INTERNATIONAL CIVIL AVIATION ORGANIZATION

Fourth Meeting of the APIRG Communications, Navigation and Surveillance Sub-group (Dakar, Senegal, 25-29 July 2011)

Agenda Item 4: Aeronautical Fixed Service (AFS)

- **Review of the performance and implementation of the AFTN circuits of the AFI AFTN plan, identification of deficiencies and remedial action**
- **Review of the performance and implementation of ATS/DS plan, identification of deficiencies and remedial action**

(Presented by the Secretariat)

SUMMARY
This working paper reviews the status of implementation status of the aeronautical fixed services (AFS) in the AFI Region.
REFERENCES
Annex 10- Aeronautical Telecommunications (Volumes 1, 2 and 3) Annex 11- Air Traffic Services Doc 8259 - Manual on the Planning and Engineering of the Aeronautical Fixed Telecommunication Network Doc 9702 - Report of the Seventh Africa-Indian-Ocean Regional Air Navigation Meeting (RAN/AFI/7) APIRG - Meeting Reports
ICAO Strategic Objectives: A and C.

1. Introduction

1.1 This paper analyses the implementation and operational status of AFS in the AFI Region.

2 Discussion

AFS implementation status and performance

2.1 The requirements for AFS communications are contained in the AFI Air Navigation Plan (ANP), FASID Tables CNS 1A (AFTN Rationalized Plan) and CNS 1D (ATS/DS Plan). AFTN main circuits have been implemented in accordance with the AFI Rationalized Plan, with digital circuits. Some AFTN circuits (such as Addis-Ababa/Asmara, Addis-Ababa/Djibouti) and ATS/DS circuits (such as Addis-Ababa/Asmara, Bujumbura/Kinshasa, Djibouti/Hargeisa, Kigali /Kinshasa) have not yet been implemented.

AFTN circuit availability

2.2 Though significant improvements are noted, notably with the implementation of aeronautical satellite telecommunications networks (as discussed under Agenda Item 2 of this meeting), the *minimum specification of 97% stated in the AFI Air Navigation Plan (AFI/7 Recommendation 9/3) is not met* by a number of AFTN circuits. This adversely affects flight coordination between ATS units as well as AIS, OPMET and SAR

messages, which in turn has negative impact on air transport operations safety and efficiency.

2.3 The non- availability of AFTN circuits is one of most concern insofar as communications to/from tributary centres or stations cannot be routed by alternative circuits due to the star configuration. However, the existence of VSAT networks and the meshed configuration of AFTN in some areas, increase availability and flexibility.

AFTN Transit Time Statistics

2.4 *The transit time of a message is defined as the elapsed time between instant of filing of a message with an AFTN station for transmission on the network, and the instant that is made available to the addressee. It can also be considered as the sum of relay times of AFTN stations through which it passes.* AFTN users establish their requirement for transit-time performance as a criterion to be achieved between two AFTN stations in the average peak hour in the peak season for at least 95% of messages of higher priority classifications (SS, DD and FF), as opposed to lesser priority classifications (KK, GG). ICAO Annex 11 prescribes a maximum transit time of 5 minutes for written message, while the AFI Region introduces a distinction between a high priority message (5 minutes) and a low priority message (10 minutes).

2.5 As per established procedures, the States responsible for the operation of AFTN circuits are expected to record transit time statistics on the 23rd day of each third month (January, April, July and October) of each year, and exchange the recorded information directly with their correspondents, with copies to Administrations concerned and to the ICAO Regional Office. These established procedures are not complied with by many States. However, available reports received from States by ICAO Regional Offices show that the prescribed transit times for AFTN messages are not always met.

AFTN Circuit Loading

2.6 There is a significant benefit in carrying out performance evaluation of AFTN circuits on the basis of statistics collected for a period of minimum three days at the interval of six months from 23 to 25 April and October. It is recommended that the AFTN centres and stations experiencing difficulties in taking character count due to system limitations should continue to record circuits loading in accordance with the criteria specified in ICAO Doc. 8259 - *Manual on the Planning and Engineering of AFTN*. These reports do not provide indications on traffic volume, traffic statistics and circuit occupancy, which are needed to assess the suitability of the modulation rate of AFTN circuits.

Transmission speed

2.7 In order to meet transit-time requirements, a minimum modulation rate of 1200 bauds has been specified for AFI AFTN main circuits *(APIRG Conclusion 12/13 refers)*. All AFTN main circuits currently operate at 9.6 kb/second or 19.2 kb/second and meet this minimum requirement. Some links have 64 kb/second capability required for ATN backbone circuits.

AFS deficiencies in the AFI Region

2.1. **Appendix A** and **Appendix B** to this working paper contain the AFS deficiencies reported in the AFI Region, in respect of international standards and recommended practices (SARPs) and requirements in the air navigation plan (ANP).

3. Action by the meeting

3.1 The meeting is invited to:

a) take note of the information provided in this working paper;

b) review the AFS deficiencies shown at **Appendices A** and **B** ;

c) request States/Organizations concerned to indicate their plans to implement remedial action.

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