

UNITED STATES PRELIMINARY VIEWS FOR WRC-2003

*(As of February 21, 2002)*

TABLE OF CONTENTS

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.1 ..... 3

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.2 ..... 4

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.3 ..... 6

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.4 ..... 8

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.6 ..... 10

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.8.1 ..... 12

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.8.2 ..... 13

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.9 ..... 14

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.10.1 ..... 15

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.10.2 ..... 16

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.11 ..... 17

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.12A ..... 18

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.12B ..... 19

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.12C ..... 20

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.12D ..... 21

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.12E ..... 22

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.13 ..... 24

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.14 ..... 26

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.15A ..... 28

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.15B ..... 30

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.15C ..... 31

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.17 ..... 32

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.18 ..... 33

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.19 ..... 34

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.20 ..... 35

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.21 ..... 37

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.22 ..... 38

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.23 ..... 39

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.24 ..... 40

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.25 ..... 42

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.26 ..... 45

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.27 ..... 46

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.28 ..... 48

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.29A ..... 49

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.29B ..... 51

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.30A ..... 53

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.30B ..... 54

UNITED STATES PRELIMINARY VIEW ON WRC-03 AGENDA ITEM 1.30C ..... 55

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.31A ..... 56

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.31B ..... 57

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.32A ..... 58

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.32B ..... 59

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.33 ..... 62

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.34 ..... 63

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.35 ..... 65

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.36 ..... 67

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.37 ..... 69

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.38 ..... 71

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.39 ..... 73

UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 2 ..... 74

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.1**

**WRC-2003 AGENDA ITEM 1.1:** requests from administrations to delete their country footnotes or to have their country footnotes deleted from footnotes, if no longer required, in accordance with Resolution **26 (Rev. WRC-97)**;

**ISSUE:** Deletion [or addition] of country names from [or to] existing country footnotes to the Table of Frequency Allocations in Article **S5** of the Radio Regulations.

**BACKGROUND:** Resolution **26 (Rev.WRC-97)** urges administrations to review footnotes periodically and to propose the deletion of their country footnotes or of their country names from footnotes, as appropriate.

In addition to the usual deletion of names from country footnotes called for under Resolution **26 (Rev.WRC-97)** and standing agenda item 1.1, WRC-2000 allowed for consideration of proposals for the addition of country names to existing footnotes submitted by a firm deadline during the Conference. WRC-2000 disallowed consideration of proposals for new country footnotes that were not linked to other issues on the WRC agenda.

**U.S. VIEW:** In dealing with this agenda item, WRC-2003 should follow the precepts of Resolution **26** and the approach used at WRC-2000.

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.2**

**WRC-2003 Agenda Item 1.2:** to review and take action, as required, on No. **S5.134** and related Resolutions **517 (Rev.WRC-97)** and **537 (WRC-97)** and Recommendations **515 (REV.WRC-97)**, **517 (Rev. WRC-2000)**, **519 (WARC-92)** and Appendix **S11**, in the light of the studies and actions set out therein, having particular regard to the advancement of new modulation techniques, including digital techniques, capable of providing an optimum balance between sound quality, bandwidth and circuit reliability in the use of the HF bands allocated to the broadcasting service;

**ISSUE:** To support the introduction of digital modulation techniques in the HF bands allocated to the broadcasting service and to prepare the regulatory means for this introduction.

**BACKGROUND:****Resolution 517 (Rev.WRC-97) and its Annex**

*considering b)* states: that single-sideband (SSB) techniques allow more efficient utilization of the frequency spectrum than double-sideband (DSB) techniques;

*invites ITU-R* states: to continue its studies on digital techniques in HF broadcasting as a matter of urgency with a view to the development of this technology for future use.

*Annex, Item 2* states: All DSB emissions shall cease not later than 31 December 2015, at 2359 hours UTC.

**Resolution 537 (WRC-97)** called for a survey of HF broadcasting transmitters and receivers with emphasis on the worldwide distribution SSB transmitters and receivers. This survey was completed in 1999 showing that although some countries had or could easily convert to SSB, there were few SSB receivers at a reasonable cost available anywhere in the world to justify the conversion from DSB to SSB.

However, it is recognized that digital modulation design and development for HF are underway.

**Recommendation 517 (HFBC-87)** deals with relative protection ratio values for SSB emissions. ITU-R TG 6/7 is currently developing protection ratios for digital transmission techniques.

**Recommendation 519 (WARC-92)** deals with the introduction of SSB emissions and the possible advancement of the date for cessation of the use of DSB emissions.

*considering d)* states: that the new extension bands allocated by WARC-92 for HF broadcasting are reserved only for SSB emissions;

Around 1995, active design and experimentation began on digital modulation techniques for use in all the broadcasting bands below 30 MHz. Because of the special international broadcasting role at HF, documentation of an essentially regulatory nature began to be introduced within the ITU-R, initially through SG 10 (now SG 6).

WRC-97, in response to the development of digital modulation for HF broadcasting, modified some of the articles, resolutions and recommendations pertinent to HF broadcasting. However, there was no agenda item at WRC-2000 associated with HF broadcasting to deal with these issues.

Since WARC-92 digital modulations technologies have developed to the field-testing stage. Digital emission systems currently under development will be compatible with present 9 -10 kHz channels.

**U.S. VIEW:** The United States supports developing the necessary changes to the resolutions, recommendations, and radio regulations cited in this agenda item to accommodate the introduction of digital modulation techniques for those HF bands allocated to the broadcasting service. (October 15, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.3**

**WRC-2003 AGENDA ITEM 1.3:** to consider identification of globally/regionally harmonized bands, to the extent practicable, for the implementation of future advanced solutions to meet the needs of public protection agencies, including those dealing with emergency situations and disaster relief, and to make regulatory provisions, as necessary, taking into account Resolution **645 (WRC 2000)**;

**ISSUE:** The primary issues within this agenda item are: Do the issues raised in **Resolution 645 (WRC 2000)** require global, regional or sub-regional harmonization of spectrum? If so, what spectrum is required to satisfy the global/regional or sub-regional harmonization needs of public protection and disaster relief? If some harmonization would be beneficial, what are the appropriate mechanisms for facilitating it?

**BACKGROUND:** WRC-2000 resolved to study the identification of globally/regionally harmonized bands, to the extent practicable, for implementation of future advanced solutions to meet the needs of public protection agencies, including those dealing with emergency situations and disaster relief, and to make regulatory provisions, as necessary. ITU-R Working Party 8A (WP-8A) was designated as having responsibility to undertake appropriate studies related to public protection and disaster relief and report the results of these studies to WRC-03. In order to help facilitate the study of agenda item 1.3, WP8A circulated a questionnaire to gather requirements for public protection and disaster relief communications. Responses to the questionnaire were consolidated at a recent interim meeting of WP-8A Working Group 3 and, after further analysis and refinement, the information will be used by that group in their drafting of CPM text on agenda item 1.3.

Resolution **645** does not ask for a specific recommendation, resolution, or a report. However, Resolution **645** does invite the ITU-R to conduct studies for the development of a resolution identifying the technical and operational basis for cross-border circulation of radiocommunication equipment in emergency and disaster relief situations.

**U.S. VIEW:** The United States recognizes the importance of having public protection and disaster relief communications. Experience has shown that, in general, public protection services operate within local or national boundaries while disaster relief operations tend to involve situations that require multinational cooperation. To this end, the United States remains committed to providing resources to assist countries requiring disaster relief assistance. The benefits of harmonization may be greater, however, for disaster relief services than for public protection services and may vary depending on user and application requirements. For this reason, provisions addressing the needs of disaster relief services may appropriately differ from those for public protection. With regard to emergency and disaster relief situations, the United States would consider pursuing at WRC-03 a resolution identifying the technical and operational basis for global cross-border circulation of radiocommunication equipment. The United States believes that this could be accomplished by amending **Resolution 644 (Rev. WRC 2000)**.

