



Agenda Item 3

CNS Developments

3.7 Support to the ICAO position for the ITU WRC-2007

**SUPPORT TO THE UPDATED ICAO POSITION FOR THE ITU WORLD
RADIOCOMMUNICATION CONFERENCE (2007) (WRC-07)**

(Presented by the Secretariat)

SUMMARY

This paper proposes that States and International Organizations consider and support the updated ICAO position for the WRC-2007, which was approved by the ICAO Council on 28 May 2007 and to adopt actions to finalize the regional preparation to support the mentioned position.

Strategic Objectives:

This item is related to the strategic objectives A and D, since it guarantees the availability and protection of the radio frequency spectrum, which is essential to meet the civil aviation demands in a safe, efficient and cost-effective manner.

References:

- Council – 181st Session – C-WP/12967

1. Introduction

1.1 On 14 June 2005, the Council (C DEC 175/14) approved the ICAO position on issues of critical concern to aviation which are on the agenda of the International Telecommunication Union (ITU) World Radiocommunication Conference (2007) (WRC 07), scheduled to be held from 22 October to 16 November 2007 in Geneva, Switzerland. The approved position was transmitted to States and international organizations under cover of State letter E 3/5 05/85, dated 12 August 2005.

1.2 The GREPECAS/13 Meeting, held in Santiago, Chile from 14 to 18 November 2005, followed up on the preparation and support to CAR/SAM Regions States and International Organizations of ICAO's Position for WRC-07; the Meeting also recalled GREPECAS Conclusion 12/33 – *CAR/SAM Regional Action for the preparation and Support of ICAO's Position for WRC-07*. Also, GREPECAS/13 drafted Conclusion 13/89 – *Support of States in the CAR/SAM Regions to the ICAO Position for the ITU WRC-2007*, through which it recommended that Civil Aviation Administrations of the States of the CAR/SAM Regions, that not yet have done it, adopt the following measures to support the aforementioned ICAO position in the Inter-American Telecommunication Commission (CITEL) meetings

of the Organization of American States (OAS), in meetings and other activities convened by ICAO and integrating national delegations to the conference to support ICAO position during the WRC-07

1.3 Recently, the Air Navigation Commission with the support of the Aeronautical Communication Panel (ACP) and the Navigation System Panel (NSP) has prepared an updated ICAO position for the WRC-2007, which was reviewed by the Commission (174 7) on 20 February 2007. The additional material complements and updates the original position and reflects the latest results of studies completed within ICAO and ITU and is included in the **Appendix** to this paper. The updated position was approved by the Council on 28 May 2007.

1.4 Several regional telecommunication organizations are finalising their regional positions for the WRC-2007. The preparation of common inter-American positions for the WRC-2007 is being developed by CITEL's Permanent Consultative Committee (CCP.II).

1.5 The IX Meeting of CCP.II was held in San Salvador, El Salvador, from 17 to 20 April 2007 reviewed documents presented by ICAO on some issues of particular interest for aviation that will be dealt with at the WRC-2007. The X Meeting of CCP.II will be held in Orlando, Florida, United States from July 31 to August 3, 2007, and is expected to finalize the inter-American position for the WRC-2007.

2. Nature and scope of the proposed updates

2.1 The proposed amendments to the ICAO position proposal for the WRC-2007, as shown in the Appendix to this paper, are based on the results of studies conducted within the ACP and the NSP. They refine and complement the approved ICAO position in light of developments that have occurred since its approval by Council in 2005.

2.2 The amendments address the following area:

- a) protection of microwave landing system (MLS) from harmful interference generated by aeronautical telemetry applications planned to be used for flight testing (WRC 07 Agenda Item 1.5 refers);
- b) since spectrum requirements for unmanned aerial vehicles (UAV) could not be established, the relevant issues have been removed from the ICAO position. However, ICAO will support proposals for reviewing spectrum requirements for UAV at WRC-11 (WRC-07, Agenda Item 1.5 refers);
- c) spectrum requirements for air-ground communications to support safety and regularity of flight, including those for systems being considered under the future communication study within ACP (WRC 07 Agenda Item 1.6 refers);
- d) results of studies on the protection required for the Earth-exploration satellite service (passive) (EESS) operating in the band 1 400 – 1 427 MHz, in particular from out-of-band emissions generated by aeronautical primary radar systems operating below 1 400 MHz (WRC 07 Agenda Item 1.20 refers); and
- e) support the inclusion of an agenda item for ITU WRC 11 in order to secure the long-term spectrum availability and protection for the aeronautical mobile-satellite (R) service in the 1.5/1.6 GHz frequency bands (WRC 07 Agenda Item 7.2 refers).

3. Finalizing the regional preparation and support to the updated ICAO position for the WRC-2007

3.1 States and International Organizations are asked to take note of the updated ICAO position for the WRC-2007 and to incorporate it into the positions of their own administrations who will participate at the WRC-2007.

3.2 It is also important that CITEL Member States participate in the preparation of common inter-American positions for the WRC-2007, which is being developed by CITEL's Permanent Consultative Committee (CCP.II). This is expected to be finalized at the X Meeting of CCP.II and is expected to support the updated ICAO position for the WRC-2007.

3.3 Likewise, States and International Organizations are asked to participate at the WRC-2007 in order to support the updated ICAO position in order to guarantee the availability and protection of the aeronautical radiofrequency spectrum, which is essential to meet the civil aviation demands in a safe, efficient and cost-effective manner.

4. Suggested action

4.1 The Meeting is proposed to:

- a) take note of the information contained in this working paper;
- b) review and recommend to support the updated ICAO position for the ITU's WRC-2007, which is attached in the Appendix to this paper;
- c) review and recommend the drafting of actions proposed under paragraphs 3.1 to 3.3 of this paper; and
- d) propose any other actions deemed appropriate.

APPENDIX



International Civil Aviation Organization

ICAO POSITION FOR THE ITU WRC-07, including updates approved by Council on 28 May 2007

SUMMARY

This paper reviews the agenda for the ITU WRC-07, discusses points of aeronautical interest and provides the ICAO Position for each agenda item.

The ICAO Position aims at protecting aeronautical spectrum for radio-communication and radionavigation systems required for current and future safety-of-flight applications. In particular, it stresses that safety considerations dictate that exclusive frequency bands must be allocated to safety critical aeronautical systems and that adequate protection against harmful interference must be ensured. It also includes proposals for new aeronautical allocations for air-ground communications.

Support of the ICAO Position by Contracting States is required to ensure that the position is supported at the WRC-07 and that aviation requirements are met.

CONTENTS

1. Introduction
2. Spectrum requirements for international civil aviation
3. Aeronautical aspects on the agenda for WRC-07

Attachment

Agenda for ITU WRC-07

1. INTRODUCTION

1.1 This paper contains the ICAO Position on issues of interest to international civil aviation to be decided at the ITU World Radiocommunication Conference (2007) (WRC-07), which will be held in October 2007. The agenda of the conference is contained in the Attachment. The ICAO Position should be considered in conjunction with section 7-II of the *Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies* (Doc 9718) (Civil aviation frequency allocations – ICAO policies and related information). An updated version of this section is available on website <http://www.icao.int/anb/panels/acp/index.cfm> which includes the amendments to the Radio Regulations as agreed at WRC-03. Also available at the above-mentioned website are the ITU WRC Resolutions referenced in the ICAO Position.

2. SPECTRUM REQUIREMENTS FOR INTERNATIONAL CIVIL AVIATION

2.1 The safety of air operation is vitally dependent on the availability of reliable communication and navigation services. The Eleventh Air Navigation Conference (AN-Conf/11), which was held in Montreal, Canada from 22 September to 3 October 2003, noted that States, international organizations and ICAO had embarked on communication, navigation and surveillance/air traffic management (CNS/ATM) systems planning, intended to improve aircraft operations by making use of modern CNS/ATM technologies. The AN-Conf/11 endorsed the global air traffic management operational concept, to be used as guidance for the development of ICAO CNS/ATM related provisions. The planning horizon used for the concept was up to and beyond the year 2025.

