

# MAIN RESULTS OF WRC-2000

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## **1. Introduction**

The World Radiocommunication Conference (WRC) is the international forum where Member States come together to revise an international treaty – the Radio Regulations, which contain not only allocations to over 40 radiocommunication services but also provide the technical, operational and regulatory conditions for the use of the radio frequency spectrum and satellite orbits. It is held every two to three years with the purpose of reaching consensus on changes in the Regulations. Some landmark decisions were made at WRC-2000.

The WRC 2000 was hailed as a success because of its ability to come to grips with key and ever more complex issues particularly as the rapid growth of radio-based systems and their increasing globalization makes it ever more difficult to share in a limited resource: the radio frequency spectrum. The results will provide the conditions for the industry to develop and deploy a host of sophisticated new radio-based communications systems over the next few years.

## **2. Additional spectrum for IMT-2000 third generation mobile systems**

With third generation (3G) mobile systems based on ITU's IMT-2000 standard due to come into service very soon in several countries, it was very important to increase available spectrum for 3G services. The existing spectrum identified in 1992 on which licensing is currently taking place around the world, was based on a model where voice services were considered to be the major source of traffic, and only low data rate services were additionally considered.

The extra spectrum needed was based on three main considerations: the number of users which is expected to reach an estimated 2 billion mobile users worldwide by 2010 and the rapid growth of mobile data services, mobile e-commerce, wireless internet access and mobile video-based services and the need to secure common spectrum worldwide for global roaming and cheaper handsets.

New bands were to be considered to satisfy the forecast needs over and above the existing spectrum available and in addition to the spectrum used for first and second-generation mobile systems.

While a global common spectrum was generally supported, countries supported different bands in order to protect existing services such as analogue and digital TV, digital audio broadcasting, aeronautical radionavigation service, meteorological radars, fixed wireless access and more. A lack of consensus may not have prevented countries from making mobile spectrum available for IMT-2000 on a national basis, but this would have resulted in higher handset prices for third generation systems because of the need to incorporate more complex circuitry to support international roaming across a large number of frequency bands.

The decision provides for three common bands, available on a global basis for countries wishing to implement the terrestrial component of IMT-2000. The agreement provides for a high degree of flexibility to allow operators to evolve towards IMT-2000 according to market and other national considerations. Making use of existing mobile and mobile-satellite frequency allocations, it does not preclude the use of these bands for other types of applications or by other services to which these bands are allocated – a key factor that enabled the consensus to be reached. While the decision of the Conference globally provides for the immediate licensing and manufacturing of

IMT-2000 in the common bands, each country will decide on the timing of availability at the national level according to need. This high degree of flexibility will also enable countries to select those parts of the bands where sharing with existing services is the most suitable, taking account of existing licenses.

The agreement effectively gives a green light to mobile industry worldwide in deploying confidently IMT-2000 networks and services and provides a stable basis for investors in the industry.

The three bands identified for use by IMT-2000 include one below 1 GHz, another at 1.7 GHz where most of the second-generation systems currently operate to facilitate the evolution, over time, of these systems to third generation, and a third band in the 2.5 GHz range. These complement the band in the 2 GHz range already identified for IMT-2000.

Moreover, the Conference identified the use of additional frequency bands for the satellite component of IMT-2000. This will afford an opportunity for satellite systems in these bands to provide IMT-2000 services.

Early in the Conference, it was decided that there was no need to identify a global radio control channel to facilitate multimode terminal operation and world-wide roaming of IMT-2000 as requested under agenda item 1.6.2.

#### SPECTRUM FOR THE TERRESTRIAL COMPONENT OF IMT-2000

- Spectrum below 1 GHz
  - [806-960 MHz](#)
- Spectrum above 1 GHz
  - 1.7 GHz ([1 710-1 885 MHz](#))
  - 2.5 GHz ([2 500-2 690 MHz](#))

#### SPECTRUM FOR THE SATELLITE COMPONENT

- 1525-1544MHz, 1545-1559MHz, 1610-1626.5MHz, 1626.5-1645.5 MHz
- 2483.5-2500MHz, 2500-2520 MHz, 2670-2690 MHz

## RESOLUTIONS RELATING TO THE USE OF MOBILE SPECTRUM BY IMT-2000

- Frequency bands for terrestrial component of IMT-2000
  - above 1 GHz ([Res. 223 \(COM5/24\)](#) )
  - below 1 GHz ([Res. 224 \(COM5/25\)](#) )
- Frequency bands for satellite component of IMT-2000 ([Res. 225 \(COM5/26\)](#) )
- Use of High-Altitude Platform Stations (HAPS) for IMT-2000 ([Res. 221 \(COM5/13\)](#) )