The United States is still evaluating the extent to which benefits will be derived from globally/regionally harmonized frequency bands for public protection and disaster relief and the extent to which such benefits may be attainable through means other than spectrum harmonization. Efficiencies derived from new advanced technologies, such as software defined radios may enable the realization of goals similar to those available through spectrum harmonization. The United States believes that comprehensive and conclusive studies of the purpose and goals of harmonization need to

be completed before any determination or calculation of future spectrum requirements or identification of frequency bands can be made for administrations implementing future solutions for public protection and disaster relief communications. The results of such studies would then be used to develop principles that can be applied in assessing the most effective approach toward achieving harmonization or the benefits that it can provide.

The United States believes it may be premature to identify future spectrum requirements and specific frequency bands at WRC-03 for global/regional harmonization for public protection and disaster relief services. However, if all studies have been completed and the determination is made that spectrum harmonization is desirable, practical and/or even necessary, then the primary focus should then be placed on bands currently designated or allocated for use by public protection and disaster relief services. Although these bands may not necessarily be harmonized globally, some administrations have already made significant investments in equipment that is currently operating in these bands. Identification of such bands may lead to the impression that countries would need to buy new equipment to move into or operate in the identified bands. (May 18, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.4**

**WRC-2003 AGENDA ITEM 1.4:** to consider the results of studies related to Resolution **114 (WRC-95)**, dealing with the use of the band 5 091-5 150 MHz by the fixed satellite service (Earth-to-space) (limited to non-GSO MSS feeder links), and review the allocation to the aeronautical radio-navigation service and the fixed satellite service in the band 5 091-5 150 MHz;

**ISSUE:** WRC-2003 will review the results of studies on the technical and operational issues related to sharing of the band 5 091-5 150 MHz between the aeronautical radionavigation service (ARNS) and the fixed-satellite service (FSS) providing feeder links of the non-geostationary (NGSO) mobile-satellite service (MSS) (Earth-to-space). Of primary concern is whether or not revisions are required to the current regulatory provisions (footnotes **S5.444** and **S5.444A** and Resolution **114 (WRC-95)**) and if so, what revisions? In this regard, consideration must be given to the following:

- Whether there are requirements for microwave landing systems (MLS) to use spectrum above 5 091 MHz, if so, in what time frame.
- To what extent MSS feeder links have used spectrum to date in the range 5 091-5 150 MHz,
- Whether the MSS feeder links would coexist with ARNS on a secondary basis or if there is transition of feeder link use expected to frequencies above 5 150 MHz,
- The experience with coordination between FSS and MLS stations and the subsequent operation of FSS stations in the 5 091-5 150 MHz band.

**BACKGROUND:** As a result of WRC-95, the FSS was granted co-primary status along with the ARNS in the band 5 150–5 250 MHz for the use of feeder uplinks for NGSO MSS systems (**RR S5.447A**). In addition, the band 5 091-5 150 MHz was allocated, on a co-primary basis, to the FSS for NGSO MSS feeder uplinks under **S5.444A** and Resolution **114 (WRC-95)**. Resolution **114 (WRC-95)** requested ITU-R to study issues concerning sharing between ARNS and feeder links to MSS (Earth-to-space) in the band 5 091-5 150 MHz and to report results of the studies to WRC-2003. The use of this band MLS and MSS feeder links is subject to footnotes **S5.444** and **S5.444A**, in particular the following conditions apply:

- 1) prior to 1 January 2010, the use of the band 5 091-5 150 MHz by feeder links of non-geostationary-satellite systems in the mobile-satellite service shall be made in accordance with Resolution **114 (WRC-95)**;
- 2) prior to 1 January 2010, the requirements of existing and planned international standard systems for the ARNS which cannot be met in the 5 000-5 091 MHz band, shall take precedence over other uses of this band;
- 3) after 1 January 2008, no new assignments shall be made to stations providing feeder links of non-geostationary mobile-satellite systems;
- 4) after 1 January 2010, the fixed-satellite service will become secondary to the ARNS.



Three NGSO MSS systems announced plans to operate feeder uplinks in this band. Of the three systems planning use of this band, two systems have implemented spacecraft Tracking and Control operations and one system has begun commercial service using the 5 091-5 250 MHz band for transmitting communications traffic from gateway earth stations to the NGSO spacecraft.

Sharing studies between NGSO/MSS feeder links and microwave landing systems resulted in ITU-R Recommendation **S.1342** "Method for determining coordination distances, in the 5 GHz band, between the international standard microwave landing system in the aeronautical radionavigation service and non-geostationary mobile satellite service stations providing feeder uplink services." These studies showed that compatibility between MLS receivers and MSS feeder links (Earth-to-space) could exist if sufficient geographical separation exists between the two stations. As a result, Recommendation **S.1342** triggers coordination between the two operators to determine the acceptability of an MSS site, possibly with or without restrictions.

In the United States and several other countries, coordination of the gateway station with MLS stations has been accomplished using the methodology contained in Recommendation ITU-R **S.1342**. Spacecraft Command and Control operations began in the 5 091-5 250 MHz band with the launch of the first Globalstar (or LEO-D, in ITU-R terminology) satellite on 14 February 1998. Six gateway stations in Argentina, Australia, France, Korea, South Africa and the United States also participated in these Command and Control operations. The ICO (or LEO-F system in ITU terminology) uses the 5 150-5 250 MHz band to support launch and service operations.

Revenue communications service for the LEO-D began on 6 January 2000. In addition to the gateway earth stations mentioned for Tracking and Control operations 13 other gateway stations have been added to the network as of the current date.

It is expected that if the two MSS systems currently operating gateway stations develop as planned that the number of gateway stations implemented worldwide will be approximately 65.

No interference to MLS stations has been reported. Thus, based upon coordination using the methods contained in Recommendation ITU-R **S.1342** it is expected that this situation will continue.

ITU-R Working Party 8B is the lead group responsible for developing CPM text on WRC-03 Agenda Item 1.4. WP 8B is currently studying the use of the 5 091-5 150 MHz band by the ARNS and the FSS for NGSO MSS feeder uplinks. These studies are expected to conclude no later than May 2002.

**U.S. VIEW:** Based upon the application of the coordination procedures in Recommendation ITU-R **S.1342** and the operating experience gained to date, existing MLS and NGSO MSS feeder link stations are able to function without interference. The existing coordination process is adequate for protecting MLS. Future deployment of both MLS and NGSO MSS facilities should be possible through coordination under ITU-R **S.1342**. Continued common use of the 5 091-5 150 MHz band by both MLS and NGSO MSS stations is dependent upon the extent of future deployment of these systems and the characteristics of any new ARNS systems. There appears to be no justification at this time for the existing relationship between ARNS and the FSS to change. (25 May 2001)

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.6**

**WRC-2003 AGENDA ITEM 1.6:** to consider regulatory measures to protect feeder links (Earth-to-space) for the mobile satellite service which operate in the band 5 150-5 250 MHz, taking into account the latest ITU-R Recommendations (for example, Recommendations ITU-R **S.1426**, ITU-R **S.1427** and ITU-R **M.1454**);

**ISSUE:** Regulatory measures for the protection of non-geostationary (NGSO) mobile-satellite service (MSS) feeder uplinks at 5 150-5 250 MHz potentially including power flux density limits at the spacecraft altitude, limits on the output powers and constraints on the deployment of fixed and mobile service transmitters in this band.