2.2 The development of new CNS/ATM provisions is highly dependent upon the availability of radio frequency spectrum that can support the high integrity and availability requirements associated with aeronautical safety systems and demands special conditions to avoid harmful interference to these systems. It was recognized by AN-Conf/11 that currently available spectrum for CNS/ATM systems may need to be supplemented with new allocations to enable the introduction of new systems in aviation while the requirements for spectrum for current systems are to be maintained until a future undetermined period. **Article 4.10** of the Radio Regulations states that ITU Member States recognize that the safety aspects of radionavigation and other safety services requires special measures to ensure their freedom from harmful interference. These factors need to be taken into consideration in the allocation, assignment and use of frequencies for aeronautical systems. In particular, the sharing of aeronautical radio services with other aeronautical services or non-aeronautical services must be considered with extreme care. Where sharing conditions cannot meet the above requirements, exclusive aeronautical allocations need to be secured to preserve the integrity of aeronautical services.

2.3 The radio frequency spectrum needs for civil aviation, arising from the growth in air transport and from the introduction of new technologies, are increasing. Requirements for additional aviation spectrum and/or for alternative uses of existing aviation spectrum are currently being identified to meet emerging needs. While some of these needs will be addressed by WRC-07, consideration by future conferences (WRC-11 and beyond) will be necessary to fully meet the future aviation requirements.

2.4 The ICAO Position was developed in 2003/2004 by the Aeronautical Communications Panel (ACP) and was reviewed by the Air Navigation Commission (ANC) at the first and second meetings of its 167th Session on 19 and 21 October 2004. Following the review by the ANC, it was submitted to ICAO Contracting States and international organizations for comment. After final review of

the ICAO Position and the comments by the ANC on 28 April 2005 (169-3), it was approved by Council on 14 June 2005 (175/14). When the ICAO Position was established, studies were ongoing in the Navigation Systems Panel (NSP) and Aeronautical Communications Panel (ACP), in ITU and in regional telecommunication organizations, in particular on the protection of the microwave landing system (MLS) from interference, as well as the assessment of spectrum required for future communication systems. The ICAO studies were completed by the end of 2006 and an update to the ICAO Position was reviewed by the ANC on 20 February 2007 (174-7) and approved by Council on xx June 2007 (181/xx). States and international organizations in their preparatory activities for the WRC-07 at the national level, in the activities of the regional telecommunication organizations¹ and in the relevant meetings of the ITU are requested to make use of the ICAO Position, to the maximum extent possible.

3. **AERONAUTICAL ASPECTS ON THE AGENDA FOR WRC-07**

Note 1.— The statement of the ICAO Position on an agenda item is given in a text box at the end of the section addressing the agenda item, after the introductory background material.

Note 2.— No impact on aeronautical services has been identified from WRC-07 Agenda Items 1.2, 1.7, 1.8, 1.10, 1.11, 1.12, 1.15, 1.18, 3, 5, 6 and 7.1 which are therefore not addressed in the Position.

Note 3.— No ICAO Position has been developed on the WRC-07 Agenda Items 1.9, 1.14 and 1.19. However, any proposal of a technical or regulatory nature on these agenda items needs to be considered carefully to ensure that aeronautical interests are not affected adversely. If required, an ICAO Position on these agenda items will be developed in due course.

¹ African Telecommunication Union (ATU), Arab Group, Asia-Pacific Telecommunity (APT), European Conference of Postal and Telecommunications Administrations (CEPT) and the Inter-American Telecommunication Commission (CITEL).

WRC-07 Agenda Item 1.1

Agenda Item Title:

Requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, in accordance with Resolution 26 (Rev. WRC-97)

Discussion:

Allocations to the aeronautical services are generally made for all ITU Regions and normally on an exclusive basis. These principles reflect the global process of standardization within ICAO for the promotion of safety and to support the global interoperability of radiocommunication and radionavigation equipment used in civil aircraft. In some instances, however, footnotes to the ITU Table of Frequency Allocations allocate spectrum in one or more countries to other radio services in addition or alternatively to the aeronautical service to which the same spectrum is allocated in the body of the table.

The use of country footnote allocations in aeronautical bands to non-aeronautical services is generally not recommended by ICAO, on safety grounds, as such use may result in harmful interference to safety services. Furthermore, this practice generally leads to an inefficient use of available spectrum to aeronautical services, particularly when the radio systems sharing the band have differing technical characteristics. It also may result in undesirable (sub)-regional variations with respect to the conditions under which the technical conditions under which the aeronautical allocations can be used. This can have serious impact on the safety of aviation.

A number of footnotes in aeronautical bands that should be deleted for safety and efficiency reasons are discussed below.

- a) In the bands used for the ICAO instrument landing system (ILS), (Marker Beacons 74.8 - 75.2 MHz; Localizer 108 - 112 MHz and Glide Path 328.6 - 335.4 MHz) and the VHF omnidirectional radio range system (VOR); 108 - 117.975 MHz, Nos. **5.181**, **5.197** and **5.259** allow for the introduction of the mobile service on a secondary basis and subject to agreement obtained under No. **9.21** of the Radio Regulations when these bands are no longer required for the aeronautical radionavigation service. The use of both ILS and VOR is expected to continue. In addition, WRC-03 has introduced No. **5.197A** stipulating that the band 108 - 117.975 MHz may also be used by the aeronautical mobile (R) service on a primary basis for navigation and surveillance functions. Relevant Standards and Recommended Practices (SARPs) for the GNSS ground-based augmentation system (GBAS) and the VHF digital link (VDL) Mode 4 have been adopted by ICAO. As a result, access to these bands by the mobile service is not feasible, in particular since no acceptable sharing criteria that secure the protection of aeronautical systems have been established to date. Nos. **5.181**, **5.197** and **5.259** should now be deleted since they do not represent a realistic expectation for an introduction of the mobile service in these bands.
- b) Nos. **5.203A** and **5.203B** allocate the band 136 - 137 MHz in some countries to the fixed and mobile, except aeronautical mobile services, on a secondary basis until 1 January 2005. In addition, this band may also be used by the meteorological satellite service until 1 January 2002 (No. **5.203** refers). The band 136 - 137 MHz was allocated to

the aeronautical mobile (route) service (AM(R)S) on a primary basis by the WARC-79. The actual introduction of the AM(R)S could only take place as from 1 January 1990 to enable other users to vacate this band. However, some of the non-aeronautical services continued to operate well beyond 1990. In Europe, the AM(R)S was introduced in the band 136 – 137 MHz in 1990 and in North America in 1995. Recently other ICAO Regions started to use this band, primarily for air-ground data communications. Introduction of aeronautical air-ground data link is primarily concentrated in this sub-band. The band is already heavily used in Europe for AM(R)S for voice and data communications and use is increasing in North America and other parts of the world, thus restricting seriously the operations of the various services mentioned in Nos. **5.203**, **5.203A** and **5.203B**. The provisions of these footnotes have already expired and should not be extended. As a result, they should be deleted at the WRC-07. Since No. **5.203** does not include any country name, it needs to be addressed under Agenda Item 7.1 of the WRC-07, since the date mentioned in this footnote has already expired. It is expected that this footnote will be addressed in the Report of the Director of the Radiocommunication Bureau.