### ***3. Sharing Between Non Geostationary Orbit satellites (NGSO) and Geostationary Orbit satellites (GSO)***

Intense private sector interest in the potential of satellite systems to deliver mobile voice and broadband data services has resulted in a large number of proposed new systems and services from non-geostationary satellites. A number of these new non-GSO systems, soon to be deployed, and the new wave of GSO networks aim at providing high speed local access to global broadband communications services such as high speed Internet, corporate intranets/extranets, e-commerce, videoconferencing and interactive services.

In 1997, frequency spectrum was made available for the first time to enable the operation of the new non-GSO systems. At the time, it was decided to establish provisional power limits for the operation of these non-geostationary systems so that they could share the frequencies with geostationary networks. In the period between WRC-1997 and WRC-2000, studies were conducted to determine whether those limits were suitable for sharing.

Despite the results of those studies which seem favorable to the concept of shared use of the bands in question by non-GSO fixed-satellite service systems and GSO networks of the fixed satellite service and the broadcasting-satellite service, this was one of the most important and difficult issues of the Conference.

The difficulty was to balance the need to protect GSO networks while allowing new non-GSO systems to operate without undue constraints. The decisions of the Conference include some limits on earth stations of GSO networks and power limits on non-GSO systems to enable their co-existence without unacceptable interference (Articles S21 and S22). These power limits provide a quantitative measure of what is unacceptable. The limits on non-GSO FSS also protect terrestrial and broadcasting-satellite systems operating in the same bands. It also agreed on the regulatory provisions for frequency sharing in the Ku band (10-18 GHz) (see Resolution 78 (COM5/23)).

The size of antennas used by the fixed-satellite service operating in the band 13.75-14 GHz also generated heated discussions. The band is shared since 1992 by the FSS, the radiolocation and the radionavigation services. The space research service operates in part of the band under conditions set out in footnote S5.503A. Limits have been placed on all three services in footnote S5.502, including mandatory limits on the size of the antenna which must be at least 4.5 metres and on the power of any emission. Satellite operators would like these limits to be less constraining so as to

take advantage of small antennas like VSAT to deliver services directly to customers in a bid to capture new markets. However, the constraints that were acceptable in 1992 by the radiolocation and radionavigation services would no longer be sustainable if the number of antennas was to grow significantly increasing the risk of interfering with radars.

Given the very strong views expressed, it was finally decided that the package solution should maintain the mandatory size of the antennas and recommended power limits. Resolution 733 (COM5/10) was approved and the reservations noted.

Appropriate transitional and implementation arrangements were adopted in this regard that entered into force as of 3 June 2000 (Resolution 59 (COM5/31)).

#### ***4. Re-Planning of the Broadcasting-Satellite Service For Regions 1 & 3***

The Broadcasting-Satellite Service provides satellite television broadcasting including direct-to-home. Under the plan adopted by WRC-97 for Regions 1 and 3 (i.e. everywhere other than the Americas) which has roots back to 1977, each country was generally given the possibility to make use of a resource equivalent to five analogue channels on the basis of one beam for national coverage. A number of factors contributed to making the situation unworkable today. They ranged from the rapid development of satellite systems, the use of digital technologies which facilitated the deployment of new regional systems that can target many countries from a single satellite to the advent of new services like Pay TV wanting to extend broadcasting capabilities across as wide an area as possible. In addition, for small countries or for countries with a small population, the use of that capacity restricted to national use often proved to be uneconomical. Also, the emergence of new countries wishing to take up their five channels put more pressure to seek more spectrum.

Although the Plan had become outdated, the idea of re-planning was however not unanimously supported until the start of the Conference. For some, the approach of apportioning spectrum on a country-by-country, rather than on a first come, first served basis was considered wasteful since many countries may never launch their own national broadcast satellite system. The result is that spectrum is effectively kept in abeyance and cannot be used for any other purpose. For others, they wanted to secure the opportunity to be able to use that spectrum when they so wish and not be faced with a blockage when time comes.

Re-planning is a very complex matter with many inter-related aspects, and in particular, the level of constraints imposed for the protection of existing and future assignments in both space and terrestrial services, which have different allocations in the different regions of the world. In addition to the technical challenges, the question of BSS re-planning has implications which touched on issues of national sovereignty.