**BACKGROUND:** The proliferation of transmitters in the fixed and mobile services providing applications such as Radio Local Area Networks (RLANs) and other non-licensed applications presents the threat of potentially serious interference to the feeder uplinks of NGSO MSS systems, operating in the fixed satellite service (FSS). Regulatory measures can be devised that effectively protect these vital links from unacceptable interference.

The band 5 150-5 250 MHz is allocated on a primary basis to the FSS and its use is limited to NGSO MSS feeder links by footnote **S5.447A**. This band is also allocated by footnote **S5.447** to the mobile service on a co-primary basis in 27 countries in Regions 1 and 3 subject to **S9.21**. Administrations are currently considering the introduction of fixed and mobile services in the band 5 150-5 250 MHz on a national and unlicensed, uncoordinated basis (see Recommendation ITU-R **M.1454**).

At WRC-2000, Resolution **736** called for studies by the ITU-R leading to technical and operational recommendations to facilitate sharing between existing services and fixed and mobile services, including RLANs in the bands 5 150-5 350 MHz and 5 470-5 725 MHz. It is anticipated that these studies will provide assurance that allocation to fixed and mobile services, in these bands, can co-exist with incumbent NGSO MSS feeder links and aeronautical radionavigation service systems.

During the 1998-2000 study period, considerable time and effort was spent on the development of three ITU-R Recommendations addressing this topic.

JRG 8A-9B developed Recommendation ITU-R **M.1454** entitled "EIRP Density Limit and Operational Restrictions for RLANs or Other Wireless Access Transmitters in order to Ensure the Protection of Feeder Links of Non-Geostationary Systems in the Mobile Satellite Service in the Frequency Band 5 150-5 250 MHz." This Recommendation calls for implementers of wireless access systems to limit the effective isotropic radiated power (EIRP) density of such transmitters to 10mW in any 1 MHz, operate these transmitters only indoors and ensure that the aggregate emissions of these transmitters do not exceed the power flux density limit given in Recommendation ITU-R **S.1426**.

Working Party 4A also considered the protection of MSS Feeder Links from wireless access system emissions and this work resulted in two Recommendations in response to these studies.

Recommendation ITU-R **S.1426**, entitled "Aggregate Power Flux Density Limits at the FSS Satellite Orbit for Radio Local Area Network (RLAN) Transmitters Operating in the 5 150-5 250 MHz Band Sharing Frequencies with the FSS (RR No. **S5.447A**)" recommends that RLANs be designed so as to

limit their aggregate power flux density limit to  $-124 - 20\log_{10}(h_{\text{sat}}/1414)$  dB(W/MHz/square meter), where  $h_{\text{sat}}$  is the altitude of the spacecraft in kilometers. This limit is for the protection of FSS satellites using full earth coverage receive antenna beams.

Recommendation ITU-R **S.1427**, entitled "Methodology and Criterion to Assess Interference from Radio Local Area Network (RLAN) Transmitters to Non-GSO MSS Feeder Links in the Band 5 150-5 250 MHz" specifies that interference from RLAN transmitters should be assessed on the basis of an increase in  $\Delta T_{\text{sat}}$ , the satellite receiver noise temperature, and, to ensure protection, this increase should be no greater than 3%. A Note to the Recommendation indicated that the aggregate long-term interference absorbed by the satellite system should not lead to a reduction in capacity of more than 1%.

Unconstrained deployment of fixed and mobile services applications, such as RLANs, could cause unacceptable levels of interference into the feeder uplinks of the NGSO MSS. Appreciating this fact, WRC-2000 developed agenda item 1.6 for WRC-2003, which calls for the consideration of regulatory measures to protect the FSS (Earth-to-space) allocation in the band 5 150-5 250 MHz from RLAN interference.

**U.S. VIEW:** The U.S. could support the introduction of certain regulatory measures to protect non-GSO MSS feeder uplinks from unacceptable interference emanating from unlicensed applications in the fixed and mobile services. These regulatory measures under consideration include emission limitations, a restriction to indoor use and a power flux density limit at the NGSO MSS satellite altitude (see ITU-R Recommendations **S.1426**, **S.1427** and **M.1454**). It is important to ensure that regulatory measures imposed on the fixed and mobile transmitters in the 5 150-5 250 MHz are not more restrictive than the limit of a maximum EIRP of 10 milliwatts in any 1 MHz band while their operations are restricted to indoor use only. (May 25, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.8.1**

**WRC-2003 AGENDA ITEM 1.8.1:** consideration of the results of studies regarding the boundary between spurious and out-of-band emissions, with a view to including the boundary in Appendix **S3**;

**ISSUES:** Beyond what minimum separation from the center frequency of an emission should all unwanted emissions be subject to the emission limits of Appendix **S3** of the Radio Regulations? How should this boundary be incorporated in the Radio Regulations?

**BACKGROUND:** While the intent of the unwanted emission limits in Appendix **S3** is that they would apply to spurious emissions, it is not generally feasible to distinguish between out-of-band and spurious emissions as defined by Article **S1**. Therefore, the limits are applied to all unwanted emissions further removed from the center frequency than a specified *boundary*. This boundary is generally 250% of the necessary bandwidth.

Task Group 1/5 recognized that, since spurious emissions can occur anywhere outside the necessary bandwidth of an emission, no boundary actually exists between out-of-band and spurious emissions. TG 1/5 solved this problem by defining the out-of-band and spurious *domains*, disjoint frequency ranges specified such that out-of-band or spurious emissions generally predominate within them.

**U.S. VIEW:** The United States supports adoption of the definitions of the out-of-band and spurious domains in Article **S1** of the Radio Regulations, since they are required to remove contradictions in the terminology used to describe unwanted emission limits. The United States supports the use of the boundary values developed by Task Group 1/5 in Recommendation ITU-R SM.[BOUNDARY] to update Appendix **S3**. (22 May 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.8.2**

**WRC-2003 AGENDA ITEM 1.8.2:** consideration of the results of studies, and proposal of any regulatory measures regarding the protection of passive services from unwanted emissions, in particular from space service transmissions, in response to recommends 5 and 6 of Recommendation 66 (Rev.WRC-2000);

**ISSUE:** Development of practical methods for protecting passive services from unwanted emissions, taking into account the impact on active services.

**BACKGROUND:** Because of their highly sensitive receivers, needed to detect weak signals from sources that are usually beyond their control, passive systems in the radio astronomy, Earth exploration-satellite, and space research services are particularly susceptible to radio frequency interference.

For years the ITU-R has sought a solution to the problem of unwanted emission interference to passive systems, especially from satellites. Measures taken by passive systems to avoid interference may restrict the operation of the passive systems and thereby reduce their value. On the other hand, filtering of satellite emissions in the passive service bands may be costly or impractical.

This issue is currently the subject of Task Group 1/7, established in November 2000. Recent work on this issue by Task Group 1/5 led to “band-by-band” studies to quantify the problem and explore possible solutions. Progress in TG 1/7 on this issue will require *very* creative ideas and perhaps willingness on the part of space and passive interests to compromise.

**U.S. VIEW:**

- Unless Task Group 1/7 can reach a broad agreement that successfully meets the requirements of both the passive and active services, protection of radio astronomy will likely involve solutions specific to frequency bands, radio astronomy station sites, and specific active systems.
  - The U.S. does not support inclusion of out-of-band emission masks in the *Radio Regulations*.
  - The U.S. does not support the inclusion of across-the-board passive service protection criteria from Recommendation ITU-R RA.769 (for radio astronomy) or Recommendation ITU-R SA.1029 (for remote sensors) in the *Radio Regulations*, or incorporating them by reference. (May 31, 2001)
-

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.9**

**WRC-2003 AGENDA ITEM 1.9:** to consider Appendix **S13** and Resolution **331 (Rev.WRC-97)** with a view to their deletion and, if appropriate, to consider related changes to Chapter **SVII** and other provisions of the Radio Regulations, as necessary, taking into account the continued transition to and introduction of the Global Maritime Distress and Safety System (GMDSS);

**ISSUE:** Review of Appendix **S13** (Distress and Safety Communications (non-GMDSS)) and Resolution **331** with the view to their deletion, and appropriate related changes to Chapter **SVII** (GMDSS) to provide for distress communications of non-GMDSS ships.