- c) In the band 1 559 - 1 610 MHz, which is used for elements of the ICAO Global Navigation Satellite System (GNSS), Nos. **5.362B** and **5.362C** allow the operation of the fixed service on a primary basis until 1 January 2005 (1 January 2010 in some countries) and on a secondary basis after those dates until 1 January 2015. This band is allocated, on a worldwide, primary basis, to the aeronautical radionavigation service (ARNS) and to the radionavigation-satellite service (RNSS). The band already supports operation of two prime elements of global navigation satellite system (GNSS), i.e. GLObal NAVigation Satellite System (GLONASS) and global positioning system (GPS), which have been defined in ICAO SARPs. SARPs for other RNSS systems, such as the European Galileo system, are under development. Studies undertaken in preparation for WRC-2000 indicate that a geographical separation distance exceeding line-of-sight (in the order of 400 km) between aircraft using GNSS and stations of the fixed service is required to ensure safe operation of GNSS. This is a very severe restriction, which can prohibit the safe use of GNSS over wide areas around any fixed service installation. To compensate for these restrictions, retention of current terrestrial radionavigation systems by aviation may be needed, leading to inefficient use of available spectrum. More importantly, harmful interference situations can arise leading to disruption to GNSS, affecting the safety of aircraft in flight. Thus, the WRC-2000 agreement to terminate all use by the fixed service in this band in 2015 still constitutes a severe and unacceptable constraint on the safe and effective use of GNSS in some areas of the world. It is, therefore, recommended that deletion of these allocations be effective from 2007. It is further noted that in No. **5.362B** the allocation to the fixed service on a primary basis in a number of countries has expired at the timing of WRC-07. Finally, the alternative allocation to the aeronautical radionavigation service in one country in the band in No. **5.363** is redundant in the light of the global allocation to the aeronautical radionavigation service already in this frequency band and should be deleted.
- d) In the band 4 200 - 4 400 MHz, which is reserved for use by airborne radio altimeters, No. **5.439** allows the operation of the fixed service on a secondary basis in some countries. Radio altimeters are a critical element in aircraft automatic landing systems and serve as a sensor in ground proximity warning systems. Interference from the fixed service has the potential to affect the safety of all weather operations. Deletion of this footnote is recommended.

ICAO Position:

To support deletion of Nos. **5.181**, **5.197** and **5.259**, as access to these bands by the mobile service is not feasible and could create the potential for harmful interference to important radionavigation systems used by aircraft at final approach and landing.

To support deletion of Nos. **5.203**, **5.203A** and **5.203B** at WRC-07 to enable full use of the band 136 - 137 MHz for AM(R)S communications.

To support the deletion of Nos. **5.362B** and **5.362C** as of 2007 in order to remove harmful interference that can be caused by the fixed service to essential aeronautical radionavigation satellite functions in the band 1 559 – 1 610 MHz and to permit the full utilization of GNSS services to aircraft on a global basis.

To support the deletion of No. **5.363** from the band 1 590 – 1 610 MHz.

To support deletion of No. **5.439** as a measure to protect safety critical operation of radio altimeters in the band 4 200 – 4 400 MHz.

Note 1.— It is expected that the expiry of No. 5.203 will be addressed under Agenda Item 7.1 in the Report of the Director of the Radiocommunication Bureau to the WRC.

Note 2.— Administrations indicated in the footnotes mentioned in the ICAO Position above which are urged to remove their country names from these footnotes are as follows:

No. 5.181	<i>Egypt, Israel and Syrian Arab Republic</i>
No. 5.197	<i>Japan, Pakistan and Syrian Arab Republic</i>
No. 5.203A	<i>Israel, Mauritania, Qatar and Zimbabwe</i>
No. 5.203B	<i>Oman, Saudi Arabia, Syrian Arab Republic and United Arab Emirates</i>
No. 5.362B	<i>Armenia, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Democratic People's Republic of Korea, France, Gabon, Georgia, Germany, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, Libyan Arab Jamahiriya, Mali, Mauritania, Nigeria, Pakistan, Poland, Republic of Moldova, Romania, Russian Federation, Saudi Arabia, Senegal, Spain, Swaziland, Syrian Arab Republic, Tajikistan, Tunisia, Turkmenistan, Uganda, Ukraine, United Republic of Tanzania and Uzbekistan</i>
No. 5.362C	<i>Bahrain, Bangladesh, Chad, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Somalia, Sudan, Syrian Arab Republic, Togo and Yemen</i>
No. 5.363	<i>Sweden (only 1 590 – 1 610 MHz)</i>
No. 5.439	<i>Iran (Islamic Republic of) and Libyan Arab Jamahiriya</i>

WRC-07 Agenda Item 1.3

Agenda Item Title:

In accordance with Resolution 747 (WRC-03) consider the upgrading of the radiolocation service to primary allocation status in the bands 9 000 - 9 200 MHz and 9 300 – 9 500 MHz and extending by up to 200 MHz the existing primary allocations to the Earth exploration-satellite service (active) and the space research service (active) in the band 9 500 – 9 800 MHz without placing undue constraints to the services to which the bands are allocated.

Discussion:

These three bands are used extensively by aeronautical radar systems (ground and airborne). They cater for short-range surveillance and precision functions up to a 50 km range. In aviation, they find considerable application in precision monitoring, approach and surface detection functions and in airborne weather radar (AWR) systems where their shorter wavelength is suitable for the detection of storm clouds. In this latter role, the frequency band 9 345 - 9 375 MHz has been coordinated with other users within ITU-R as the agreed aeronautical airborne frequencies for this purpose. This band enables for a narrower beam than the AWR operating at 5.3 GHz and it provides a better resolution and less ground clutter. One of the vital safety functions of AWR is to give warning of hazardous weather and ensure safe separation of aircraft from hazardous weather conditions. In most countries the carriage of AWR by aircraft is a mandatory requirement.

These radars are to remain in service for many years into the future. Sharing with maritime radars is manageable and practical because of the different geographical usage and good coordination between the two services. The ongoing protection of the aeronautical uses of these bands needs to be assured. The operation of the radiolocation service in these bands needs to be based upon the results of studies in ITU-R, demonstrating that sharing with the radiolocation service on a primary basis is feasible. These studies should also result in ITU-R recommendations stipulating the conditions of the use of these bands by the radiolocation service. Any upgrade of the radiolocation service to a primary status should be considered with a footnote indicating that the radiolocation service will not cause harmful interference to nor claim protection from the (aeronautical) radionavigation service.

Under this agenda item, WRC-07 may also consider to allocate additional 200 MHz on a primary basis to the Earth exploration satellite service (EESS) and the space research service (SRS). The band 9 300 - 9 500 MHz identified in the *resolves to invite ITU-R* of Resolution **747 (WRC-03)** is used by aeronautical radio services. Any suggestions for the sharing of this radionavigation band with EESS and SRS can only be considered on the basis of agreed studies, which take into account the present and expected future use of the band by aviation, and the constraints applied to this use. Such an allocation to EESS and SRS shall not cause harmful interference to, nor claim protection from, or otherwise impose constraints on the operation and future development of the radionavigation service in the band 9 000 - 9 500 MHz.

The ICAO Position, which requires that in introducing the proposed new primary allocation no harmful interference be caused to the aeronautical radionavigation service and the radionavigation service and that the new primary allocations need to accept interference from these services, should not be interpreted as reverting the new primary allocations to a secondary status in the context of the ITU definition for a secondary service.

The Radio Regulations stipulate, *inter alia*, that stations of a secondary service:

- a) shall not cause harmful interference to stations of a primary service to which frequencies are already assigned or to which frequencies may be assigned at a later date;
- b) cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or will be assigned at a later date.

The provision requested by ICAO primarily protects the aeronautical utilization against harmful interference that may be caused when assignments are made with system characteristics different from those assumed in the compatibility analysis and interference mechanisms which were not foreseen in the compatibility analysis. New assignments (or changes to existing assignments) made to all services to which the bands are allocated on a (co-) primary basis need to be coordinated taking into account the protection of any existing (coordinated) assignment. Protection of relevant services is to be secured by Administrations, taking into account any relevant ITU-R Recommendation as required, since the aeronautical systems operating in these bands are not standardized by ICAO.