Against this background and against all odds, major differences of approach were ironed out on the eve of the conference and BSS re-planning was agreed by the Conference.

One of the key decisions of WRC-2000 has been to increase the capacity for each country to an equivalent of 10 analogue channels in Europe and Africa and to 12 analogue channels in Asia and Australasia. With the uptake of direct satellite broadcasting in both regions as well as the potential for the future delivery of multimedia services, the decisions of WRC-2000 provide the capacity to meet the current and prospective demand.

In order to ensure full protection of existing and future terrestrial and space services and systems, the Conference requested that an analysis of the new Plan be carried out with respect to compatibility with other services co-sharing on a primary basis so that WRC-2003 can review the power limits that have been agreed upon at this Conference.

## **5. Global Satellite Positioning Systems**

WRC-2000 provided additional allocations for the radionavigation-satellite service. The additional spectrum makes it possible for the two current systems Russia's GLONASS (Global Navigation Satellite System) and the USA's Global Positioning System (GPS) to develop into second-generation systems while providing room for Europe's new system – Galileo.

Highly accurate satellite positioning data is becoming increasingly important for a wide range of activities, from navigation on land, in the air, at sea and in outer space to national security to new consumer-oriented position determination applications. There are over eight million Radionavigation-Satellite Service (RNSS) receivers in use today in a wide range of consumer applications such as navigation aids in cars, handheld position location devices like street finders, positioning in sports activity (sailing, mountain trekking, expeditions), location of lost persons in rescue operations or business applications including safety-of-life such as air traffic control, fleet tracking, ships and aircraft positioning.

As businesses and consumers alike become more dependent on global positioning in their daily lives, the new allocations were needed to ensure that the services these satellite systems provide would be feasible in the future. The annual market is worth billions of dollars, and is set to give rise to over hundreds of thousands of direct jobs in coming years.

The difficulty was to agree on allocations in new bands that would not pose sharing problems for the two current systems, GPS and GLONASS, nor to radionavigation systems that provide a safety-critical mission to civil aviation and ships at sea.

By enabling the deployment of a new comer and the system upgrades of current global position systems, the allocations made at WRC-2000 add competitiveness into a highly lucrative market which is good news to users. The entry into force of these new allocations is effective 3 June 2000.

New allocations: 1164-1215 MHz, 1260-1300 MHz and 5010-5030 MHz. Also allocated for space-to-space: 1215-1260 MHz and 1559-1610 MHz.

ITU-R will carryout studies before WRC-03 to assess the overall compatibility between RNSS and existing services in these bands. This includes the verification of the need to establish pfd limits and out of band emission limits to protect adjacent systems or services. For the band 1559-1610 MHz, the FS will continue with primary status until 2005 and secondary up to 2015 and then will be suppressed. Some countries insisted on primary status until 2010.

## **6. Quiet zones for Radioastronomy**

With the growing demand for radiocommunication-based services and the resulting deluge of radio signals from cellular phones, pagers, satellite systems and more, there were concerns about interference with radio astronomy and other deep-space research services which are seeking "quiet zones" in the spectrum.

The biggest problems were in the areas of passive monitoring, such as that used by the world's largest radiotelescopes to detect extremely weak celestial sources of radio activity, which are susceptible to interference from active users such as mobile telephony.

From the point of view of passive space research, the signal strength from a cellular phone is huge – so high, in fact, that making a standard cellular phone call from the surface of the moon would register on a radiotelescope as the third most powerful source of radio activity in the universe. With unwanted emissions from other services threatening to blot out incoming cosmic signals through which astronomers and others learn about our world and the universe around us, radio astronomers had been actively seeking better protection for vital research.

At WRC-2000, a number of measures have been adopted to better protect the radio astronomy and other scientific services in a range of frequency bands in which other services are also operating. The Conference also provided new allocations in several bands of the spectrum that should help meet the concerns of the radio astronomers. Finally, the Conference authorized the use of spectrum above 275 GHz, which is not yet allocated, for experimental purposes by various active and passive services, and in particular for radio astronomy, earth-satellite exploration and space research.

## ***7. High-density fixed systems***

High density fixed services (HDFS) cover new wireless point-to-point and point-to-multipoint technologies ranging from Fixed Wireless Access (FWA) to high-speed broadband wireless systems such as Local Multipoint Distribution Service (LMDS). Through their ability to provide cost-effective, reliable metropolitan links, HDFS seem certain to play a growing role in a wide range of applications, from broadband access for business customers to low-cost facilities monitoring of remote sites. The development of high-density fixed services is also seen as key to overcoming the risk of a local-loop bottleneck for broadband services.

