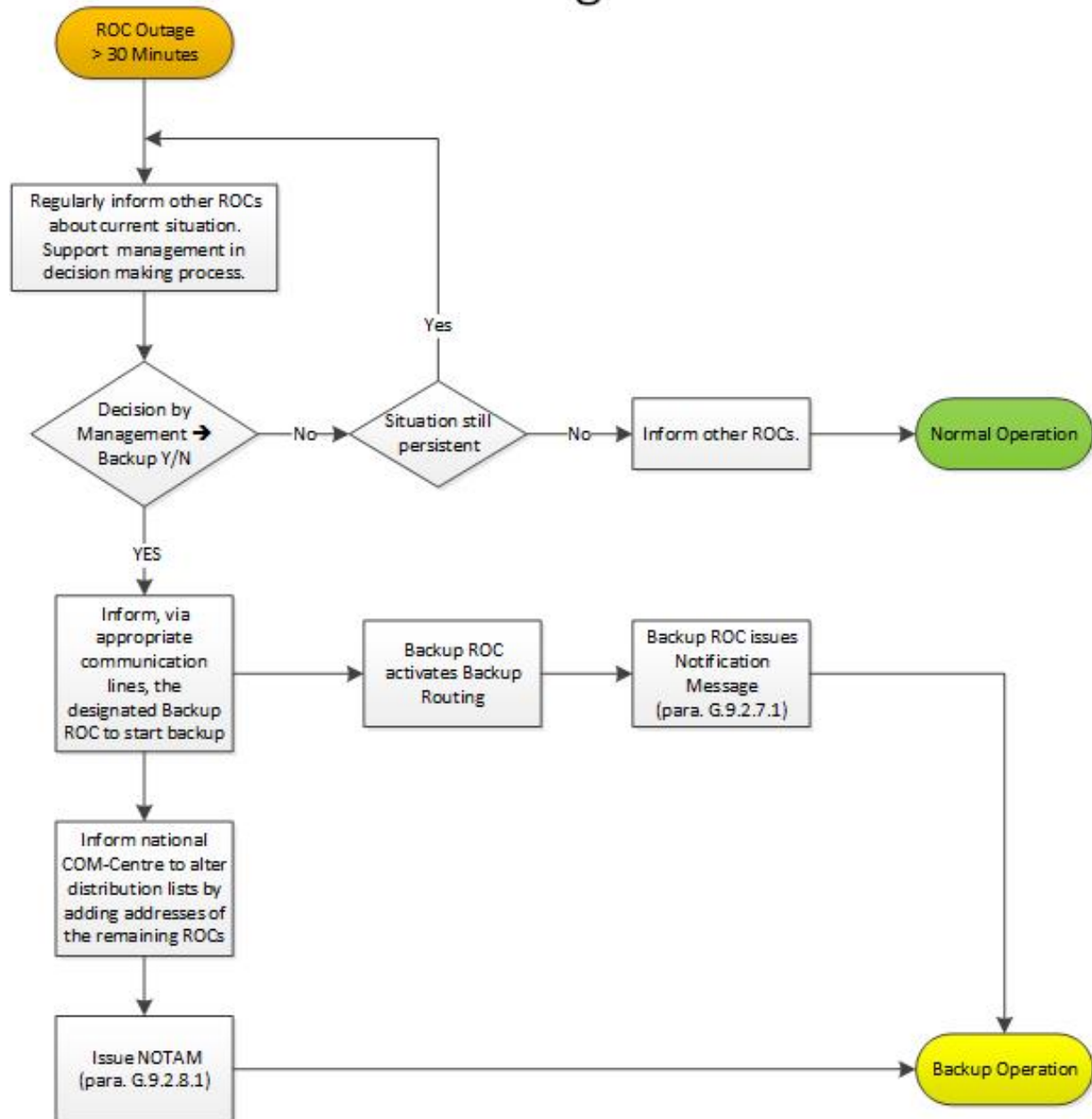|	
A_1A_2	= Country Code of Backup-ROC (UK, FR, OS, RS)
$C_AC_AC_AC_A$	= Location Indicator of Backup ROC (EGGY, LFPW, LOWM, UUUJ)
$C_BC_BC_BC_B$	= Location Indicator of failing ROC (EGGY, LFPW, LOWM, UUUJ)