ICAO Position:

Accept the upgrading of the radiolocation service to primary status in the bands 9 000 - 9 200 MHz and 9 300 - 9 500 MHz, on the basis of agreed studies which take into account the protection of the use of these bands by aviation. Any upgrading of the radiolocation service shall be made with the condition that no harmful interference is caused to the aeronautical radionavigation service and the radionavigation service in these bands and that no protection is required to the radiolocation service from these radionavigation services.

Any suggestions for the sharing of radionavigation band 9 300 - 9 500 MHz with EESS and SRS under this agenda item can only be considered on the basis of agreed studies, which take into account the use of the band by aviation. Any allocation to EESS and SRS shall be made with the condition that no harmful interference is caused to the (aeronautical) radionavigation service in the band 9 300 – 9 500 MHz and that no protection is required to the EESS and SRS from the (aeronautical) radionavigation service.

No change to Nos. 5.337, 5.427, 5.474 and 5.475. No. 5.476 can be deleted since the date indicated has expired.

WRC-07 Agenda Item 1.4

Agenda Item Title:

To consider frequency related matters for the future development of IMT-2000 and systems beyond IMT-2000 taking into account the results of ITU-R studies in accordance with Resolution 228 (Rev. WRC-03)

Discussion:

Proponents of IMT-2000 are seeking additional allocations for the future development of mobile communication and are especially looking at bands below 3 GHz. Resolution **228 (Rev. WRC-03)** goes beyond spectrum currently planned for allocation to IMT services. In particular *resolves* 3 of Resolution **228 (Rev. WRC-03)** enables the WRC-07 to consider all relevant frequency bands below 806 MHz for future use by IMT-2000 and beyond; and *resolves* 6 of Resolution **228 (Rev. WRC-03)** enables the WRC-07 to consider all relevant frequency bands for future use by IMT-2000 and beyond.

In general, ICAO does not support the shared use of spectrum between aeronautical safety services (ARNS, AM(R)S and AMS(R)S) and other (non aeronautical) services, without relevant studies having been completed (either in ITU or in ICAO) that support sharing. All frequency bands used for aeronautical safety services are already heavily used or planned to be used and do not allow for sharing with a non-aeronautical mobile service. These bands are in particular:

108 – 112 MHz	Used for ILS Localizer
108 – 117.975 MHz	Used for VOR, GBAS, GRAS and VDL Mode 4
117.975 – 137 MHz	Used for voice and data air-ground communications
328.6 – 335.4 MHz	Used for ILS Glide Path
960 – 1 215 MHz	Used for DME, SSR and ACAS
1 215 – 1 350 MHz	Used for primary (long range) radar systems
1 559 – 1 610 MHz	Used for GNSS systems and (associated) systems in the aeronautical radionavigation service
2 700 – 3 300 MHz	Used for primary (medium range) radar systems
4 200 – 4 400 MHz	Used for radio altimeters
5 030 – 5 150 MHz	Used for MLS
5 350 – 5 470 MHz	Used for airborne weather radar systems

In addition, adequate protection to the mobile service from these aeronautical safety systems is unlikely. Due to either the heavy use of these bands or the technical specifications of aeronautical systems using or planning to use these bands (e.g. radio altimeters or weather radar systems), compressing aeronautical assignments in a smaller sub-band is considered not feasible. The use of RF spectrum for radar systems is normally only coordinated on a national or bilateral basis. This makes a global acceptance of proposals to introduce a new service in such bands difficult to study.

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ICAO Position:

No sharing of the mobile service (e.g. for IMT-2000 and beyond) in the frequency bands listed.

WRC-07 Agenda Item 1.5

Agenda Item Title:

To consider spectrum requirements and possible additional spectrum allocations for aeronautical telecommand and high-bit rate aeronautical telemetry, in accordance with Resolution 230 (WRC-03)

Discussion:

Non-Safety Related Aeronautical Telecommand and Telemetry

The development of modern aircraft requires a large test flight program. These programs are required to gather a large amount of data on the performance of the airframe under test. By providing a real-time link between the aircraft and the ground control centre, the amount of testing and the number of flights can be kept to a minimum. This will result in faster development programs and hence achieve a significant cost saving. This agenda item seeks to make provision for the required air-ground telemetry links.

The use of such telemetry links however must not adversely affect existing and planned aeronautical systems. Aeronautical telemetry, not being a safety service, can operate with allocations to the mobile or the aeronautical mobile services, either on a primary or secondary status. Aeronautical telemetry includes telemetry and associated telecommand assisting flight-testing of aircraft.

ICAO studies have demonstrated that the band 5 030 – 5 091 MHz is required for the aeronautical radionavigation service (MLS) and therefore the current allocations in this band should remain unchanged. In addition, since not all requirements for MLS can be met in the band 5 030 – 5 091 MHz, parts of the band 5 091 – 5 150 MHz may also be necessary for MLS in some geographical areas. In order to secure MLS operations it is of paramount importance that no modification should be made to provisions Nos. **5.444** and **5.444A** of the Radio Regulations, which provide priority access for MLS to the band 5 030 – 5 150 MHz. Studies in ICAO have further shown that an aggregate interference level of -130 dBm/150 kHz will ensure protection of MLS. This will result in very large separation distance with aeronautical telemetry, making co-frequency sharing in the same geographical area not practicable. The band 5 091 – 5 150 MHz is also required for the aeronautical mobile (R) service, to support communication related to safety and regularity of flight (ICAO position for WRC-07 Agenda Item 1.6 refers). Hence, additional allocations for the implementation of aeronautical telemetry can only be supported by ICAO if protection and priority access of MLS and AM(R)S is secured in the Radio Regulations.

ICAO Position:

To support the allocation of suitable spectrum for non-safety related aeronautical telemetry and associated telecommand systems and applications, in the bands between 3 – 30 GHz, in accordance with the provisions of Resolution **230 (WRC-03)**. These allocations, to be made to the mobile or aeronautical mobile service, should, in principle, not be made in bands currently allocated to the aeronautical mobile (R) service (AM(R)S), the aeronautical radionavigation service (ARNS) or their satellite equivalents. If allocations are made to such bands, and in particular in the frequency band 5 091 – 5 150 MHz, regulatory priority shall be given to these aeronautical safety services.

No change to the current allocation in the band 5 030 – 5 091 MHz since this band is required to satisfy the requirements of the aeronautical radionavigation service (MLS).

To support the continued use and protection of frequency bands currently allocated and used for aeronautical telemetry applications.

Note.— Current allocations designated for the use by aeronautical telemetry are:

No. 5.342	1 429 – 1 535 MHz	Several countries in ITU Region 1 (Eastern Europe)
No. 5.343	1 435 – 1 535 MHz	ITU Region 2
No. 5.394	2 300 – 2 390 MHz	United States
	2 300 – 2 483.5 MHz	Canada
No. 5.395	2 310 – 2 360 MHz	France, Turkey

WRC-07 Agenda Item 1.6

Agenda Item Title:

To consider allocations for the aeronautical mobile (R) service in parts of the bands between 108 MHz to 6 GHz, in accordance with Resolution 414 (WRC-03) and to study current satellite frequency allocations that will support the modernization of civil aviation telecommunication systems, taking into account Resolution 415 (WRC-03)

Discussion:

Resolution 414 – Consideration of the frequency range between 108 MHz and 6 GHz for new aeronautical applications

In some regions, in particular in portions of Region 1 (Europe) and Region 2 (North America), the aeronautical VHF communications band 117.975 – 137 MHz is heavily congested. Assignable VHF spectrum for line-of-sight communications to support safety and regularity of flight has become increasingly limited, and in some cases non-existent, even after introduction of more spectrum efficient techniques.

