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INTERNATIONAL CIVIL AVIATION ORGANIZATION

CAR/SAM REGIONAL AIR NAVIGATION PLANNING AND IMPLEMENTATION GROUP (GREPECAS)

FOURTH MEETING OF THE AERONAUTICAL METEOROLOGY SUBGROUP (AERMETSG/4)

(Mexico City, 22 to 26 May 2000)

Agenda Item 4: Special Implementation Project. Problems in the exchange of OPMET information. COM aspects

(Information paper presented by the Secretariat)

Summary

This information paper presents, under the communications perspective, the problems observed in the SAM Region in the exchange of OPMET information, after a joint meteorology and communications mission carried out to ten States of the Region as consequence of a SAM COM/MET Special Implementation Project. As initial result of the mission, some conclusions are presented which, upon adoption, would greatly solve the problem in the exchange of OPMET information. This is analyzed based upon three fundamental aspects: communications procedures in the OPMET exchange, equipment, and communications means adopted in this respect.

The problems in the OPMET exchange, under the aeronautical meteorology point of view, are presented in WP/04.

References:

1. GREPECAS/8 Report;
2. Draft Regional Air Navigation Plan, Volumes I and II (yellow cover);
3. Annex 10, Volume II;
4. Doc 8896-AN/893/5; and
5. Doc 7910/95.

1. **Background**

1.1 Deficiencies in the OPMET exchange were found on the basis of the results of coordinate controls on the exchange of OPMET information carried out in the SAM Region. Therefore, the eighth meeting of GREPECAS, held in Dominican Republic from 9 to 12 November 1998, formulated Conclusion 8/25 which, in order to study and recommend measures in each State to solve the problems affecting the exchange of OPMET information, decided to establish a COM/MET Special Implementation Project. This Project was approved by the ICAO Council, and its execution started in December 1999. The project is being carried out by the COM and MET Regional Officers from the SAM Office. Up to date, the projects has visited ten States of the SAM Region, remaining only Argentina, Chile and Uruguay. The project is entirely financed by the International Civil Aviation Organization and is contemplated within the ICAO mechanisms to strengthen the implementation of the regional air navigation plans. The objectives of the project are the following:

a) to strengthen the coordination among MET dependencies and other operational dependencies in the SAM States;

b) to assist States in the identification of difficulties related to OPMET information exchange; and

c) to develop suitable recommendations regarding identified problems, aimed at achieving reliability and efficiency in OPMET information exchange as well as availability of OPMET information, in accordance with Tables MET 2 and 2A requirements.

2. **Analysis**

2.1 To evaluate the OPMET exchange from the Communications point of view, three aspects were basically analyzed during the visits to the SAM States:

a) Communications procedures used in the OPMET exchange.
b) Equipment used for OPMET exchange.
c) Communications means used for OPMET exchange.

Communications procedures used in the OPMET exchange

2.2 Within the procedures used for the OPMET exchange, an analysis was made in each State visited on the manner in which the meteorological information was generated, how it was introduced in the communications network (AFTN, ISCS) and how the information was distributed.

2.3 In accordance with tables MET 2 and MET 2A, SAM States must have only one AFTN address for international OPMET exchange, entrance or reception address. To unify and facilitate this task, a destination indicator for determined distribution should be adopted, constituted by XXZZMAMX. In accordance to Annex 10, Volume II, paragraph 4.4.15, the two initial characters (XX) indicate the State of the Region. The MET table of the old Air Navigation Plan (Doc 8733/14) indicated the addresses which the States of the Region should have (SAEZYMYX, SLZZMAMX, SBBRYZYX, SCZZMAMX, SKZZMAMX, SEZZMAMX, SOZZMAMX, MPZZMAMX, SGZZMAMX, SPZZMAMX, SMZZMAMX, SUZZMAMX and SVZZMAMX). Many States of the Region do not use the aforementioned addresses for OPMET exchange and, in some cases, there are States using more than one AFTN address for this purpose.