**BACKGROUND:** In accordance with the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, all ships subject to this convention were fitted for the Global Maritime Distress and Safety System (GMDSS) by 1 February 1999. GMDSS changed maritime distress and safety communications from essentially a ship-to-ship to primarily a ship-to-shore system. This change was based on the theory that a properly established shore facility could better organize a search and rescue effort. It further changed a highly manpower intensive system to one with considerable automation. During the transition period to full implementation of the GMDSS, the RR had dual provisions; Appendix **S13** includes the non-GMDSS provisions. Since the GMDSS provisions are applicable only to SOLAS vessels, there are a considerable number of maritime vessels that are not fitted with the automated communications systems, necessitating some consideration of frequencies and modes of operation for their distress and safety communications. Support of the old and new distress and safety systems for an extended period of time is costly. Many administrations have worked to increase fitting of GMDSS elements (e.g., radios incorporating DSC functions and satellite EPIRBs) on non-SOLAS vessels through rule-makings for specific classes of vessels and equipment certification requirements. However, some provisions need to be added to Chapter **SVII** to cater to the needs of non-SOLAS ships. This agenda item is intended to consider the deletion of Appendix **S13** and Resolution **331** at a time when GMDSS is fully implemented and applicable provisions are appropriately included in Chapter **SVII**. It was not intended that Appendix **S13** be revised or edited.

**U.S. VIEW:** Deletion of Appendix **S13** is premature at this time. If Appendix **S13** is suppressed, non-GMDSS ships will not have sufficient provisions to meet their distress and safety communication requirements.

Resolution **331** and Chapter **SVII** may need to be revised to reflect current status of GMDSS implementation. (May 16, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.10.1**

**WRC-2003 AGENDA ITEM 1.10.1:** to consider the results of studies, and take necessary actions, relating to exhaustion of the maritime mobile service identity numbering resource (Resolution **344 (WRC-97)**);

**ISSUE:** Resolution **344** is on the agenda so that WRC-2003 may assess the status of MMSI assignments to administrations and determine whether there is an impending exhaustion of the MMSI numbering resource.

**BACKGROUND:** Presently Maritime mobile service identities (MMSIs) are required for many shipboard communications equipment (e.g., DSC, mobile earth stations). The MMSI (Article **S19**) is a 9-digit number to uniquely identify ship stations, group ship stations, coast stations, and group coast stations. The first three of the nine MMSI digits are the Maritime Identification Digits (MIDs). MIDs represent a territory or geographical area of administrations and are assigned by the ITU. Thus within each MID area there are 6 digits available to identify the stations. The total possible number of MMSIs is reduced by a requirement to assign MMSIs ending in 3-zeros to vessels requiring access to certain satellite services. Therefore, for each MID (administrations can be assigned more than one MID), there are only 1000 numbers available for use by ships with INMARSAT satellite systems. As the number of vessels carrying INMARSAT satellite systems increase, so has the demand for MMSIs with three trailing zeros. Early on the ITU-R recognized this limitation of MMSIs for these satellite systems within each MID. Additional MIDs are now assigned by the ITU to administrations when they have used 80% of the MMSIs with three trailing zeros. The ITU uses the notification requirements of Article **S19** as evidence of use of the numbers with the three trailing zeros. Normally, these are notified and entered into the ITU maritime database and published in List VII A, List of Call Signs and Numerical Identities. The ITU, following established procedures, will not provide additional MIDs until administrations provide the ITU with evidence that 80% of their 1000 allotted MMSIs with three trailing zeros have been assigned. Although the resource of specifically these MMSIs is limited, it is anticipated to be sufficient to meet the needs of the maritime community for the foreseeable future. The present concern stemming from the INMARSAT numbering scheme may be ameliorated by the end of the useful life of certain existing INMARSAT ship earth stations. The ITU will report on the status of the resource and if exhaustion is anticipated, urgent studies can be initiated between ITU-T Study Group 2 and ITU-R Study Group 8 to agree on necessary changes in their respective guidance to obtain some additional resources.

**U.S. VIEW:** Depending on the results from the Director of the Radiocommunication Bureau on the impending exhaustion of the MMSI resource for certain MIDs, the ITU-R and ITU-T may need to address consequential changes to their respective recommendations affecting the assignment and use of MMSIs and the MID numbering resource.

If the report of the Bureau indicates no pending exhaustion of the resource within the next few years, the U.S. will support revising Resolution **334 (WRC-97)**, to instruct the Bureau to provide an updated report at a future WRC. (May 16, 2001)

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.10.2**

**WRC-2003 AGENDA ITEM 1.10.2:** to consider the results of studies, and take necessary actions, relating to shore-to-ship communication priorities (Resolution **348 (WRC-97)**);

**ISSUE:** A shore-based search and rescue authority has no means to interrupt or preempt the satellite communications to a vessel in a distress or safety situation. This communications inability may increase the probability of lost of life and property.

**BACKGROUND:** At present, when vessels are using their ship earth stations, it is not possible to send them a distress or safety message without extremely complex and time-consuming manual intervention at a land earth station to remove all other shipboard traffic. Although this is technically possible, it is not practical. In a recent distress case, the shore-based search and rescue authorities were unable to contact a vessel because of on-going routine traffic to the vessel. This inability to preempt lower priority traffic hindered the overall search and rescue operation. A shore-based search and rescue authority must have the means to interrupt or preempt the satellite communications to a vessel in a distress or safety situation, without using extremely complex and time-consuming manual intervention.

The International Maritime Organization considered this problem and decided that provisions are necessary for giving priority to shore-originated distress communications. INMARSAT is aware of this requirement and has been studying how to provide such priority arrangements.

**U.S. VIEW:** For any GMDSS system, including future generations of mobile satellite systems intended for use aboard ships as part of its distress and safety communications, shore-originated search and rescue communications must be given priority. If practicable, this capability should be incorporated in existing GMDSS systems. If not, specific manual procedures should be standardized. Future generations of GMDSS systems must include this capability.

The U.S. will consider IMO and INMARSAT findings and their proposed methods to provide priority for shore-originated distress communications, with a view to modifying provisions of the Radio Regulations. The U.S. supports development of appropriate Resolutions or Recommendations to ensure priority access is secured for shore-originated distress communications. (May 16, 2001)

---



**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.11**

**WRC-03 AGENDA ITEM 1.11:** to consider possible extension of the allocation to MSS (Earth-to-space) on a secondary basis in the band 14-14.5 GHz to permit operation of the aeronautical mobile-satellite service as stipulated in Resolution **216 (Rev.WRC-2000)**;

**ISSUE:** WRC-03 will consider broadening the secondary MSS allocation at 14-14.5 GHz to include AMSS should the ITU-R studies under Resolution **216** demonstrate that such use will not cause harmful interference to the primary services, including FSS, radionavigation, fixed and mobile, and will be compatible with the current secondary services.

**BACKGROUND:** There is an interest in developing two-way broadband communications and data transmission to and from aircraft in flight for passengers. Land and maritime mobile-satellite service networks have been successfully operating on a secondary basis in the 14-14.5 GHz band for a number of years under an existing allocation. Resolution **216**, originally adopted by WRC-97 and modified by WRC-2000, recognizes that the existing demand for use on board aircraft of capabilities to provide broadband two-way communication and data transmission services justifies consideration of broadening the secondary MSS allocation to include aeronautical applications. The Resolution invites the ITU-R to complete in time for WRC-03 technical and operational studies on the feasibility of sharing of the band 14-14.5 GHz between the fixed-satellite (Earth-to-space), radionavigation, fixed and mobile (except aeronautical mobile) services and the aeronautical mobile-satellite service, with the latter on a secondary basis.