In addition, new applications are foreseen to be globally implemented and mainly making use of data communication systems. These are needed to accommodate expected air traffic growth and to support various new ATM, as well as aviation security requirements. In particular, aviation has identified the need for introducing aeronautical safety systems including those that would:

- a) overcome limitations of conventional systems and allow ATM to further develop on a global scale;
- b) provide increased information exchange between aircraft and ground systems as well as between aircraft (e.g. ATC centres, aircraft operating agencies, etc.); and
- c) reduce runway incursions through the use of high integrity, wireless local area networks combined with connected grids of distributed sensors.

For aviation, these new applications support air navigation functions (i.e. either communication, navigation or surveillance or a combination of these) through the transmission or exchange of data. However, within the terms of the ITU definitions, they require to operate under an allocation to the AM(R)S, thus requiring additional allocations to be made in the relevant bands between 108 MHz to 6 GHz.

The combination of VHF band spectrum congestion, growing air traffic and evolving aeronautical applications drive an urgent need for new AM(R)S allocations.

Furthermore, an increased use of short-range communication links on or around airports is expected to be required to support the transfer of safety critical information generated by systems such as air traffic control radar, wind-shear radar, remote control systems, automated weather information systems, runway lighting etc. between nodes of high integrity airport surface wireless local area networks.

Spectrum currently globally allocated to the aeronautical radionavigation service (ARNS) and having suitable propagation conditions to support air-ground communication systems has been considered in ICAO. ICAO supports additional allocations to the AM(R)S in the frequency bands 960 – 1 164 MHz, 5 000 – 5 030 MHz and 5 091 – 5 150 MHz. The introduction of an allocation to the AM(R)S in any of these bands needs to be limited to ICAO standardized systems ('... operating in accordance with international aeronautical standards'), preferably through an appropriate footnote. Compatibility with ICAO standardized systems will be addressed in ICAO. Compatibility with in-band and adjacent band non-aeronautical systems will be addressed in ITU, as required, when the technical characteristics of these aeronautical communication systems are being established. Special attention is required for appropriate provisions in the Radio Regulations to allow for the proposed use of the universal access transceiver (UAT) system which operates on the frequency 978 MHz.

ICAO studies have demonstrated that the band 5 030 – 5 091 MHz is required for the aeronautical radionavigation service (MLS) and therefore the current allocations in this band should remain unchanged. In addition, since not all requirements for MLS can be met in the band 5 030 – 5 091 MHz, parts of the band 5 091 – 5 150 MHz may also be necessary for MLS in some geographical areas, and thus its priority in this band must be maintained.

No change to the current allocations in the bands 108 – 112 MHz and 328.6 – 335.4 MHz since it is expected that these bands on a long-term basis (more than twenty years) would be required to accommodate the Instrument Landing System (ILS) (Localizer and Glide Path), including ILS Category I, Category II and Category III operations and other ICAO standardized systems covered under No. **5.197A** which support navigation and surveillance functions. However the current limitations to AM(R)S in the band 112 – 117.975 MHz as per No. **5.197A** can be removed.

Frequency bands allocated to the aeronautical radionavigation service or radionavigation service between 1 215 – 4 400 MHz and 5 350 – 5 470 MHz are considered to be not available for an allocation to the aeronautical mobile (R) service due to the extensive use of some of these bands by primary radar systems, introduction of aeronautical radionavigation systems supporting GNSS, by radio altimeters and airborne weather radar systems.

Resolution 415 – Study of current satellite frequency allocations that will support the modernization of civil aviation telecommunication systems

Resolution **415 (WRC-03)** is addressing possibilities of broadening the services and applications of the use of current satellite frequency allocations to allow the expansion of the ICAO communications, navigation, surveillance and air traffic management (CNS/ATM) systems through using, for aeronautical safety purposes, systems that can also support other non-aeronautical services.

Ground-ground communications

Satellite communications provide a real possibility to meet the demands of the ICAO CNS/ATM system, especially in areas where a terrestrial communication infrastructure is lacking. The benefits of using in particular very small aperture terminals (VSAT) include the use of the most appropriate and cost-effective technology to improve aeronautical ground-ground communications. VSAT networks have been implemented in a number of ICAO regions and the operation of these networks is well under control. Potential shortcomings, such as interoperability issues between different networks, require a technical or administrative (with administrations and/or service providers) solution. In view of their role in

aeronautical safety service communications, aeronautical VSAT systems can be used on a shared basis to offer telecommunication services to non-aeronautical users, subject to appropriate priorities being afforded to aeronautical telecommunications.

VSAT networks operate under an allocation to the fixed satellite service (FSS) which in the ITU is not recognized as a safety service. In this regard, it is necessary to consider in the ITU, preferably through the adoption of a new Recommendation at WRC-07, how to recognize the safety aspects of the aeronautical telecommunications element VSAT networks can carry. Such a Recommendation, however, should not impose additional constraints on the VSAT operators.

Air-ground communications

AMS(R)S:

Currently, special provisions in the Radio Regulations provide for priority to accommodate the spectrum requirements for the aeronautical mobile-satellite (R) service (AMS(R)S) through No. 5.357A and Resolution 222 (WRC-2000) in the frequency bands 1 545 – 1 555 MHz and 1 646.5 – 1 656.5 MHz. Difficulties in coordinating adequate spectrum access for AMS(R)S have been experienced. ICAO supports a review of these allocations with the aim to securing long-term spectrum availability and protection for AMS(R)S. The results of ITU-R studies show that real-time pre-emptive access between different networks of mobile-satellite service is not feasible and can no longer be seen as a method to ensure priority access and immediate availability for AMS(R)S. As a result of these developments, WRC-11 needs to consider the allocations in these bands and to provide an effective mechanism securing long-term access for aviation to these bands (ICAO position for WRC-07 Agenda Item 7.2 refers).

ICAO Position:

Resolution 414

To support global allocations to the aeronautical mobile (R) service in portions of the aeronautical radionavigation service (ARNS) frequency bands 960 – 1 164 MHz, 5 000 – 5 010 MHz, 5 010 – 5 030 MHz and 5 091 – 5 150 MHz. Use of the AM(R)S allocations shall be limited to systems which operate in accordance with recognized international aeronautical (ICAO) standards. Compatibility issues with regard to aeronautical radionavigation systems, operating in accordance with recognized international aeronautical (ICAO) standards will be addressed in ICAO and will be part of the development of relevant Standards and Recommended Practices (SARPs) for the communication systems. Compatibility issues with regard to other services to which the bands are allocated will be addressed in the ITU-R as appropriate.

No change to the current allocation in the band 5 030 – 5 091 MHz since this band is required to satisfy the requirements of the aeronautical radionavigation service (MLS).

No change to the current regulatory provisions which secure priority access of MLS to the band 5 030 – 5 150 MHz.

To support appropriate regulatory provisions ensuring protection of RNSS in the bands 5 000 – 5 010 MHz and 5 010 – 5 030 MHz as well as protection of FSS in the band 5 091 – 5 150 MHz.

No change to the current allocations in the bands 108 – 112 MHz and 328.6 – 335.4 MHz.

To support removal of the current limitation on AM(R)S in the band 112 – 117.975 MHz.

Resolution 415

To support appropriate regulatory measure, preferably in the format of an ITU Recommendation in the Radio Regulations which recognizes that VSAT networks operating in the fixed satellite service can also be used for aeronautical safety applications. This includes provisions for the necessary priorities for aeronautical telecommunications when aeronautical VSAT networks are also being used to provide non-aeronautical telecommunications.

