International Civil Aviation Organization

Third Meeting of the AFI Frequency Management Group (AFI/FMG/3)

Dakar, Senegal, 22-24 July 2013

Agenda Item 5: Review and Follow up of the Final Acts of the last ITU World Radiocommunication Conference (ITU-WRC-12)

Outcome of WRC-12 and preparation of WRC-15 Resolution 154 (COM6/24) - WRC-12 and challenges for the safe operation of AFISNET in the 3 400-4 200 C-band

(*Presented by the Secretariat)*

SUMMARY

The purpose of this paper is to provide the meeting with a summary of the Finals Acts of ITU World Radicommunication Conference (ITU WRC) held in Geneva from 23 January to 17 February 2012, in particular those related to the protection of the down link Fixed Satellite Service (FSS) C-Band operated by AFI satellite based networks (**AFISNET, CAFSAT, NAFISAT, SADC2**).

Action by the meeting is at Paragraph 3.

REFERENCES:

Report on ACP Working Group F Meetings
Finals Acts of ITU WRC-12
ITU Recommendation 724-WRC-07
ITU Resolution 154 (COM6/24)-WRC 12
Report on APIRG/18 Meeting
Report of ICAO 12th Air navigation Conference).

Related ICAO Strategic Objectives: **A:** ***Safety*****; B:** ***Air Navigation Capacity and Efficiency,***

Related ASBU Bloc 0 Modules, Performance Improvement Areas and Applications: ***All supported by CNS infrastructure***

1. Introduction

1.1 After having experienced the lack of reliability continuity and efficiency of service provided by the public or commercial telecommunication operators, the LIM/ AFI RAN meeting, Lome, Togo 1988, the following AFI RAN 7,Abuja Nigeria 1997, the SP AFI/RAN 8, Durban 2008 and the APIRG meetings promoted the use of VSAT technology to support the provision of Aeronautical Fixed Service (AFS), Aeronautical Mobile Service (AMS), Aeronautical Radio navigation Service (ARNS) and aeronautical Surveillance data exchange, mainly due to the difficulties encountered to install and/or maintain aeronautical telecommunication facilities in non-accessible areas, such as deserts, oceanic areas and deep forests.

This provision relies on available technology proposed by the satellite service providers namely INTELSAT and IMARSAT for the AFI region.

1.2 Since the early time of the implementation of VSAT technology for the provision of Air Navigation Service within AFI Region, the C-Band was recognized as the best technology band range candidate to provide a

weather insensitive signal radiation to carry both Aeronautical Fixed and Mobile Service as well as Aeronautical radio navigation and Surveillance services. This band is not subject to the attenuation by oxygen and by rainfall water that are very dense in the tropical region.

Therefore the strategy of the AFI Aeronautical Communication Plan has been based on the implementation of C-Band VSAT networks that operate on the ITU Fixed Satellite Service (**FSS**) in the range of **3.4-4.2 GHz** for the downlink.

For the same reasons, other ICAO regions like the Caribbean (CAR), South America (SAM) or Middle East (MID) are making an extensive use of VSAT technology in C-Band for civil aviation services.

2. Discussion

2.1 The operation of aeronautical VSAT on FSS C-band has been encountering more and more threat from new candidate to the usage of this spectrum in particular the International Mobile Telecommunication (**IMT**) identified as potential cause of harmful interferences to the satellite downlink and therefore to the provision of the backbone supporting CNS components within the AFI region. The conclusions of ITU-R studies on the colocation between broadband mobile devices and FSS earth stations are attached at **Appendix A**.

2.2 This threat was earlier identified and during the ITU World Radiocommunication Conference held in Geneva on 2007, lobbying between AFI States and AFI Air Navigation Service providers (Cameroun, Nigeria, Ghana, ASECNA, GCAA, NAMA...) and satellite manufacturers (Intelsat, Inmarsat..) under ICAO auspices allowed through **Recommendation 724 WRC 07** ***Use by civil aviation of frequency allocations on a primary basis to the fixed-satellite service,*** to prevent allocation on a primary basis of this band to IMTs.

2.3 **Recommendation 724 WRC 07** attached at **Appendix B,** calls upon administrations, in particular in developing countries and in countries with remote and rural areas to recognize the importance of VSAT operations to the modernization of civil aviation telecommunications systems, encourages the implementation of VSAT systems that could support both aeronautical and other communication requirements, as well as, to the maximum extent possible and as necessary, the expedition of the authorization process to enable aeronautical communications using VSAT technology**.** However some States agreed with footnotes on the usage of this band by IMT and deployment has started in some AFI countries and during further implementation of Aeronautical VSATs stations, some ANSPs have been encountering risk of harmful interferences.