In developing countries, it is a particularly promising technology for bridging the access gap because of the ease of installation and potentially lower costs. FWA enables the connection of users to the telecoms network without having to construct a landline network – a lengthy and costly process. Because it can be rapidly deployed in areas where infrastructure is poor or non-existent particularly in densely populated areas, it is viewed as a way to meet rapidly the pent-up demand.

They can also potentially accommodate new telecoms operators in aiming to gain market access in competitive environments by providing alternate technologies for upgrade of existing telephone infrastructure or for greater access and service choice for data and multimedia services. They are also expected to be widely used for a range of remote monitoring, cutting costs on the current way of sending staff to subscribers' premises to read gas or electricity meters for invoicing.

There has been wide support from WRC-2000 participants to provide spectrum for HDFS in bands between 30-60 GHz. The difficulty has been on agreeing on rules governing the shared use of frequency bands with other existing and future services operating in the same bands and in particular with the geostationary and non-geostationary fixed satellite service and with the radio astronomy service.

The Conference confirmed the availability of the bands 31.9-33.4 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz. In addition, the bands 37-40 GHz and 40.5-43.5 GHz were added to footnote S5.547.

In addition to allocations, the conference also agreed on the regulatory provisions applicable to the deployment of HDFS as well as power limits to protect HDFS from other space services allocated to the same bands or to adjacent bands. These worldwide allocations should help decrease the cost of equipment through greater economies of scale.

## **8. Administrative due diligence**

The question of evaluating the administrative due diligence procedure ended with the adoption of temporary measures to improve satellite filing procedures in a bid to reduce the backlog in processing which represents three years and which affects mostly coordination requests.

One of the negative impacts of such backlog is that countries can be faced with a reduced time window in which to accomplish coordination given the five-year limit to place a network into operation.

Introduced in November 1997 by WRC-97, administrative due diligence is a procedure that aims at minimizing the number of paper satellites by requiring information which becomes available when systems have reached an advanced stage of development and are soon to be deployed. This procedure requires disclosure of implementation data for satellite systems such as the identity of the satellite network, the name of the operator, name of the satellite, the name of the space manufacturer for each satellite, the date of execution of the contract, contractual "delivery window", number of satellites procured, name of the launch vehicle provider, date of execution of the contract, a launch or in-orbit delivery window and the name of the launch vehicle.

Because countries have generally requested extension of the regulatory period for bringing their satellites into use up to the maximum limit authorized by the Radio Regulations, it is not until the end of 2003 that the effect of administrative due diligence is likely to be fully apparent. This means that several years may be needed to see whether the procedure yields satisfactory results. Proposals by some countries to introduce financial due diligence to deter what they called "frivolous filings" failed to gather support as it was considered premature, the administrative due diligence not having been put to test.

After a long-drawn out debate, the Conference concluded that further experience was needed in the application of this procedure before any sound judgment could be made on its impact and effectiveness in reducing, if not eliminating, paper satellites.

The administrative due diligence procedure will therefore continue and a report on the analysis of its impact will be submitted to the 2002 Plenipotentiary Conference to take appropriate action.

## **9. Cost-recovery for satellite filings**

WRC-2000 discussed one aspect of the implementation of cost recovery for processing satellite network filings with a view to considering possible amendments to the Radio Regulations.

Following the policy decision taken at the 1998 Plenipotentiary Conference to introduce such charges, ITU's annual governing body – the ITU Council, had, at its 1999 session, agreed on the methodology and fee schedules. These charges are applicable for filings (new network and modification to existing networks) for which the advance publication information was received after 7 November 1998.

At WRC-2000, discussions focused on possible regulatory consequences of non-payment of such charges. Despite strong views expressed on the possible cancellation of a filing in case of non-

payment, the Conference adopted a regulatory provision which will enter into force at a date to be determined by the forthcoming Plenipotentiary Conference in 2002. The decision to request the Plenipotentiary Conference to decide on the date of entry into force was based on the views expressed by several countries that the rights and obligations of Member States are defined in the Constitution and that any modification of these rights, based on financial considerations, should be decided by ITU's top policy-making body.

## **10. Other allocation issues**

### **10.1 Footnotes (Resolution 26)**

Several countries made proposal to withdraw from or suppress footnotes that were no longer needed. However, in strict application of Resolution 26, the Conference did not accept proposals made by a number of countries to be added to certain footnotes.