WRC-07 Agenda Item 1.13

Agenda Item Title:

Taking into account Resolutions 729 (WRC-97), 351 (WRC-03) and 544 (WRC-03) to review the allocations to all services in the HF bands between 4 and 10 MHz, excluding those allocations to services in the frequency range 7 000 - 7 200 kHz and those bands whose allotment plans are in Appendices 25, 26 and 27 and whose channelling arrangements are in Appendix 17, taking into account the impact of new modulation techniques, adaptive control techniques and spectrum requirements for HF broadcasting

Discussion:

Within the frequency range 4 - 10 MHz, various frequency bands are allocated to the aeronautical mobile (R) service and the allotment plan for these frequency bands is in **Appendix 27** to the Radio Regulations. Although the aeronautical bands between 4 to 10 MHz have been excluded from consideration under this agenda item, it is of concern to aviation that any change to existing allocation, or new allocation, in particular to the high-powered broadcasting service, will not cause harmful interference to the aeronautical mobile (R) service. In addition, the introduction of any new modulation technique, in particular digital modulation by the broadcasting service, may cause harmful interference to the aeronautical mobile (R) service if these techniques are applied in bands adjacent to or in close proximity of these aeronautical bands.

ICAO Position:

Ensure that new allocations and techniques considered for introduction in the bands between 4 to 10 MHz will not cause harmful interference in the aeronautical HF bands.

WRC-07 Agenda Item 1.16

Agenda Item Title:

To consider the regulatory and operational provisions for maritime mobile service identities (MMSIs) for equipment other than shipborne mobile equipment, taking into account Resolutions 344 (Rev. WRC-03) and 353 (WRC-03)

Discussion:

Maritime mobile service identities (MMSIs) are unique identifiers for individual stations and provide a rapid method of identification. Several ITU-R recommendations cover the assignment and use of these MMSIs for ship and land stations. The need to assign MMSIs for automatic identification systems (AIS) on search and rescue (SAR) aircraft, in accordance with the provision of Recommendation ITU-R M.1371 in order to communicate efficiently in the maritime mobile service when engaged in SAR operations. With respect to using AIS on board an aircraft provisions for a standard format of the identification number are necessary. WRC-07 will consider necessary changes to the Radio Regulations to allow MMSIs to be used on board SAR aircraft.

ICAO supports measures aimed at improving the use of MMSIs on board SAR aircraft. Changes to the Radio Regulations should be made on the condition that these are compatible with ICAO Standards and Recommended Practices (SARPs).

ICAO Position:

Support measures improving the use of MMSIs on board SAR aircraft for automatic identification system (AIS).
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WRC-07 Agenda Item 1.17

Agenda Item Title:

To consider the results of ITU-R studies on compatibility between the fixed-satellite service and other services around 1.4 GHz, in accordance with Resolution 745 (WRC-03)

Discussion:

This agenda item seeks to complete the studies undertaken in response to Agenda Item 1.16 of WRC-03 on feeder links for non-geostationary satellite systems. Studies completed to date have shown that there are significant difficulties with an allocation to the fixed-satellite service in this frequency range, in particular if existing (passive) services are to be afforded protection from these feeder links. Of concern to aviation is that the allocation to the radionavigation service in No. 5.338 is protected from harmful interference. It is also necessary to secure protection from harmful interference of the band 1 429 - 1 535 MHz. Nos. 5.342 and 5.343 are stipulating the use of this band for aeronautical telemetry in some countries.

ICAO Position:

Use of the band around 1.4 GHz by the fixed satellite service for feeder links for non-geostationary satellite systems should not be introduced in any of the aeronautical bands in this frequency range; aeronautical usage needs to be protected from harmful interference.

WRC-07 Agenda Item 1.20

Agenda Item Title:

To consider the results of studies and proposals for regulatory measures, if appropriate, regarding the Earth exploration-satellite service (passive) from unwanted emissions of active services in accordance with Resolution 738 (WRC-03)

Discussion:

Resolution **738 (WRC-03)** resolved to invite ITU-R to initiate compatibility studies between stations in the Earth exploration-satellite service (EESS) (passive) receiving in the frequency band 1 400 – 1 427 MHz and stations of various other radio services transmitting in the adjacent frequency bands with a view to updating ITU-R Recommendation SM.1633. One of the spectrum engineering main considerations is to study the impact of unwanted emissions of active services in the out-of-band domain which fall in the 1 400 - 1 427 MHz band, allocated to the EESS. Studies in the ITU-R have shown that systems currently operating in the radiodetermination service in the band 1 215 - 1 400 MHz and conforming to the relevant ITU-R recommendations will not be able to meet the suggested maximum value of –28.9 dBW per 27 MHz for unwanted emissions. The application of suggested mitigation methods to help radar systems achieve compliance with the proposed unwanted emission limits will negatively impact radar system operational performance and as such represent a significant additional burden on the radiodetermination service.

Of particular concern to aviation is that the band below 1 400 MHz is used by the aeronautical radionavigation service (radar) through Nos. **5.334** and **5.338** and their operations should not be unduly constrained.

The use of the band 1 429 – 1 535 MHz for aeronautical telemetry is regulated through Nos. **5.342** and **5.343** for aeronautical telemetry and this usage should not be adversely affected by the wish to improve protection to the Earth exploration-satellite service.

ICAO Position:

Protection of the Earth exploration-satellite service in the band 1 400 – 1 427 MHz should not impose undue constraints to the use of the adjacent bands by aviation.

WRC-07 Agenda Item 1.21

Agenda Item Title:

To consider the results of studies regarding the compatibility between the radio astronomy service and the active space services in accordance with Resolution 740 (Rev. WRC-03), in order to review and update, if appropriate, the tables of threshold levels used for consultation that appear in the Annex to Resolution 739 (WRC-03)

Discussion:

The radio astronomy service uses frequencies in the band 1 610.6 - 1 613.8 MHz and is seeking protection from active services in the adjacent bands.

Of concern to aviation is that the near adjacent band 1 559 - 1 610 MHz is used by the radionavigation satellite service for GNSS (GPS, GLONASS and the future Galileo system) and their operations should not be unduly constrained.

ICAO Position:

Protection of the radio astronomy service in the band 1 610.6 - 1 613.8 MHz should not impose undue constraints to the use of the band 1 559 - 1 610 MHz by aviation.

WRC-07 Agenda Item 2

Agenda Item Title:

To examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution 28 (Rev. WRC-03), and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex to Resolution 27 (Rev. WRC-03)

Discussion:

Currently no new or amended ITU-R recommendations referring to aeronautical radio services and incorporated by reference in the ITU Radio Regulations have been identified.

ICAO Position:

No change to the current references in the Radio Regulations to ITU-R recommendations related to aeronautical services.

WRC-07 Agenda Item 4

Agenda Item Title:

In accordance with Resolution 95 (Rev. WRC-03), to review the resolutions and recommendations of previous conferences with a view of possible revision, replacement or abrogation

ICAO Position:

Resolutions:

<i>Resolution No.</i>	<i>Title</i>	<i>Action recommended</i>
18 (MOB-83)	Relating to the procedure for identifying and announcing the position of ships and aircraft of States not parties to an armed conflict	No change
20 (Rev. WRC-03)	Technical cooperation with developing countries in the field of aeronautical telecommunications	No change
26 (Rev. WRC-97)	Footnotes to the Table of Frequency Allocations in Article 5 of the Radio Regulations	No change
27 (Rev. WRC-03)	Use of incorporation by reference in the Radio Regulations	No change
28 (Rev. WRC-03)	Revision of references to the text of ITU-R recommendations incorporated by reference in the Radio Regulations	No change
63 (Rev. WRC-03)	Protection of radiocommunication services against interference caused by radiation from industrial, scientific and medical (ISM) equipment	No change
95 (Rev. WRC-03)	General review of the resolutions and recommendations of world administrative radio conferences and world radiocommunication conferences	No change
114 (Rev. WRC-03)	Studies on compatibility between new systems of the aeronautical radionavigation service and the fixed-satellite service (Earth-to-space) (limited to feeder links of the non-geostationary mobile-satellite systems in the mobile-satellite service) in the frequency band 5 091 - 5 150 MHz	No change
205 (Rev. MOB-87)	Protection of the band 406 - 406.1 MHz allocated to the mobile-satellite service	No change