2.4 Upon examining the above AFTN addresses, it can be observed that SAEZYMYX and SBBRYZYX are not structured like the rest, therefore, it would be desirable that the addresses SAZZMAMX and SBZZMAMX were used. In the case of the address SBBRYZYX, corresponding to the Brasilia data bank, an amendment to the current procedure would have to be made, indicating States that, to send OPMET information to Brazil, the new address would be SBZZMAMX, and that, to interrogate the OPMET data bank, the AFTN address SBBRYZYX would continue to be used. In accordance with Annex 10, Volume II, paragraph 4.4.15, the AFTN addresses of the addressees are associated to the SBZZMAMX indicator (OPMET data bank SBBRYZYX, and MET offices in Brazil).

2.5 At transmission level, States would also have to have an only address, which would be XXXXYMYX, whose first four characters indicate the State and the site originating the transmission. Most States of the Region use this address for the transmission of the information. There are States that send international OPMET information from each of their airports, instead of using one only address from where all local MET information is sent.

2.6 States of the Region having meteorological data, hand over the distribution process of the information to the bank (SBBRYZYX, SEQUYZYX). Banks are programmed so that, through them, they automatically obtain the national MET information stored for its later national and international remittance, in an automatic and consolidated form (METAR, TAF).

2.7 The distribution process of the MET information through the banks implies that, to guarantee an adequate level of OPMET exchange, an elevated operational availability is required (99.9%). The banks' OPMET information rejection percentage is very high, having to manually correct the information for its reinsertion to the banks. Therefore, if the banks were to adopt the task of consolidation and distribution, errors would have to be reduced through an analysis in the storage procedures. Another aspect of the banks is that they are programmed to send the OPMET information (METAR, TAF) in a timely manner; if MET information arrives at a time other than that defined, it is not accepted by the bank and, upon sending the consolidated information, the prior stored METAR is sent. Due to the above, the effectivity in the use of a bank as information distributor greatly depends in the compliance of the indicated parameters. If these are not complied with, the distribution and consolidation process has to be made outside the bank.

2.8 Due to the above, it is necessary that the consolidation of the OPMET information to be transmitted by a State be made through a PC terminal with an application programme installed for this, removing this task to the banks, which would remain only for consultation purposes. This would improve the availability of OPMET information in the Region.

2.9 Coordination between the telecommunications and meteorology operators are essential for the OPMET exchange to be efficient; therefore, coordination meetings between both operators are necessary, with the aim of exchanging experiences, assume respective responsibilities, introduce any change to improve the OPMET exchange, such as distributing responsibilities between both operators (for example, updating routing tables, MET tables, etc.)

2.10 Many States in the Region are implementing OPMET data banks. It has been observed that the procedure requirements for access to these banks are different at each State. Therefore, the telecommunications or meteorology operators must have available near their work site a list with the access requirements to these banks. In most cases, these banks are of national use, with the exception of the Brazil data bank, which is the only recognized international bank in the Region. The SAM COM and MET operators are lately consulting these banks quite frequently. To take a better advantage in the increase of banks in the Region, it has become necessary to establish standard requirement procedures, as well as on its use.

2.11 A great number of OPMET messages received at the Brasilia bank are rejected due to errors in the coding of the WMO abbreviated heading. The use of this heading is not clear (specifically the number selection). Therefore, it is convenient that the AERMET/SG analyze this situation.

2.12 The consolidation of the national OPMET information for international remittance is not efficiently made in some States, with many intermediate steps which could be avoided. The OPMET information would have to come from the MET offices directly to a central station for its consolidation and distribution; all this to increase efficiency and reduce delays in the emission of OPMET information.

Equipment used for OPMET exchange

2.13 As follow up to GREPECAS Conclusion 6/35, urging CAR/SAM States to install a PC terminal for communications between the CCAM and the MET offices, during the visit to the SAM States the communications equipment at the meteorology stations used for the dissemination of the OPMET information were inspected. Many of them had not implemented this conclusion, but the aeronautical authorities agreed that their installation would be completed in two to six months from the date of the visit. The installation of these terminals would solve many of the current problems in the OPMET exchange, since transcription errors and delays in the emission of the information would be avoided. Many of the meteorological offices have only one telephone for the transmission of the information, causing delays in the emission of the corresponding information, even though the MET reports are prepared in time. Another form of preparing the OPMET information is filling in by hand a sheet and taking it to the telecommunications office for its transcription to an AFTN network terminal for its distribution. This process also causes delays and at the same time represents a source of error due to the manual transcription of the information. There are States with a PC terminal at the meteorology office, but it is operated by telecommunications personnel and, therefore, also subject to transcription problems.