### **10.2 High Altitude Platform Stations (HAPS)**

Resolution 122 was modified to extend the time frame of the 47 GHz sharing studies and to request the study of the feasibility of additional spectrum for HAPS within the fixed service in the 18-32 GHz range. These studies will focus on the bands 27.5-28.35 GHz and 31-31.3 GHz.

New Resolution 734 (COM5/14) requests ITU-R to study systems using HAPS in the fixed and mobile services in bands above 3 GHz allocated exclusively for terrestrial radiocommunication.

Footnotes S5.537A (S5.5SSS) and S5.543A (S5.5RRR) facilitates HAPS on a non-interference, non-protection basis within the fixed service in the bands 27.5-28.35 GHz and 31.0-31.3 GHz for certain Region 3 countries. WRC-03 will further consider regulatory provisions and possible identification of existing frequency allocations for services which may be used by HAPS.

### **10.3 MSS in the bands used by GPS**

There was general agreement that the band 1559-1610 MHz could not be shared between the radionavigation services and the mobile satellite services. Resolutions 226 (COM5/29) and 227 (COM5/30) call for ITU-R studies of the feasibility of allocating this band to MSS, respectively for the downlink band (with an emphasis on the band 1518-1525 MHz) and the uplink band (with an emphasis on the band 1683-1690 MHz). Furthermore, Resolutions 220 and 213 were suppressed.

### **10.4 Generic MSS**

The generic allocation for MSS has been preserved without any change to S5.353A and S5.357A. Resolution 222 (COM5/22) answers to some concerns of the civil aviation and GMDSS communities while not prejudging the outcome of studies on inter-system prioritization and pre-emption.

## **10.5 MSS below 1 GHz**

The Conference agreed to have no further allocation to MSS below 1 GHz. As part of the compromise, such additional allocations will be re-examined in WRC-2003, in accordance with Resolution 214.

## **10.6 Sharing studies between MSS feeder links and FSS at 20/30 GHz**

The Conference considered the progress of studies on sharing between feeder links of non-GSO MSS networks and GSO FSS networks in the bands 19.3-19.7 GHz and 29.1-29.5 GHz. Based on the work within the ITU-R, which has resulted in an appropriate ITU-R Recommendation on mitigation techniques, the Conference modified the regulatory arrangement in this regard, including the adoption of consequential modifications to Appendix S5 and to provisions Nos. S11.32A, S11.32A.1 and S11.33. Resolution 121 (WRC-97) was suppressed accordingly.

## **10.7 MSS feeder links in the band 15.43-15.63 GHz**

Under agenda item 1.14, the Conference reviewed the results of the studies on the feasibility of implementing non-GSO MSS feeder links in the 15.43-15.63 GHz in accordance with Resolution 123 (WRC-97).

Some administrations considered that there was no need to modify the current allocation to FSS in the 15.43-15.63 GHz band (space-to-Earth) as contained in Article S5, while other advocated such a removal of that allocation, on the basis of its incompatibility with the radioastronomy service operating in the band 15.35 – 15.4 GHz.

The Conference decided on the removal of allocation for FSS (space-to-Earth) from Frequency Allocation Table and on putting it into footnote S5.511A, by indicating therein the PFD limits required to protect the radioastronomy service. Resolution 123 was suppressed accordingly.

## **10.8 Allocations above 71 GHz**

The Conference agreed to re-arrange the allocations above 71 GHz to correspond to the needs of the Earth exploration-satellite service (EESS), the space research service (SRS) and the radio astronomy service (RAS) with regard to the frequency spectrum and protection requirements.

The re-arranged allocation table also take into account the spectrum requirements and sharing possibilities of active services in order to provide an interference-free sharing environment and usable spectrum for all services to the extent possible.

## **10.9 EESS in the band 18.6-18.8 GHz**

Based on the technical limits which were developed in the CPM Report, a consensus view was reached on a worldwide allocation for the Earth exploration-satellite (passive) and space research (passive) services in the band 18.6-18.8 GHz. Most countries supported this consensus. However, several Arab countries proposed a footnote which allocates EESS only on a secondary basis in their country and explicitly exempts their existing fixed services from the new power limits.

## **11. Other regulatory issues**

### **11.1 Review of spurious emissions for space services**

Based on the studies carried out by the ITU-R (TG 1/5) and the CPM recommendations in this respect, the Conference has finalized the issue of the spurious emission limits for space services in Appendix S3 to the Radio Regulations. The limits for space services, which were indicated as design objectives only, became hard limits for space service transmitters installed after 1 January 2003, and for all space service transmitters after 1 January 2012.