The ITU-R is now in the midst of a substantial work program on this issue under the lead of Working Party 8D. Working Parties 4A and 9D have already made significant progress on identifying parameters and methodologies for analyses, and have conducted initial studies. United States contributions to Working Parties 7B and 7D will be submitted soon.

**U.S. VIEW:** The U.S. supports the broadening of the secondary MSS allocation at 14-14.5 GHz to include AMSS, provided that the ITU-R studies conclude that this service, using an appropriate design, can operate without causing harmful interference to the primary services in the band and that the service will be compatible with existing secondary uses. (May 16, 2001)

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.12A**

**WRC-2003 AGENDA ITEM 1.12A:** to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev.WRC-2000)** and to review all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz, taking into account Resolution **730 [COM5/1] (WRC-2000)**;

**ISSUE:** Resolution **723 (Rev.WRC-2000)** resolves to recommend that WRC-03 consider the provision of up to 3 MHz of frequency spectrum for the implementation of telecommand links in the space research and space operations services in the frequency range 100 MHz to 1 GHz.

**BACKGROUND:** ITU-R Recommendation **SA.363-5** recommends that frequencies below 1 GHz are technically suitable for telecommand of satellites in the space science services operating below an altitude of 2000 km. A deficiency in telecommand (uplink) frequency allocations has been previously identified, compared to the available telemetry (downlink) allocations in the 100 MHz to 1 GHz range. This deficiency was first noted in Resolution **712 (WARC-92)**, repeated in Resolution **712 (Rev. WRC-95)**, and again in Resolution **723 (WRC-97)**.

This item was originally placed on the WRC-97 agenda due to the imbalance that exists between telemetry spectrum and telecommand spectrum in the 100 MHz to 1 GHz region. WRC-97 determined that insufficient study had been completed to take action on this agenda item. Sharing studies are currently being carried out within ITU-R WP 7B to determine whether or not these telecommand links will interfere with existing or planned systems of other radio services that are allocated in bands of interest in the 100 MHz to 1 GHz region.

ITU-R WP 7B has indicated that certain sub-bands in the region 100 MHz to 1 GHz are of interest for use by telecommand links in the space research and space operations services. The range 257-262 MHz has specifically been identified by Russia/Ukraine as being of interest. The U.S. and other administrations operate critical air-ground-air communications with military aircraft, radio relay operations, and tactical and strategic satellite communications over the entire 225-400 MHz range.

**U.S. VIEW:** The U.S. opposes new allocations to the space research and space operations services in the band 225-400 MHz. Proposals for allocations in other portions of the range 100 MHz to 1 GHz will be examined as to their merit, and further U.S. views will be developed as appropriate. (May 22, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.12B**

**WRC-2003 AGENDA ITEM 1.12B:** to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev. WRC-2000)** and to review all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz, taking into account Resolution **730/[COM5/1] (WRC-2000)**;

**ISSUE:** To consider incorporating in the Table of Frequency Allocations the existing primary allocation to the space research service in the band 7 145 - 7 235 MHz under No. **S5.460**. (Resolution **723 (Rev.WRC-2000)**, *resolves 2*)

**BACKGROUND:** The 7 145 - 7 235 MHz band is allocated by footnote **S5.460** on a primary basis to the space research service (Earth-to-space), subject to agreement under No. **S9.21**. The companion downlink band, 8 400-8 500 MHz, is allocated on a primary basis in the Table of Frequency Allocations. These bands are used on a worldwide basis for cross-support in accordance with international agreements concluded between a number of space agencies. The footnote calling for agreement under No. **S9.21** was originally applied at **WARC-ST-71** because the coordination parameters necessary for earth station coordination were not agreed at that time. Currently, Appendix **S7** contains these coordination parameters for transmitting earth stations for the space research service in the 7 145 - 7 235 MHz band. Therefore, the premise behind requiring agreement under No. **S9.21** no longer exists.

Worldwide decisions in the framework of ITU on IMT-2000 core bands (which include the band 2 110-2 120 MHz allocated to Space Research Service, Deep Space) are ‘de-facto’ constraining both the existing space research service and the planned IMT-2000 systems (see RR **S5.388**). With the planned implementation of IMT-2000 starting in 2001, the band 2 110 - 2 120 MHz will be increasingly difficult to use by the powerful Earth-to-space links of the space research/deep space service. The space research service will be forced to migrate all but emergency operations to an alternative band, i.e., to the existing allocation within 7 145 - 7 235 MHz.

**U.S. VIEW:** The U.S. supports the addition of the space research service (Earth-to-space) to the Table of Frequency Allocations on a primary basis in the 7 145 - 7 235 MHz band and the modification of footnote **S5.460** to delete everything except the final sentence of the current footnote. (May 22, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.12C**

**WRC-2003 AGENDA ITEM 1.12C:** to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev. WRC-2000)** and to review all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz, taking into account Resolution **730/[COM5/1] (WRC-2000)**;

**ISSUE:** To review existing allocations to space science services near 15 GHz and 26 GHz, with a view to accommodating wideband space-to-Earth space research applications. (Resolution **723 (Rev. WRC-2000)**, *resolves 4*)

**BACKGROUND:** Currently, only the 8 450-8 500 MHz band is available below 30 GHz for the down-link of broadband data from spacecraft in the space research service (SRS). The next available band allocated for SRS use is 37-38 GHz. This band is expected to be heavily utilized for lunar and planetary missions and additionally may be constrained by deployment of HDFS. An allocation is needed to support planned high data rate space research missions (requiring bandwidths up to 400 MHz) that will carry telescopes and or other passive instruments used to measure phenomenon such as the earth's magnetosphere and solar flares. These missions will be limited in number with no more than an estimated 3-5 satellites per year worldwide, and will generally be in equatorial orbits with some geostationary and others at the L1 or L2 libration points.

The 25.5-27.0 GHz band is currently allocated on a worldwide primary basis to the Earth exploration-satellite service (EESS) (space-to-Earth). The telecommunications requirements for the SRS (near Earth missions) are in general similar to those in the EESS and systems of these services are expected to share ground network resources. There are no plans for, nor is there any foreseeable need, for broad distribution of such data. The sharing situation for the SRS with other services allocated in these bands are expected to be very similar to those involved between the EESS and these other services and therefore do not present additional burden to the other allocated services.

Additionally, there is a secondary space research allocation covering 14.5-15.35 GHz. The possibility of upgrading all or part of this allocation to primary status is under investigation.

**U.S. VIEW:** The U.S. supports the need for additional space research service downlink spectrum below 30 GHz to facilitate broadband SRS mission requirements. Either the 14.5-15.35 GHz or 25.5-27 GHz bands under study would fulfill the SRS requirements. The U.S. anticipates submitting a proposal to WRC-2003 for a primary SRS allocation within the bands under investigation. (May 31, 2001)

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.12D**

**WRC-2003 AGENDA ITEM 1.12D:** to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev. WRC-2000)** and to review all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz, taking into account Resolution **730/[COM5/1] (WRC-2000)**;

**ISSUE:** to review the allocations to the space research service (deep space) (space-to-Earth) and the inter-satellite service, taking into account the coexistence of these two services in the frequency range 32-32.3 GHz, with a view to facilitating satisfactory operation of these services. (Resolution **723 (Rev. WRC-2000)**, *resolves 3*)

**BACKGROUND:** Signals received on Earth from spacecraft in deep space are extremely weak and highly susceptible to interference of all kinds. In particular, the presence of near-Earth airborne and spaceborne interference sources can easily overwhelm the desired (but extremely weak) signal from deep space. Geographic isolation is not possible in the case of near-Earth orbiting spacecraft sharing the same band with space research (deep space). To satisfy present and future science deep space data return requirements, heavy reliance is being placed on space-to-Earth links in the 31.8-32.3 GHz band. The lack of compatibility between the inter-satellite service and the space research service (deep space) has been demonstrated and is documented in Recommendation ITU-R SA. 1016.