2.4 Pursuing its efforts, the AFI Frequency Management Group brought to the agenda of ACP WGF 25th meeting (Dakar, Senegal, 10-14 October 2011) the issue of the protection of the C-Band and after discussion the meeting considered how best to tackle this concern and although some radio regulatory method might provide an option it was realized that this would not be achievable at WRC in 2012. The meeting formed a small correspondence group which developed a proposal for a future Resolution of WRC that was circulated and transmitted to ATU by the AFI/FMG Rapporteur.

2.5 Moreover, a coordinated ICAO state letter was issued by ICAO WACAF and ESAF Offices to address AFI state and call upon them to approach their National Telecommunications Regulation Authority to present the concern and ask for their support during the ATU preparatory meetings and during the conference itself. The AFI/FMG Rapporteur worked closely with ICAO and ITU by participating in ATU preparatory meetings.

2.6 The draft Resolution was introduced by ATU prior to its endorsement by at least 11 ATU States members. One must note that this endorsement was achieved during the conference itself after one week of negotiation and lobbying towards the AFI states.

The commitment of some AFI States and their promises to support the resolution were not translated into practical achievement.

2.7 Fortunately, in the other hand AFI States and Organization such as Algeria, Cote d'Ivoire, Ghana, Senegal, South Africa, ATU and ASECNA played a key role during the debate on the issue. Support was also gained from United States of America, INTELSAT and IATA.

2.8 After debate the resolution was adopted as **Resolution COM6/24-WRC 12,** currently renamed

Resolution 154-WRC 12.
This resolution attached at **Appendix C** resolves to invite ITU-R to provide after studies, for next WRC-15/16 a set of "***possible technical and regulatory measures in some countries in Region 1 to support the existing and future FSS earth stations in the 3 400-4 200 MHz band used for satellite communications related to safe operation of aircraft and reliable distribution of meteorological information***".

The resolution invites States and ICAO and WMO to participate in these studies.

2.8 This important result implies that the aeronautical VSAT operators in the AFI Region should actively participate through their national Authority of Regulation of Telecommunication in the preparatory activities of WRC-15/16.

In particular by providing the status of deployment of VSATs operating in the FSS C-Band in support to aeronautical services, they will contribute to the study called upon by Resolution 154.

To successfully address this critical issue, the AFI region needs to build a solid cooperation with other AFI FSS users operating in the same 3400-4200MHZ C-Band and with Aeronautical VSAT operators in the neighbouring Regions (MID, SAM, EUR, APAC…).

During this conference, ASECNA, GCAA, Cote d'Ivoire, Senegal as SNMC core members provided useful support to the initiative and this should be recognized and encouraged.

The difficulties encountered by the Secretariat and the AFI/FMG Rapporteur to have feedback for the endorsement of the draft Resolution requires that each SNMC member nominated a focal point to address VSAT spectrum issues.

2.9 The experience gained during this conference shows that an earlier and good preparation for the forthcoming Conference must be taken through dialogue with stakeholders such as CAAs, National Authorities of Regulation of Telecommunication and ANSPs.
The AFI Frequency Management Group (AFI/FMG) should draft a strategy in conjunction with the VSAT networks management committees (SNMC, CNC, NAFISAT & SADC management Boards) to actively participate in and follow up the studies called upon by Resolution 154-WRC 12.

2.10 ICAO Regional Offices WACAF and ESAF will continue the necessary coordination actions with the other neighbouring ICAO regions (MID, SAM, EUR, and APAC) to populate and share Resolution 154-WRC 12 that also addresses the issues of safe operation of satellite based VSAT networks supporting Aeronautical Fixed Services between these regions.

3. Action by the meeting

The meeting is invited to:

a) Take note of the information given above
b) Encourage AFI Sates/Organizations to populate WRC-12 outcome on issues related to the provision of spectrum for civil aviation;
c) Consider this resolution when updating the AFI Spectrum Strategy Terms of Reference and Work Programme;
d) Actively participate in the studies called upon by Resolution 154-WRC 12 through the activities of AFI/FMG, ACP WG F meetings and ATU regional meetings;
e) Strength their collaboration with their National Authority of Regulation of Telecommunication in order to submit and support the position of ICAO for the future WRC-15.