



**NAFISAT SUPERVISORY COMMITTEE MEETING  
MAHE SEYCHELLES 25-26 MARCH 2013**

**Agenda Item 7: Matters Arising**

**7.3 Implementation of APIRG/18 Conclusions and Recommendations of Relevance to  
NAFISAT Network**

**Outcome of ITU WRC-12, ICAO AN-Conf/12 and Preparation of WRC-15,  
including Draft ICAO Position**

*(Presented by the Secretariat)*

**SUMMARY**

This working paper summarizes the results of the ITU World Radiocommunication Conference (2012) and of the ICAO Twelfth Air Navigation Conference (2012), and provides the Draft ICAO Position for the ITU World Radiocommunication Conference (2015) pertaining to AFI Aeronautical VSAT Networks.

**References:**

- ICAO AN-Conf/12 Report
- ITU WRC-12 Report
- Draft ICAO Position for WRC-15 (State Letter Ref. E 3/5-12/62 of 28 November 2012)

**1. INTRODUCTION**

1.1 This working paper presents the results of the ITU World Radiocommunication Conference (2012) and of the ICAO Twelfth Air Navigation Conference (2012) concerning VSAT spectrum availability and protection. It also provides the Draft ICAO Position for the ITU World Radiocommunication Conference (2015) as pertains to AFI Aeronautical VSAT Networks.

**2. DISCUSSION**

***Outcome of WRC-12 - VSAT C-Band protection***

2.1 The Supervisory Committee will recall that the support received from States to ICAO position at ITU WRC-07 had led to Recommendation 724 (WRC-07) - Use by civil aviation of frequency allocations on a primary basis to the fixed-satellite service, which calls

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;
- Encourage the implementation of VSAT systems that could support both aeronautical and other communication requirements; and
- Expedite, to the maximum extent possible and as necessary, the authorization process to enable aeronautical communications using VSAT technology.

2.2 Considering the critical role of VSAT technology in the AFI and other regions' air navigation system, further work was carried out through the AFI Frequency Management Group (FMG), regional workshops, WRC-12 preparatory meetings and the Aeronautical Communications Panel (ACP) Working Group on Frequency Spectrum issues, toward an international protection of the C-band (3.400-4.200 MHz). These combined efforts lead to ITU WRC-12 Resolution 154 - Consideration of technical and regulatory actions in order to support existing and future operation of fixed-satellite service earth stations within the band 3 400-4 200 MHz.

### ***Outcome of ICAO AN-Conf12 on specific issues related to the agenda of ITU WRC-15***

2.3 The Conference noted that very small aperture terminal (VSAT) satellite networks in the C-band (3400 – 4200 MHz) are used to facilitate Safety of Life CNS services where terrestrial infrastructure is non-existing or not sufficiently reliable. Due to atmospheric and rainfall attenuation in higher frequency bands, the C-band remains the most suitable frequency band for this service, especially in tropical regions. C-band VSAT networks are currently in use in all regions of the world. However, it was recalled that at WRC-07, an allocation specific to ITU Region 1 (Europe and Africa) was made to the international mobile telecommunications (IMT) service in the C-band. This has resulted in interference and reduced access for aeronautical C-band networks, especially in Africa.

2.4 Furthermore, the Conference noted that the outcome of WRC-15 Agenda Items 1.1 and 1.5 may negatively impact the continued operation of C-band VSAT networks on a worldwide basis, unless aviation interests are sufficiently supported during the WRC. The Committee agreed that long-term VSAT spectrum availability and protection from interference needs to be guaranteed across the entire African continent and other parts of the world. Based on the above, the Committee accepted the following recommendation:

### ***Recommendation 1/14 – Long-term very small aperture terminal spectrum availability and protection***

*That:*

- a) *ICAO and Member States not support additional international mobile telecommunications spectrum allocations in the fixed satellite service C-band spectrum at the expense of the current or future aeronautical very small aperture terminal networks; and*

b) *ICAO and Member States pursue this matter in the International Telecommunication Union Radio Communication Sector (ITU-R) and during the World Radiocommunication Conference (WRC-15), with a coordinated proposal to promote a solution where the international mobile telecommunications spectrum allocation does not compromise the availability of the aeronautical very small aperture terminal networks.*

c) ***Draft ICAO Position for ITU WRC-15***

2.5 The draft ICAO Position for WRC-15 was submitted to all ICAO Member States and relevant international organizations on 28 November 2012, for comment and use in preparation for the conference. Among the items of main concern to aviation which will be addressed at the WRC-15 are *the technical and regulatory actions in the AFI Region to protect aeronautical VSAT networks*. **Appendix A** to this working paper provides the draft ICAO Position on these *technical and regulatory actions*. Aeronautical VSAT networks in all Regions may be negatively affected as a potential outcome of WRC-15.

2.6 The Air Navigation Commission will undertake a final review of the draft ICAO Position in the second quarter of 2013, in light of the comments received, and will make its recommendations on the subject to Council. Following approval by Council, the ICAO Position for the WRC-15 will be dispatched to all Member States and relevant international organizations and submitted to the ITU WRC-15.