**U.S. VIEW:** Sharing between the space research service (deep space) (space-to-Earth) and the inter-satellite service does not appear feasible. The U.S. anticipates proposing that the inter-satellite service allocation from 32-33 GHz be modified to exclude the 32-32.3 GHz band. (May 31, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.12E**

**WRC-2003 AGENDA ITEM 1.12E:** to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev.WRC-2000)** and to review all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz, taking into account Resolution **730 (WRC-2000)**;

**ISSUE:** Resolution **730 (WRC-2000)**, resolves 1 and 2, and review of all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz.

1 to invite ITU-R to study sharing between spaceborne precipitation radars and other services in the band 35.5-35.6 GHz;

2 to recommend that WRC-03 review the results of those studies and consider the removal of the restriction currently contained in No. **S5.551A** on spaceborne precipitation radars operating in the Earth exploration-satellite service in the band 35.5-35.6 GHz.

Footnote **S5.551A**, which places restrictions on the use of the EESS and SRS (active) allocations in the 35.5-36 GHz band, is to be reexamined to determine if there is technical justification for its removal.

**BACKGROUND:** The frequency band 35.5 – 36 GHz is allocated to the Earth exploration-satellite (active) service on a primary basis limited by footnote **S5.551A** and is also allocated to the meteorological aids and radiolocation services on a primary basis. Prior to WRC-97, operation by radars located on spacecraft on a primary basis was permitted in the band 35.5–35.6 GHz by footnote **S5.551 (SUP WRC-97)**. This 100 MHz band is used by precipitation radars located on spacecraft. Furthermore, studies have shown that sharing between spaceborne active sensors and radiolocation systems in the band 35.5–36 GHz is feasible, as indicated in § 5.7.2.1 of Chapter 5 of the CPM-97 Report. ITU-R Joint Working Party 7-8R, which studied compatibility between spaceborne active sensors and other services prior to WRC-97, noted that in the band 33.4–36 GHz, compatibility analysis between spaceborne altimeters and scatterometers and terrestrial radars in the radiolocation service indicated that interference from these spaceborne active sensors into the radiolocation systems would not exceed the interference criteria for terrestrial radiolocation systems that are in normal use. JWP 7-8R also examined the compatibility of active sensors with radiolocation systems from the aspect of potential interference from these radiolocation systems into altimeters and scatterometers and concluded that interference into these sensors would not exceed their interference criteria. Therefore, JWP 7-8R and subsequently CPM-97 concluded that compatibility between known spaceborne active sensors and radiolocation systems in the 33.4–36 GHz band existed and that an allocation of 500 MHz in this frequency range should be made. Therefore, there was no technical reason behind applying the footnote **S5.551A** to the table allocation for the Earth exploration-satellite (active) and space research (active) services in the 35.5-36 GHz band.

With respect to the EESS (passive) and SRS (passive) allocations in the band 36-37 GHz and the space research service allocation in the band 37–38 GHz, there have been no changes in the requirements for these allocations, nor have there been changes in the sharing conditions in these bands that would warrant any changes.

**U.S. VIEW:** The U.S. believes that the footnote **S5.551A** should not have been applied to the band 35.5–35.6 GHz due to the nature of the primary allocation by footnote **S5.551 (SUP WRC-97)**. Therefore, the U.S. supports the removal of the restriction currently contained in footnote **S5.551A** on spaceborne precipitation radars operating in the Earth exploration-satellite service in the band 35.5-35.6 GHz. Furthermore, there is no technical basis for the application of footnote **S5.551A** to the

remainder of the allocation from 35.6–36 GHz. Therefore, the U.S. supports the suppression of footnote **S5.551A**.

Further, the U.S. supports maintaining the allocations to the Earth exploration-satellite (passive) and space research (passive) services in the band 36-37 GHz and to the space research service in the band 37-38 GHz without change. (May 22, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.13**

**WRC-2003 AGENDA ITEM 1.13:** to consider regulatory provisions and possible identification of existing frequency allocations for services which may be used by high altitude platform stations, taking into account No. **S5.543A** and the results of the ITU-R studies conducted in accordance with Resolutions **122 (Rev.WRC-2000)** and **734/[COM5/14] (WRC-2000)**;

**ISSUE:** Matters related to high-altitude platform stations in the fixed and mobile services

**BACKGROUND:** At WRC-97, the bands 47.2-47.5 GHz and 47.9-48.2 GHz (which were already allocated for the fixed service) were designated within the fixed service for High-Altitude Radio-Relay Platform Stations (HAPS). WRC-2000 confirmed this designation and under Resolution **122 (Rev.WRC-2000)** requested that studies continue on regulatory and sharing issues in these bands. While this designation does not limit the use of a band by types of services for which it is already allocated, it does give guidance to administrations wishing to implement specific service types. WRC-2000, through Resolution **122**, requested that the ITU-R conduct studies, taking into account the requirements of other Fixed Service systems and other services, on the feasibility of identifying suitable frequencies, in addition to the 2x300 MHz paired band at 47 GHz, for the use of HAPS in the Fixed Service in the range 18 – 32 GHz in Region 3. These studies were called for at the request of several Region 3 administrations because rain fade made utilizing the previously identified 47 GHz band difficult. The studies are to focus particularly, but not exclusively, on the bands 27.5 – 28.35 GHz and 31.0 – 31.3 GHz. In addition, country footnote **S5.537A** was adopted to permit the use of HAPS (HAPS-to-ground) in the fixed service allocation in the band 27.5-28.35 GHz on a non-interference, non-protected basis in certain Region 3 countries. This band, by country footnote **S5.543A** was paired with the 31-31.3 GHz band for use by HAPS (ground-to-HAPS) also on a non-interference, non-protected basis. Additionally use of the 31 – 31.3 GHz band is subject to not causing harmful interference to EESS (passive) and RAS services operating in the 31.3-31.8 GHz band. The footnote urged the identified administrations to utilize only the 31.0-31.15 GHz band until studies were completed.

The same concerns expressed at WRC-00 by many Administrations, including the U.S., with respect to identifying HAPS use in the fixed service in the 18 – 32 GHz band are still valid today. Internationally the FSS is allocated on a global basis from 17.7 – 21.2 GHz and 27.5 – 31.0 GHz band. The FSS community is very concerned about their ability to deploy planned global FSS satellite systems without hindrance from HAPS deployment in the same band. The FSS community has invested large amounts of resources and time in the development of global FSS systems that will operate in certain parts of the 18 – 32 GHz band. Additionally there is concern regarding compatibility of HAPS with existing global FSS systems that operate in these bands. ITU-R Study Group 4-9S is currently studying this situation. The EESS (passive) and RAS service communities are also very concerned about the possibility of interference from HAPS stations in the 31–31.3 GHz band, which is adjacent to the 31.3-31.5 GHz passive band allocated on a primary basis to the Earth exploration-satellite (passive) and space research (passive) services for passive remote sensing of the Earth. This passive sensing band is of vital importance in Earth observation and weather forecasting because it is the reference band used in conjunction with the unique oxygen absorption bands from 50.2–59.3 GHz. Unwanted interference in this band from out-of-band emissions from HAPS would be particularly harmful to the remote sensing use of the band. The 31.3-31.5 GHz band is allocated to the RAS on a primary exclusive basis, and is extensively used, e.g. for studies of the Cosmic Microwave Background.