<i>Resolution No.</i>	<i>Title</i>	<i>Action recommended</i>
207 (Rev. WRC-03)	Measures to address unauthorized use of and interference to frequencies in the bands allocated to the maritime mobile service and to the aeronautical mobile (R) service	No change
217 (WRC-97)	Implementation of wind profiler radars	No change
222 (WRC-2000)	Use of the bands 1 525 - 1 559 MHz and 1 626.5 - 1 660.5 MHz by the mobile-satellite service	No change
225 (Rev. WRC-03)	Use of additional frequency bands for the satellite component of IMT-2000	No change
228 (Rev. WRC-03)	Studies on frequency related matters for the future development of IMT-2000 and systems beyond IMT-2000 as defined by ITU-R	Delete after WRC-07 (WRC-07, Agenda Item 1.4)
230 (Rev. WRC-03)	Consideration of mobile allocations for wideband aeronautical telemetry and associated telecommand	Delete after WRC-07 (WRC-07, Agenda Item 1.5)
339 (Rev. WRC-03)	Coordination of NAVTEX services	No change
405	Relating to the use of frequencies of the aeronautical mobile (R) service	No change
353 (WRC-03)	Maritime mobile service identities (MMSIs) for equipment other than shipborne equipment	No change
413 (WRC-03)	Use of the band 108 - 117.975 MHz by aeronautical services	Delete after studies completed
414 (WRC-03)	Consideration of the frequency range between 108 MHz and 6 GHz for new aeronautical applications	Delete after WRC-07 (WRC-07, Agenda Item 1.6)
415 (WRC-03)	Study of current satellite frequency allocations that will support the modernization of civil aviation telecommunication systems	Delete after WRC-07 (WRC-07, Agenda Item 1.6)
544 (WRC-03)	Identification of additional spectrum for the broadcasting service in the HF bands	Delete after WRC-07
608 (WRC-03)	Use of the frequency band 1 215 – 1 300 MHz by systems of the radionavigation satellite service	Delete after studies completed
609 (WRC-03)	Protection of aeronautical radionavigation systems from the equivalent power flux-density produced by radionavigation satellite service networks and systems in the 1 164 - 1 215 MHz band	No change
610 (WRC-03)	Coordination and bilateral resolution of technical compatibility issues for radionavigation satellite	No change

<i>Resolution No.</i>	<i>Title</i>	<i>Action recommended</i>
	networks and systems in the band 1 164 - 1 300 MHz, 1 559 - 1 610 MHz and 5 010 - 5 030 MHz	
644 (<i>Rev. WRC-2000</i>)	Telecommunication resources for disaster mitigation and relief operations	No change
705 (<i>MOB-87</i>)	Mutual protection of radio services operating in the band 70 - 130 kHz	No change
729 (<i>WRC-97</i>)	Use of frequency adaptive systems in the MF and HF bands	Delete after WRC-07
738 (<i>WRC-03</i>)	Compatibility analysis between the Earth exploration-satellite service and (passive) and active services	Delete after WRC-07
740 (<i>WRC-03</i>)	Future compatibility analyses between the radio astronomy service and active space services in certain adjacent or nearby bands	Delete after WRC-07
745 (<i>WRC-03</i>)	Protection of existing services in all regions from non-geostationary-satellite networks in the fixed satellite service using the frequency bands around 1.4 GHz on a secondary basis	Delete after WRC-07
747 (<i>WRC-03</i>)	Possible upgrade of the radiolocation service to primary allocation status in the frequency bands 9 000 - 9 200 MHz and 9 300 - 9 500 MHz, and possible extension of the existing primary allocations to the Earth exploration-satellite service (active) in the band 9 500 - 9 800 MHz	Delete after WRC-07 (WRC-07, Agenda Item 1.3)
802 (<i>WRC-03</i>)	Agenda for the 2007 World Radiocommunication Conference	Delete after WRC-07
803 (<i>WRC-03</i>)	Preliminary agenda for the 2011 World Radiocommunication Conference	Modify at WRC-07 (WRC-07, Agenda Item 7.2)
951 (<i>WRC-03</i>)	Options to improve the international spectrum regulatory framework	Delete after WRC-07
952 (<i>WRC-03</i>)	Studies regarding devices using ultra-wideband technology	Delete after studies completed

Recommendations:

<i>Recommendation No.</i>		<i>Action recommended</i>
7 (<i>Rev. WRC-97</i>)	Adoption of standard forms for ship station and ship earth station licences and aircraft station and aircraft earth station licences	No change
9	Relating to the measures to be taken to prevent the operation of broadcasting stations on board ships or aircraft outside national territories	No change
71	Relating to the standardization of the technical and operational characteristics of radio equipment	No change
75 (<i>WRC-03</i>)	Study on the boundary between the out-of-band and spurious domains of primary radars using magnetrons	No change
401	Relating to the efficient use of aeronautical mobile (R) worldwide frequencies	No change
604 (<i>Rev. MOB-87</i>)	Future use and characteristics of emergency position-indicating radio beacons (EPIRBs)	No change
606 (<i>MOB-87</i>)	The possibility of reducing the band 4 200 - 4 400 MHz by radio altimeters in the aeronautical radionavigation service	Delete
608 (<i>WRC-03</i>)	Guidelines for consultation meetings established in Resolution 609 (WRC-03)	No change
800 (<i>WRC-03</i>)	Principles for establishing agendas for world radiocommunication conferences	No change

WRC-07 Agenda Item 7.2

Agenda Item Title:

To recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, taking into account Resolution 802 (WRC-03)

Discussion:

This agenda item addresses the preliminary agenda for WRC-11 which was established at WRC-03 and will be reviewed at WRC-07. The preliminary agenda for WRC-11 includes Agenda Item 2.3 “to consider results of ITU-R studies in accordance with Resolution 222 (WRC-2000) to ensure spectrum availability and protection for the aeronautical mobile-satellite (R) service, and to take appropriate action on this subject, while retaining the generic allocation for the mobile-satellite service;”. Resolution 222 was adopted at WRC-2000 and at the timing of WRC-03, the studies were not yet completed.

The introduction of new generic type allocations to the mobile-satellite service (MSS) in 1997, which replaced the exclusive allocations to the aeronautical, land and maritime mobile-satellite services, has not recognized the serious reservations by the international civil aviation community on compatibility of AMS(R)S with other non-aeronautical mobile-satellite services. Even though WRC-97 decided that prioritization and pre-emption were to be the basis for securing timely access to the satellite frequency band for aviation. This is stipulated in No. 5.357A:

5.357A *In applying the procedures of Section II of Article 9 to the mobile-satellite service in the bands 1 545 – 1 555 MHz and 1 646.5 – 1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article 44. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44 shall have **priority access and immediate availability, by pre-emption if necessary**, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution 222 (WRC-2000) shall apply.) (WRC-2000)*

In 2005, ITU Report 2073 on the “Feasibility and practicality of prioritization and real-time pre-emptive access between different networks of mobile-satellite service in the bands 1 525 – 1 559 MHz and 1 626.5 – 1 660.5 MHz” was approved. This report concludes, *inter alia*, that “prioritization and intersystem real-time pre-emption” is not practical and, without significant advance in technology, is unlikely to be feasible for technical, operational and economical reasons. This means that “intersystem real-time pre-emption” cannot be used as an effective method to ensure long-term spectrum availability and protection for the AMS(R)S communications in these bands.

In addition, since 1997, the allotment of spectrum to mobile-satellite service providers has been organized

under the provisions of various regional Memoranda of Understanding (MoU). The allotments agreed under the provisions of these MoUs are not available in the public domain and are not known to ICAO. This makes it virtually impossible for aviation to develop long-term planning for using this spectrum. ICAO has also been informed that the current provisions and procedures for AMS(R)S under these MoUs (which effectively bypass the open coordination process as is normal under the provisions of the ITU) are insufficient to satisfy future demand for AMS(R)S spectrum.