2.14 With regard to the use of the ISCS station of OPMET exchange in the SAM Region, at States visited it has been observed that it is used as a means of support for consultation of the OPMET information when this is not available by the AFTN, in accordance with GREPECAS Conclusion 7/27.

Communications means used for OPMET exchange

2.15 From the monthly operational availability of AFTN circuits in the SAM Region, it could be observed that the digital circuits have a higher availability than the analogue circuits. The latter are the majority of the circuits in the Region. To improve the availability and efficiency of the Aeronautical Fixed Service circuits, a project for the implementation of a digital network (REDDIG) is being carried out. This network will increase the operational availability of the AFTN circuits and will be able to increase the quantity of information to be transmitted using protocols permitting the reduction of errors in the transmission of information. This network will be based on satellite links through the VSAT.

2.16 States must implement this digital process in their national communications networks. In accordance with the results of the visits, many of the SAM States are in the implementation phase of the digital networks which other States are in the project phase. The whole digitalling of the communications network, inasmuch the national as the regional, will greatly contribute to increase the availability of OPMET information in the Region.

3. **Conclusions**

3.1 The following could therefore be concluded upon:

a) **Adoption of an only address for OPMET exchange**.
That States of the Region, to increase availability, efficiency and save time in the elaboration of OPMET information, establish an only AFTN address for the reception of OPMET information in the Region, and for standardization purposes and considering that all AFTN centres in the Region are automatic, the following address be established: XXZZMAMX, being XX the State. The transmitting address to be used will be XXXXYMYX.

b) **Adequate use of the OPMET banks**.
The task for the consolidation of the OPMET information to be transmitted by a State be carried out through a PC terminal with a proper application programme installed, releasing this function from the banks, which would remain as a consultation means, improving therefore the availability of the OPMET information in the Region.

c) **Consolidation of the OPMET information**.
The consolidation of the national OPMET information for its international remittance is carried out inefficiently by some States, since there are many intermediate steps which could be avoided. The OPMET information would have to originate from the MET station and be sent directly to a central station for its consolidation and distribution, with the aim of increasing the efficiency and reducing the delays in the emission of OPMET information.

d) **Improvements in the banks**.
That States in the Region make all efforts so that the OPMET banks achieve the following characteristics:
- Increase availability to 99.9%.
- Standardize access requirements.
- Not assume functions corresponding to the message switcher.
- Reduce the quantity of rejected messages (Example: correct use of the WMO heading, adjustments in the time spans to accept OPMET information).

e) **Coordination meetings between Meteorology and Communications operators**
Coordination between the telecommunications and meteorology operators is essential for the OPMET exchange to be efficient. Therefore, coordination meetings between both operators are necessary to exchange experiences, assume respective responsibilities, introduce any changes that might improve OPMET exchange, through the distribution of responsibilities between both operators (Example: updating routing tables, MET tables, etc.).

f) **Installation of PC terminals at MET offices**.
i) That States install a PC terminal at the meteorology stations, in compliance with GREPECAS Conclusion 6/35.
ii) That the meteorology offices have alternate communications means (telephone, fax, HF SSB equipment) as backup in the event of failure of the terminal or AFTN circuit.

g) **Use of ISCS stations**.
In the SAM States visited, the ISCS station for the OPMET exchange is currently used as a means of support for consultation of OPMET information when it is unavailable by the AFTN. The main transmission means for the transmission of OPMET information is the AFTN.

h) **Improvement of the communications means**.
That States of the Region, with the aim of increasing the availability, efficiency, reliability and capacity of the information to be transmitted, make an implementation analysis for the substitution of their analogue communications network for digital networks with voice plus data integration.

4. **Action suggested**

4.1 The meeting is invited to note the information provided herein, with the aim of acknowledging the initial actions formulated by the SIP after the visit to ten SAM States.

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