The Recommendation 66 was amended to take into account the progress made on space services.

WRC-03 will deal with the results of studies concerning the boundary between spurious and out-of-band emissions with a possible inclusion in Appendix S3. Further studies will be conducted on regulatory measures concerning the protection of passive services from unwanted emissions, in particular from space service transmission.

### **11.2 Coordination area around satellite Earth stations**

The Conference reviewed the earth station coordination procedures of Appendix S7, including the scope of the systems covered, the methodologies employed, the frequency range of applicability, the time percentage range of applicability, the propagation aspects and the tables of system parameters. ApS7 was consequentially modified, based on the new calculation methods taken from Recommendation ITU-R SM.1448.

### **11.3 Review of HF spectrum**

Article S52 was modified to encourage the use of digital selective calling instead of calling by radiotelephony. Administrations are encouraged to use national working frequencies for routine calling. New international routine calling frequencies for 12 and 16 MHz were also identified by changes to Article S52 and ApS17. These changes are subject to a transition period until 31 December 2003.

The Radiocommunication Bureau will initiate a new monitoring programme and ITU-R will study interference caused by routine calling. Based on these studies, WRC-03 may confirm the issue of exclusivity.

### **11.4 Satellite Earth stations on-board vessels**

The Conference considered proposals on the regulatory and technical provisions to enable earth stations located on board vessels (ESV) to operate in the fixed-satellite service networks in the bands 3700 – 4200 MHz and 5925 – 6425 MHz, including their coordination with other services allocated in these bands (Agenda item 1.8).

A number of delegations supported the view expressed by the Conference Preparatory Meeting on the use of these bands by ESVs to provide wideband services to cruise liners, passenger ships, naval vessels, seismic research, petroleum vessels and other deep draft vessels.

Resolution 82 (COM4/3) provides a way forward for ESVs to operate in the fixed-satellite service (FSS) in these bands. Along with the Resolution are two annexes which contain provisional general, as well as technical guidelines to be applied to ESVs operating in these bands.

Given the limited number of geostationary FSS systems that have global coverage, the Resolution recognizes that there may be a number of vessels using these ESVs, which may cause a high coordination burden to some countries, particularly developing ones.

In order to ensure the protection and future growth of other services, technical and operational constraints have been agreed for ESV. The Resolution further notes that operation within the territorial waters should be left to the discretion of the territorial authority whose relevant procedures would apply.

The Resolution also calls for a number of technical and operational studies to be continued in particular on the constraints which can be applied to ESV operations and on the feasibility of using mitigation techniques as a way to avoid the need for detailed coordination of ESVs without constraining existing services. In the light of these studies, WRC-2003 may assess and decide on the provisions under which ESVs could operate in FSS networks in the bands 3700-4200 MHz and 5925-6425 MHz.

Meanwhile, agreement between countries licensing ESVs and those that may be affected will be made on a bilateral or multilateral basis using the newly agreed provisional guidelines. Compliance with such agreements will form part of the licensing process.

## **11.5 Digital maritime VHF technology**

Resolution 342 was modified with a view to support the development of a new worldwide technology.

The modification of the Appendix S18 with the addition of a new footnote will permit the possible use on a voluntary basis of various channels or bands created by the conversion of duplex channels 02 to 05, 22 to 26, 61 to 65 and 82 to 86 to simplex channels, for initial testing and the possible future introduction of new technologies. This new footnote would allow these channels to be operated as simplex channels, thus offering the possibility of extending the number of channels for solving local congestion.

## **11.6 Rule of Procedure on S23.13**

A compromise solution supported by CEPT, Morocco and USA was drafted based on the addition of 3 new Articles to provision S23.13 (S23.13A, S23.13B and S23.13C), reflecting the idea of:

- how to proceed if an administration wishes not to be part of the service area of a BSS satellite network after the 4 month period following the publication of the system in the Special Section of the Weekly Circular for comments, and;
- clarifying that if no comments are received within that period this do not mean agreement or disagreement.

Regarding the first bullet the 'penalty' proposed is to exclude that country from the service area by redefining it (if necessary with new test points) without adversely affecting the rest of the service area. Regarding the second bullet the administration that has not responded will be

included in the service area although the lack of response will not be interpreted as an agreement or disagreement.

It was agreed to exclude the sound broadcasting from these new provisions.