2.7 ICAO Assembly Resolution A36-25 (Support of the ICAO policy on radio frequency spectrum matters) urges Contracting States and international organizations to firmly support the ICAO Position at WRCs and in regional and other international activities conducted in preparation for WRCs. In A36-25, several means are identified as guidance on how to support the ICAO Position (See **Appendix B** to this working paper).

### **3. CONCLUSION**

3.1 The NAFISAT participating States are requested to support the ICAO Position for WRC-15 in accordance with ICAO Twelfth Air Navigation Conference (AN-Conf/12) Recommendation 1/14 and Assembly Resolution A36-25.

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**Appendix A****SUB-ITEM 5 (9.1.5)**

*Consideration of technical and regulatory actions in order to support existing and future operation of fixed-satellite service earth stations within the band 3 400 – 4 200 MHz, as an aid to the safe operation of aircraft and reliable distribution of meteorological information in some countries in Region 1 (Resolution 154 (WRC-12))*

**DISCUSSION:**

The efficient provision of air navigation services requires the implementation and operation of ground communications infrastructure with high availability, reliability and integrity in order to fulfill aviation performance requirements.

In the Africa and Indian Ocean region, the difficulty of fulfilling these requirements, given the extent of the airspace and weakness in terrestrial communication infrastructure, led, in 1988, *the ICAO Africa-Indian Ocean (AFI) Limited Regional Air Navigation Meeting* to approve the use of fixed satellite technology (VSAT) to support terrestrial aeronautical communications services in the band 3.4–4.2 GHz. In tropical regions, due to more pronounced rain attenuation at higher frequency bands, this frequency band remains the only viable option for satellite links with high availability.

Since the 90s, States and/or organizations in the AFI Region have developed and implemented networks of satellite-based VSAT systems in this fixed satellite service (FSS) band. These VSAT networks support all aeronautical communications services including the extension of VHF aeronautical mobile, navigation and surveillance systems.

Today, these VSAT systems constitute a real infrastructure spanning the entire African continent and beyond and the availability of the entire 3.4–4.2 GHz FSS band is crucial for the AFI Region to ensure the continued growth of traffic while maintaining the required level of safety in this region.

Recommendation **724**, adopted by the WRC-07, indicates that satellite communication systems operating in the fixed satellite service may be the only medium to support the requirements of the ICAO communications, navigation, surveillance and air traffic management systems, where an adequate terrestrial communication infrastructure is not available.

WRC-07 allocated the frequency band 3.4–3.6 GHz to the mobile, except aeronautical mobile, service on a primary basis in some countries, including Region 1, subject to regulatory and technical restrictions (No. **5.430A**). The deployment of (non-aeronautical terrestrial) mobile service systems in vicinity of airports has led to an increased number of cases of interference into the FSS (VSAT) receivers. Consequently, some additional measures need to be adopted to improve the protection of the FSS links supporting aeronautical

communications.

ICAO supports ITU-R studies on the appropriate regulatory and/or technical measures that Administrations in the AFI region should apply to facilitate protection of VSATs used for the transmission of aeronautical and meteorological information in the 3.4–4.2 GHz frequency band from other services operating in the band. This will ensure the continued growth of traffic while maintaining the required level of safety in this region.

*Note: The problem can also occur in other regions. The 3.4–4.2 GHz frequency band is used by VSAT networks for aeronautical communications in tropical regions of Central/South America and the Asia Pacific as well as Africa. Hence there is a potential link to WRC-15 AI 1.1.*

### **ICAO POSITION**

To support possible technical and regulatory measures in the AFI region to ensure protection of VSATs used for the transmission of aeronautical and meteorological information in the 3.4 – 4.2 GHz frequency band from other services operating in the band.

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**Appendix B****A36-25: SUPPORT OF THE ICAO POLICY ON RADIO FREQUENCY SPECTRUM MATTERS**

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*The Assembly:*

*1. Urges Contracting States and international organizations to support firmly the ICAO position at WRCs and in regional and other international activities conducted in preparation for WRCs by the following means:*

*a) undertaking to provide for aviation interests to be fully integrated in the development of their positions presented to regional telecommunications fora involved in the preparation of joint proposals to the WRC;*

*b) including in their proposals to the WRC, to the extent possible, material consistent with the ICAO position;*

*c) supporting the ICAO position and the ICAO policy statements at ITU WRC's as approved by Council and incorporated in the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (Doc 9718);*

*d) undertaking to provide experts from their civil aviation authorities to fully participate in the development of States' and regional positions and development of aviation interests at the ITU; and*

*e) ensuring, to the maximum extent possible, that their delegations to regional conferences, ITU study groups and WRCs include experts from their civil aviation authorities or other aviation officials who are fully prepared to represent aviation interests;*

*2. Requests the Secretary General to bring to the attention of ITU the importance of adequate radio frequency spectrum allocation and protection for the safety of aviation; and*

*3. Instructs the Council and the Secretary General, as a matter of high priority within the budget adopted by the Assembly, to ensure that the resources necessary to support increased participation by ICAO in international and regional spectrum management activities are made available.*

*4. Declares that this resolution supersedes Resolution A32-13.”*

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