9.4.4. In parallel the COM-Centre related to the failing ROC will

– update the disseminations lists by removing the addresses of the other ROCs
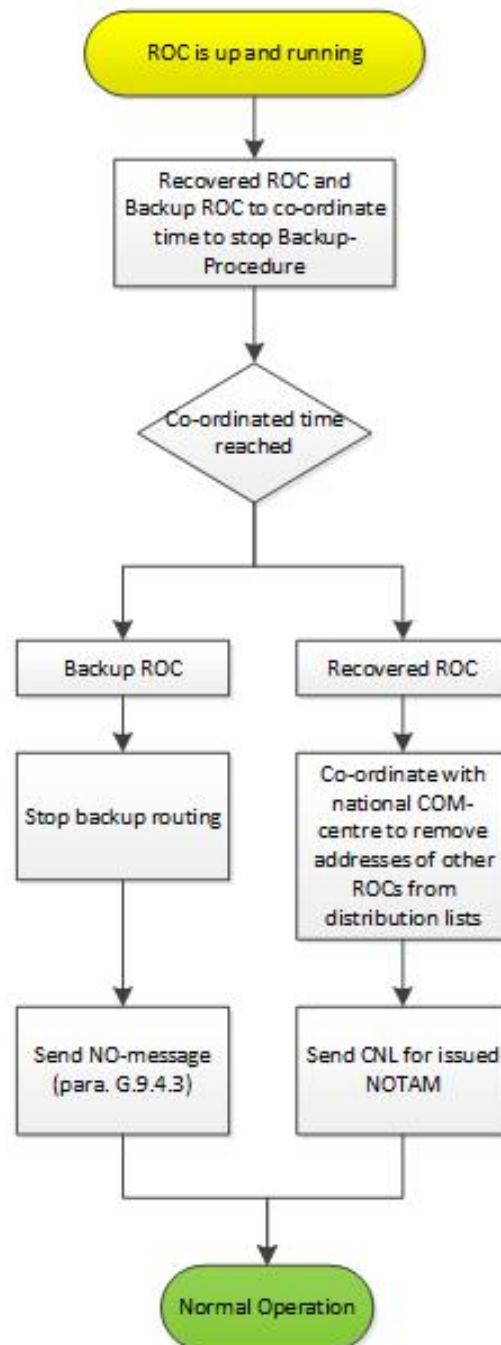– cancel the NOTAM

9.4.5. Within a short period, there may occur double transmissions of OPMET data within the AoR of the failing ROC.

10. Attachment A – Flow Charts for Outage and Recovery of a ROC

Outage of a ROC

Recovery of a ROC

APPENDIX H – List of Acronyms

ACC	Area control centre
AFI	African region
AFS	Aeronautical Fixed Service (throughout this document AFS refers to the ground segments, namely AFTN and AMHS)
AFTN	Aeronautical fixed telecommunication network
AHL	Abbreviated header line
AIRMET	Information concerning en-route weather phenomena which may affect the safety of low-level aircraft operations (up to FL 100 (FL 150 or higher in mountainous areas)).
AMHS	ATS Message Handling System
AMO	Aerodrome Meteorological Office
AMS	Aeronautical Meteorological Station
ANP	Air navigation plan
AOP	Aerodrome operational planning
AoR	Area of responsibility
ARS	Special Air-Report
ASI	Asia region
AST-TF	AFS to SWIM Transition Task Force (former AFSG)
AST-TF/PG	AST-FT Planning Group
AST-TF/OG	AST-TF Operations Group
ATM	Air traffic management
ATSU	Air traffic services unit
BMG	Bulletin Management Group (predecessor of DMG)
CAR	Caribbean region
CIDIN	Common ICAO data interchange network
CNS	Communication, navigation and surveillance
COM	Telecommunication
CONOPS	Concept of operations
DB	Databank
DMG	Data Management Group
eANP	Electronic Air Navigation Plan
EANPG	EUR Air Navigation Planning Group
EASPG	EUR Aviation Systems Planning Group
EUR	European region
FASID	Facilities and services implementation document
FIR	Flight information region (global FIR map at following link: http://gis.icao.int/flexviewer/)
FTBP	File Transfer Body Part
GAMET	Area forecast for low-level flights.
GTS	Global Telecommunications System
IAVW	International Airways Volcano Watch
ICAO	International Civil Aviation Organisation
ICD	Interface control document
IROG	Inter-Regional OPMET Gateway
ISCS	International satellite communication system
IWXXM	ICAO Meteorological Information Exchange Model
METAR	Aerodrome routine meteorological report (in meteorological code)
METG	Meteorological Group of the EASPG
MID	Middle East region
MOTNE	Met Operational Telecommunications Network Europe

MOTNEG	Met Operational Telecommunications Network Europe Group
MWO	Meteorological watch office
NAM	North American Region
NAT	North Atlantic Region
NOC	National OPMET Centre
OPMET	Operational meteorological (information)
PAC	Pacific region
ROC	Regional OPMET Centre
RODB	Regional OPMET Databank
RODC	Regional OPMET Data Catalogue
RODEX	Regional OPMET Data EXchange
RQM	Meteorological databank request in TAC-format
RQX	Meteorological databank request in IWXXM-format
RPG	Regional Planning Group
SADIS	Secure Aviation Data Information Service
SAM	South American region
SARPs	Standards and recommended practices
SIGMET	Information concerning en-route weather phenomena which may affect the safety of aircraft operations
SPECI	Aerodrome special meteorological report (in meteorological code)
SWIM	System Wide Information Management
SWX	Space Weather
SWXA	Space Weather Advisory Message
SWXC	Space Weather Centre
TAC	Traditional Alphanumeric Code
TAF	Aerodrome forecast (in meteorological code)
TCA	Tropical cyclone advisory
TCAC	Tropical cyclone advisory centre
ToR	Terms of Reference
UTC	Coordinated Universal Time
VA	Volcanic ash
VAA	Volcanic ash advisory
VAAC	Volcanic ash advisory centre
VSAT	Very small aperture terminal
WAFC	World area forecast centre
WAFS	World area forecast system
WIFS	World Area Forecast System (WAFS) Internet File Service (backup SFTP SADIS)
WMO	World Meteorological Organisation
XML	Extensible Markup Language