The following statement was also included in the minutes of the Conference as part of the compromise:

“In adopting the provisions S23.13A, S23.13B and S23.13C, it is understood that these procedures are separate from the procedures of Article S9 and Article 4 of Appendix S30 and consequently they are not taken into account in the application of Article 5 of Appendix S30 and Article S11. It is also to be noted that in case of the BSS planned bands when any of the test points is in the territory of the objecting administration, the notifying administration shall have the opportunity to move test points or to add additional test points to ensure that the rest of the service area is not adversely affected.”

### **11.7 Coordination of non-planned services with ApS30/30A Plans**

The Conference considered the issues related to the application of Nos. **S9.8**, **S9.9** and **S9.17** and the corresponding parts of Appendix **S5** with respect to Appendices **S30** and **S30A**, with a view to possible deletion of Articles 6 and 7 of Appendices **S30** and **S30A**, also taking into consideration Recommendation **35 (WRC-95)**.

As a result of discussions, Articles 6 and 7 now only point at Articles S9 and S11 to effect the coordination and notification of the non-planned services in the bands covered by Appendices S30 and S30A. Also, proposals to correct the identified deficiencies have been adopted by the Conference.

### **11.8 Incorporation by reference**

The Conference agreed that for the purpose of the Radio Regulations, the term “incorporation by reference” shall apply only to those references intended to be mandatory. Where the relevant references are brief, the referenced material should be placed in the body of the Radio Regulations rather than using incorporation by reference. Texts which are of a non-mandatory nature or which refer to other texts of a non-mandatory nature shall not be considered for incorporation by reference.

As a consequence, Resolutions 27 and 28 concerning the use of incorporation by reference and procedures for updating references have been comprehensively revised.

The rules for identifying text suitable for incorporation by reference, the method of reference and related WRC procedures for treating instances of incorporation by reference have also been set out clearly.

### **11.9 Working methods of the Radio Regulations Board**

After long discussions, it was decided not to change the provisions of Article S13 except to state that the minutes of the RRB should normally be available one month before the next meeting of the RRB.

## **12. Resolutions from PP-98**

### **12.1 Resolution 86 - Satellite procedures**

In view of the important backlog experienced by the Radiocommunication Bureau with space notices, the Conference concluded that extraordinary measures were needed to enable the elimination of this backlog. This was considered justified on account that the continued viability and credibility of the ITU satellite coordination process was at stake as the current situation seriously compromises the ability of several networks to provide services.

The Conference decided on the following elements with respect to this Resolution:

- Keep API but restrict any changes to the orbital position to  $\pm 12$  degrees without restarting the API
- Separate the up and down link calculations under App. S8
- BR to identify the specific networks likely to be affected
- Use a coordination arc concept to identify coordination requirements for the FSS in certain C, Ku and Ka bands
- Mandatory electronic filing (with some restrictions for developing countries, until 3 June 2001) as of 3 September 2000.

### **12.2 Resolution 87 – Role of notifying Administrations**

After some discussions, it was agreed not to modify the Radio Regulations but to add some explanatory text in the minutes of the Plenary meeting.

### **12.3 Resolution 88 – Cost recovery for satellite filings**

(See paragraph 9 above)

## **13. Telecommunication resources for disaster mitigation and relief operations**

The Conference approved revisions to two key Resolutions on humanitarian assistance: Resolution 644, which relates to telecommunication resources for disaster mitigation and relief operations and Resolution 10 which covers the use of wireless two-way telecommunications by the International Red Cross and Red Crescent Movement.

Countries, notably from the Inter-American Telecommunications Commission (CITEL), reported on their efforts to implement the Tampere Convention and urged other regions to do so. They further stressed that regional organizations should be reminded to play an active role in promoting the Tampere Convention.

In particular, countries are urged to find practical ways of facilitating the rapid deployment and effective use of disaster communications by reducing and, where possible, removing regulatory barriers and strengthening transborder cooperation between States. The ITU is invited to continue to study, as a matter of urgency, those aspects of radiocommunications that are relevant to

disaster mitigation and relief operations, including mobile and portable satellite terminals. It is also requested to increase its involvement in disaster communications and take action in support of the Tampere Convention.