As demand for non-AMS(R)S communication over mobile-satellite service systems is anticipated to further increase, it is becoming more and more difficult to ensure adequate spectrum availability for AMS(R)S.

As a result of these developments, WRC-11 needs to consider the allocations in these bands and to provide an effective mechanism securing long-term access for aviation to these bands.

ICAO Position:

To support the inclusion of an agenda item for WRC-11 addressing the MSS 1.5/1.6 GHz bands with a view to ensure long-term spectrum availability and protection for the AMS(R)S communications in these bands, taking into account the results of the studies in ITU Report 2073.

Attachment

ITU COUNCIL RESOLUTION 1227

Agenda for the World Radiocommunication Conference (WRC-07)

Chapter 1

The Council,

Noting

that Resolution **802** of the World Radiocommunication Conference (Geneva, 2003):

- a) resolved to recommend to the Council that a World Radiocommunication Conference be held in 2007 for a period of four weeks; and
- b) recommended its agenda, and invited the Council to finalize the agenda and arrange for the convening of WRC-07 and to initiate, as soon as possible, the necessary consultation with Member States,

resolves

to convene a World Radiocommunication Conference (WRC-07) in Geneva (Switzerland) from 8 October to 2 November 2007 with the following agenda:

1. on the basis of proposals from administrations, taking account of the results of WRC-03 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action with respect to the following items:

1.1 requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, in accordance with Resolution **26 (Rev. WRC-97)**;

1.2 to consider allocations and regulatory issues related to the Earth exploration-satellite (passive) service, space research (passive) service and the meteorological satellite service in accordance with Resolutions **746 (WRC-03)** and **742 (WRC-03)**;

1.3 in accordance with Resolution **747 (WRC-03)**, consider upgrading the radiolocation service to primary allocation status in the bands 9 000 - 9 200 MHz and 9 300 - 9 500 MHz and extending by up to 200 MHz the existing primary allocations to the Earth exploration-satellite service (EESS) (active) and the space research service (SRS) (active) in the band 9 500 - 9 800 MHz without placing undue constraint on the services to which the bands are allocated;

1.4 to consider frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000 taking into account the results of ITU-R studies in accordance with Resolution **228 (Rev. WRC-03)**;

1.5 to consider spectrum requirements and possible additional spectrum allocations for aeronautical

telecommand and high bit-rate aeronautical telemetry, in accordance with Resolution **230 (WRC-03)**;

1.6 to consider additional allocations for the aeronautical mobile (R) service in parts of the bands between 108 MHz and 6 GHz, in accordance with Resolution **414 (WRC-03)** and, to study current satellite frequency allocations, that will support the modernization of civil aviation telecommunication systems, taking into account Resolution **415 (WRC-03)**;

1.7 to consider the results of ITU-R studies regarding sharing between the mobile-satellite service and the SRS (passive) in the band 1 668 - 1 668.4 MHz, and between the mobile-satellite service and the mobile service in the band 1 668.4 - 1 675 MHz in accordance with Resolution **744 (WRC-03)**;

1.8 to consider the results of ITU-R studies on technical sharing and regulatory provisions for the application of high altitude platform stations operating in the bands 27.5 - 28.35 GHz and 31 - 31.3 GHz in response to Resolution **145 (WRC-03)**, and for high altitude platform stations operating in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz in response to Resolution **122 (Rev. WRC-03)**;

1.9 to review the technical, operational and regulatory provisions applicable to the use of the band 2 500 – 2 690 MHz by space services in order to facilitate sharing with current and future terrestrial services without placing undue constraint on the services to which the band is allocated;

1.10 to review the regulatory procedures and associated technical criteria of Appendix **30B** without any action on the allotments, the existing systems or the assignments in the List of Appendix **30B**;

1.11 to review sharing criteria and regulatory provisions for protection of terrestrial services, in particular the terrestrial television broadcasting service, in the band 620 - 790 MHz from broadcasting-satellite service networks and systems, in accordance with Resolution **545 (WRC-03)**;

1.12 to consider possible changes in response to Resolution **86** (Rev. Marrakesh, 2002) of the Plenipotentiary Conference: “Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks” in accordance with Resolution **86 (WRC-03)**;

1.13 taking into account Resolutions **729 (WRC-97)**, **351 (WRC-03)** and **544 (WRC-03)**, to review the allocations to all services in the HF bands between 4 MHz and 10 MHz, excluding those allocations to services in the frequency range 7 000 - 7 200 kHz and those bands whose allotment plans are in Appendices **25**, **26** and **27** and whose channelling arrangements are in Appendix **17**, taking account of the impact of new modulation techniques, adaptive control techniques and the spectrum requirements for HF broadcasting;

1.14 to review the operational procedures and requirements of the Global Maritime Distress and Safety System (GMDSS) and other related provisions of the Radio Regulations, taking into account Resolutions **331 (Rev. WRC-03)** and **342 (Rev. WRC-2000)** and the continued transition to the GMDSS, the experience since its introduction, and the needs of all classes of ships;

1.15 to consider a secondary allocation to the amateur service in the frequency band 135.7 - 137.8 kHz;

1.16 to consider the regulatory and operational provisions for maritime mobile service identities (MMSIs) for equipment other than shipborne mobile equipment, taking into account Resolutions **344 (Rev. WRC-03)** and **353 (WRC-03)**;

1.17 to consider the results of ITU-R studies on compatibility between the fixed-satellite service and other services around 1.4 GHz, in accordance with Resolution **745 (WRC-03)**;

1.18 to review pfd limits in the band 17.7 - 19.7 GHz for satellite systems using highly inclined orbits, in accordance with Resolution **141 (WRC-03)**;

1.19 to consider the results of the ITU-R studies regarding spectrum requirement for global broadband satellite systems in order to identify possible global harmonized fixed-satellite service frequency bands for the use of Internet applications, and consider the appropriate regulatory/technical provisions, taking also into account No. **5.516B**;

1.20 to consider the results of studies, and proposals for regulatory measures if appropriate regarding the protection of the EESS (passive) from unwanted emissions of active services in accordance with Resolution **738 (WRC-03)**;

1.21 to consider the results of studies regarding the compatibility between the radio astronomy service and the active space services in accordance with Resolution **740 (Rev. WRC-03)**, in order to review and update, if appropriate, the tables of threshold levels used for consultation that appear in the Annex to Resolution **739 (WRC-03)**;

2. to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution **28 (Rev. WRC-03)**, and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex to Resolution **27 (Rev. WRC-03)**;

3. to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the conference;

4. in accordance with Resolution **95 (Rev. WRC-03)**, to review the Resolutions and Recommendations of previous conferences with a view to their possible revision, replacement or abrogation;

5. to review, and take appropriate action on, the Report from the Radiocommunication Assembly submitted in accordance with Nos. **135** and **136** of the Convention;

6. to identify those items requiring urgent action by the Radiocommunication Study Groups in preparation for the next world radiocommunication conference;

7. in accordance with Article 7 of the Convention:

7.1 to consider and approve the Report of the Director of the Radiocommunication Bureau:

- on the activities of the Radiocommunication Sector since WRC-03;
- on any difficulties or inconsistencies encountered in the application of the Radio Regulations; and
- on action in response to Resolution **80 (Rev. WRC-2000)**;

7.2 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, taking into account Resolution **803 (WRC-03)**,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and the Special Committee on Regulatory/Procedural Matters and to prepare a report to WRC-07,

instructs the Secretary-General

1. to make all the necessary arrangements, in agreement with the Director of the Radiocommunication Bureau, for the convening of the conference;
2. to communicate this resolution to international and regional organizations concerned.

— END —