In addition to the above, WRC-2000 requested studies on the use of HAPS in both the fixed and mobile services in bands above 3 GHz allocated exclusively for terrestrial radiocommunication.



**U.S VIEW:** Identification of suitable fixed service bands for HAPS should be in bands that are already allocated to the fixed service on a primary basis. The bands considered should be limited to the 27.5-28.35 GHz and the suitable portions of the 31.0-31.3 GHz bands identified in response to the studies called for in Resolution **122**. The identification of bands for HAPS should not impact the ability to operate existing and planned FSS, EESS (passive) or radio astronomy systems. The identification of HAPS bands should be by country footnote and limited to Region 3 countries expressing a need for an additional 2 x 300 MHz identification of bands because of difficulties with rain attenuation associated with the existing 2 x 300 MHz bands at 47 GHz identified for HAPS.

Prior to any identification of HAPS use in the fixed service bands technical studies by the ITU-R should confirm that sharing is feasible with existing and planned services in a particular frequency band. In particular, worldwide use of the 31.3-31.8 GHz passive band for remote sensing of the Earth and radio astronomy must be protected. Additionally the amount of spectrum identified for HAPS systems in the band, 27.5-28.35 GHz should be consistent with the amount identified at 47 GHz (i.e. 300 MHz), unless a specific technical rationale for more spectrum is provided. Furthermore, the amount of spectrum for the ground-to-HAPS direction should also be limited to a maximum of 300 MHz, subject to the outcome of sharing studies to prevent harmful interference to the passive services operating in the upper adjacent band, which may reduce the amount of spectrum in the 31-31.3 GHz band available for use by the HAPS systems.

The U.S. is following the ITU-R studies being conducted in accordance with Resolution **734** on the use of HAPS in both the fixed and mobile services in bands above 3 GHz allocated exclusively for terrestrial radiocommunication and will develop a preliminary view in due course. (May 16, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.14**

**WRC-2003 AGENDA ITEM 1.14:** to consider measures to address harmful interference in the bands allocated to the maritime mobile and aeronautical mobile (R) services, taking into account Resolutions **207 (Rev.WRC-2000)** and **350/[COM5/12](WRC-2000)**, and to review the frequency and channel arrangements in the maritime MF and HF bands concerning the use of new digital technology, also taking into account Resolution **347 (WRC-97)**;

**ISSUE:** There has been considerable interference to HF frequencies used by the aeronautical and maritime mobile services for distress and safety communications.

A second related issue involves a need for more effective methods for ships and coast stations to call ships using DSC for routine communications.

**BACKGROUND:** In an ongoing effort to reduce interference to HF distress and safety frequencies used in the GMDSS, WRC-2003 prohibited general calling on channels allocated for GMDSS distress and safety traffic. Prior to WRC-2000, the radio regulations permitted routine voice calling on the two GMDSS duplex distress and safety traffic channels in the 12 and 16 MHz band. The U.S. reasoned that users of these frequencies for calling would not interfere with distress traffic if proper procedures were followed. WRC-2000 actions create additional impact on search and rescue organizations who maintain watch on these distress and safety frequencies and who also use these frequencies to call ships not required to fit GMDSS equipment. Removal of the calling function would require search and rescue organizations to maintain watches on the distress and safety as well as the calling channels. Additionally, this change would require non-GMDSS vessels in emergency situations to first make a distress call on the routine calling channel before moving to the 12 or 16 MHz distress and safety channel. This, in practice, is difficult to do and may result in loss of communications. The ability to guard both the calling and the distress and safety channels would require additional equipment resources and increased operational cost.

At present, routine calling is prohibited on channels allocated for DSC distress calling. This prohibition was implemented due to concern that routine calling might overload the DSC Distress and Safety channel. Currently, very little public correspondence use is made on HF using DSC. Additionally, GMDSS ships are not required to guard any routine calling channels. Therefore, if routine calling is to be effective, it must occur on DSC distress calling channels or new watchkeeping requirements for GMDSS vessels must be imposed.

Resolution **207 (Rev. WRC-2000)** contains provisions and measures to combat the growing concern of aviation authorities over the increased interference to operational safety communications caused by unauthorized (illegal) transmissions. Interference to safety communications with aircraft in the HF bands in some areas of the world is now a matter of very serious concern to civil aviation authorities, and to aircraft operating in those areas. International civil aviation fully supports the development of measures to strengthen the Radio Regulations, as feasible, and their application by administrations to avoid the occurrence of safety infringing events and to lead to the eventual cessation of these unauthorized transmissions.

**U.S. VIEW:** The U.S. will consider ITU-R studies in response to Resolution **350** regarding the geographical distribution and level of interference in these bands with a view to identifying the possible causes of any interference and alternative solutions. The U.S. will consider modifying the

Regulations where appropriate and consider any other actions that may be needed to enforce the current provisions of the Radio Regulations. Furthermore, consideration will also need to be given to the increased use of digital telecommunications technologies and how best to accommodate this through changes to Article **S52** and Appendix **S17**.

The U.S. will continue to monitor developments in the ITU-R regarding interference to 12 290 kHz and 16 420 kHz (**Resolution 350**). The results of interference studies will be used as a basis to determine if it is necessary to prohibit routine calling on HF frequencies that are used in the GMDSS for distress and safety traffic by radiotelephone and are presently allocated for distress, safety and calling. Removal of the calling function on 31 December 2003 presents potential difficulty in establishing unscheduled initial contacts to and from ships.

The U.S. also supports permitting DSC routine calling on DSC distress and safety calling frequencies by ships when attempting to communicate with other ships known to be in their area but outside VHF. The aviation community is best suited for addressing any HF interference mitigation solutions. No regulatory changes to the ITU radio regulations are necessary at this time. Any proposed solutions affecting technical characteristics of currently used equipment and solely aimed at mitigating the effects of interference must be carefully assessed by maritime and civil aviation as to their affect on internationally agreed standards, and to their practical effectiveness in both the short and the long term. Enforcement of existing regulatory provisions, cooperative action by administrations, and the implementation of recommended measures and techniques, aimed at reducing this threat to the safety of air and maritime operations is necessary to help mitigate the occurrences of harmful interference on these safety communication channels. (May 21, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.15A**

**WRC-2003 AGENDA ITEM 1.15A:** to review the results of studies concerning the radionavigation-satellite service in accordance with Resolutions **604 (WRC-2000)**, **605 (WRC-2000)** and **606 (WRC-2000)**;

**ISSUE (Resolution 605):** There are two issues related to Resolution **605**:

- a. To ensure the protection of aeronautical radionavigation service (ARNS), specifically including Distance Measuring Equipment (DME), from radionavigation-satellite service (RNSS) space-to-Earth transmissions in the 1 164-1 215 MHz band.
- b. To assess the need for an aggregate power flux-density limit on RNSS space-to-Earth transmissions, and if such a need exists to confirm or revise the provisional aggregate power flux-density limit adopted in **S5.328A** of the Radio Regulations.

**BACKGROUND:** WRC-2000 introduced new allocations in the band 1 164-1 215 MHz for use by the RNSS (space-to-space) and (space-to-Earth) with an aggregate provisional pfd limit of -115 dB (W/m<sup>2</sup>) in any 1 MHz produced at the Earth's surface by all space stations within all RNSS systems and for all angles of arrival. It also stated in **S5.328A** of the Radio Regulations that the provisions of Resolution **605 (WRC-2000)** apply. There was extensive discussion at the WRC with regards to the need for a pfd limit and the value needed to protect ARNS (including DME). Resolution **605** requests the ITU-R to study the technical, operational, and regulatory aspects of compatibility between RNSS and ARNS in the band 9 60-1 215 MHz, including an assessment of the need for an aggregate pfd limit and if such need exists, to revise, if necessary the provisional pfd limit given in **S5.328A** concerning the operation of RNSS (space-to-Earth) systems in the frequency band 1 164 – 1 215 MHz.