Resolution 10 urges ITU Member States to take account of the possible needs of the International Red Cross and Red Crescent Movement for wireless two-way telecommunication means on which it heavily relies (particularly extensive HF and VHF radio networks), when normal communication facilities are interrupted or not available. The Resolution also urges countries to assign to these organizations the minimum number of necessary

#### **14. Equitable access to the radio-frequency spectrum and satellite orbits**

The Radio Regulations Board (RRB) presented its report which had been prepared in response to a Resolution of WRC-97 (Resolution 80) calling upon the RRB to develop rules of procedures that would cater for the requirement of preserving equitable access by all countries to the radio frequency spectrum and associated orbital positions given that they are recognized as limited natural resources in two international treaties - the ITU Constitution and the Radio Regulations. The rules of procedure were urgently needed in a bid to assist the Radiocommunication Bureau (BR) in examining due compliance with these principles in the process leading up to the recording of frequency assignments in the International Frequency Register. These rules were to be applied from a date to be decided by this Conference.

The RRB developed a possible approach for consideration by WRC-2000. The criteria implicit in the Radio Regulations (S0.3) require countries, in putting into use frequencies and usage of the geostationary satellite orbit (GSO), to take into account a number of principles. These include the need to ensure rational use, utilize the resources efficiently, use the minimum number of frequencies possible (economical usage), operate in conformity with the Radio Regulations, ensure equity of access by all countries, take into account the special needs of developing countries, take into account the geographical situation of other countries.

Considering these principles, several members of the Board noted some difficulties likely to be experienced by countries and, in particular, developing countries. The following were highlighted:

- The "first come first served" concept restricted and sometimes prevented access and use of certain frequency bands and orbit positions;
- Perceived differences in consistency of application of the Radio Regulations;
- "Paper" satellites restrict access options;
- Satellite systems may already be in orbit before completion of coordination;
- The growing use of the bands of the broadcasting-satellite service Plans by regional, multi-channel systems, which may impact on the equitable access to all countries;
- The considerable processing delays in the Radiocommunication Bureau are due to the very complex procedures required and the large number of filings submitted, giving rise to the possible loss of the assignment because the allotted time is exceeded;

- Statutory time frames to complete the regulatory industrial requirements may often be insufficient for developing countries who often lack of resources and expertise, henceforth putting them at a disadvantage;
- There are no provisions for international monitoring to confirm the bringing into use of satellite networks (assignments and orbits).

The draft Rules of Procedure on this subject gave rise to intense debate. Finally, rather than going ahead with the draft Rules of Procedure, Resolution 80 was revised to incorporate the recommendations of the UN Committee on the Peaceful Uses of Outer Space concerning ways to foster equitable access. The new text also instructs the Radiocommunication Advisory Group to draw up draft provisions that would link the formal filing procedures with the principles stated in the preamble to the Radio Regulations under S.03.

## ***15. Review of Resolutions and Recommendations***

In pursuance to Resolution 95, WRC-2000 performed a general review of the Resolutions and Recommendations of previous conferences, based on the BR Director's report in this regard, which was prepared in consultation with the Radiocommunication Advisory Group and the chairmen of the relevant radiocommunication study groups, as well as on appropriate proposals from administrations. Consequential to this review, 36 Resolutions and 9 Recommendations were abrogate, and 31 Resolutions and 2 Recommendations were amended. As there were substantive discussions as to the mandate of WRCs to review Resolutions and Recommendations that are not explicitly on the agenda, Resolution 95 was amended to clarify the relevant aspects.

## ***16. WRC-03 and WRC-06 agendas***

In accordance with the standard practices, WRC-2000 established preliminary agendas for the next two Conferences. The agenda for WRC-03 is more detailed, while the agenda for WRC-05/06 contains indications on the possible issues that might be included at the agenda of that Conference with a view to ensure timely preparations with ITU-R.

Resolution 800 (GT PLEN-2/4) contains the 34 agenda items for WRC-03, 4 possible agenda items (subject to provision of additional financial resources) and 8 standing items (update of allocation footnotes, review of references to ITU-R Recommendations incorporated by reference, consequential changes, review of the resolutions and recommendations from previous conferences, review of the report from the Radiocommunication Assembly, identification of items requiring urgent studies by ITU-R study groups, consideration of the report of the Director of the BR, recommendation on the possible agenda items for WRC-05/06).

Council 2000 decided to include in the WRC-03 agenda the 4 items which were subject to additional financial resources, without providing these additional resources.

The agenda items that are included on the agenda for WRC-2003 could be grouped in several main groups:

- HF BC issues (new use of new modulation techniques, adequacy of current allocations)
- Issues related to harmonization of bands for public protection services

- Issues related to the RNSS
- Amateur and Amateur-satellite services
- Maritime issues
- Issues related HIPERLAN systems (5 GHz)
- HDFSS
- Unwanted (OOB/spurious in S3) emissions
- Interactive wide band multimedia services