ITU-R Working Party 8D is studying the methodologies for calculating an aggregate pfd. The ITU-R currently does not have a methodology that can be used to calculate the power flux-density produced by RNSS systems. Nor is it certain that appropriate regulatory provisions can be developed that ensures the desired protection is provided effectively. Moreover, there will be a small number of RNSS systems, and ARNS use is similar throughout the world. ITU-R technical and regulatory studies are expected to show how DME systems can be protected while not constraining the aggregate emissions of RNSS systems.

With respect to interference from ARNS systems into RNSS receivers, RNSS receivers are generally not susceptible to interference from individual ARNS systems, so that co-frequency operation of the two services is possible. If there are a large number of ARNS transmitters, for example DME, an aircraft at a high altitude may experience interference to its RNSS receiver. In the U.S., the Federal Aviation Administration has started reassigning DMEs to eliminate any potential for interference.

ITU-R Working Party 8D is addressing this issue and developing Conference Preparatory Meeting text.

**U.S. VIEW:** Addressing Resolution **605**, the U.S. has a strong need for both RNSS spectrum and the continued operation of ARNS systems in the 1 164-1 215 MHz band and is committed to protecting from interference both current and future ARNS systems operating in the same band as RNSS. This protection needs to be provided without unnecessarily delaying or hindering the implementation and provision of RNSS (space-to-Earth) services. The U.S. is studying possible alternatives to the pfd provisions in the allocation footnote and accompanying resolution adopted at WRC 2000 for this band.

There is no need for elaborate ITU regulatory processes to facilitate RNSS - ARNS sharing. (May 23, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.15B**

**WRC-2003 AGENDA ITEM 1.15B:** to review the results of studies concerning the radionavigation-satellite service in accordance with Resolutions **604 (WRC-2000)**, **605 (WRC-2000)** and **606 (WRC-2000)**;

**ISSUE (Resolution 606):** to ensure, through appropriate technical, operational, and regulatory studies (including the assessment of the need for a power flux-density limit on new radionavigation-satellite service (RNSS) (space-to-Earth) systems in the 1 215-1 300 MHz band), that the RNSS (space-to-Earth) will not cause harmful interference to the radionavigation and radiolocation services.

**BACKGROUND:** WRC-2000 introduced allocations to the RNSS (space-to-Earth) in the 1 260-1 300 MHz band, and for RNSS (space-to-space) in the 1 215-1 300 MHz band. Where RNSS use of the 1 164-1 215 MHz band was made subject to a provisional aggregate pfd limits, RNSS use of the band 1 215-1 300 MHz band is the subject of studies to be conducted pursuant to Resolution **606 (WRC-2000)**. There are large numbers of Global Positioning System (GPS) receivers operating in the band 1 215-1 260 MHz. The band 1 240-1 300 MHz is also allocated on a co-primary basis to ARNS and to radiolocation for use of long-range primary radar systems. Among other things, Resolution **606** calls for studies of “the need for a power flux-density limit concerning the operation RNSS (space-to-Earth) systems in the frequency band 1 215–1 300 MHz in order to ensure that the radionavigation-satellite service (space-to-Earth) will not cause harmful interference to the radionavigation and radiolocation services.”

Also in Resolution **606**, WRC-2000 resolved that no additional constraints are to be placed on RNSS systems operating in the 1 215-1 260 MHz band. The GPS, an RNSS system which operates on 1 227.6 MHz (24 MHz bandwidth), has been in operation in the band 1 215–1 260 MHz since 1988. It provides positioning and navigation services from space. Currently, this signal is used for high precision GPS in high productivity applications, such as machine guidance in survey, construction, agriculture, and mining. With an expanding capability to receive an additional civilian GPS signal, other civilian and commercial sectors have yet to be explored. The existing signal will continue to be a low power signal in the 1 215-1 300 MHz band. This signal has been transmitted at its current power level for over 23 years and has not caused any interference to other users of the band. This has been accomplished without the need for power flux-density limits in the Radio Regulations. It is anticipated that in the future there will be requirements to improve upon the signal. However, the U.S. also has a need to protect radars and has no intention of changing the GPS signal in a way that would adversely affect radar operations.

ITU-R Working Party 8D is addressing this issue and developing Conference Preparatory Meeting text.

**U.S. VIEW:** Addressing Resolution **606**, there is no need for a power flux-density limit to be imposed in the 1 215-1 300 MHz band. RNSS systems have been successfully operating in the 1 215-1 240 MHz band for more than 12 years with no interference. Adding a power flux density limit would not provide any benefit, and could hinder development of RNSS. (May 23, 2001)

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.15C**

**AGENDA ITEM 1.15c:** to review the results of studies concerning the radionavigation-satellite service in accordance with Resolutions **604 (WRC-2000)**, **605 (WRC-2000)** and **606 (WRC-2000)**;

**ISSUE: Resolution 604:** To determine whether the provisional pfd of  $-171$  dB ( $W/m^2$ ) is the appropriate value.

**BACKGROUND:** WRC-2000 introduced new space-to-space and space-to-Earth allocations to the radionavigation-satellite service (RNSS) in the band 5 010-5 030 MHz. In order to protect radio astronomy from detrimental interference, RR **S5.443B** includes a provisional aggregate pfd value of  $-171$  dB ( $W/m^2$ ) in a 10 MHz bandwidth at any radio astronomy observatory site that cannot be exceeded for more than 2% of the time in the band 4 990-5 000 MHz. Under Resolution **604 (WRC-2000)**, the ITU-R is to review the provisional limit.

ITU-R Working Party 8D is the lead group addressing this issue and developing Conference Preparatory Meeting text. Working Party 7D has confirmed that the value of  $-171$  dB( $W/m^2$ ) is the necessary value and is considering a methodology for computing the aggregate level, as well as, how to address the time during which the pfd can be exceeded taking into account the characteristics of the radio astronomy antenna.

**U.S. VIEW (Resolution 604):** The United States believes that the pfd value of  $-171$  dB( $W/m^2$ ) is the appropriate level. The United States continues to study the regulatory aspects of use of an aggregate protection level. At the same time, the United States is concerned about extensive requirements that might be placed on the ITU Radiocommunication Bureau to implement processes to verify that such pfd's are not exceeded. In addition, the use of allocation provisions (footnotes) in one frequency band that specify protection levels for services operating in a different band should be limited to particular cases where such protection is not obtainable otherwise. In this instance the allocation table has been modified to add allocations where there is a high probability that interference may result from the operation of the new systems unless special measures are taken. In other cases the normal provisions of the Radio Regulations are sufficient to ensure compatibility of use. (*January 9, 2002*)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.17**

**WRC-2003 AGENDA ITEM 1.17:** to consider upgrading the allocation to the radiolocation service in the frequency range 2 900-3 100 MHz to primary;

**ISSUE:** Obtaining sufficient primary spectrum for radiolocation in the range 2 900-3 400 MHz to support expanding radiolocation operations; sharing between radiolocation, and incumbent services – radiolocation and radionavigation.

**BACKGROUND:** WRC-97 (Resolution **722**) first considered the possibility of an allocation upgrade for the radiolocation service in the 2.9-3.4 GHz and 5.35-5.65 GHz bands by placing this matter on the draft WRC-2001 agenda. Changes in technology are driving a need for larger bandwidth in order to be able to pick smaller and less reflective radar targets out of background clutter. This upgrade is necessary in view of the expanding requirements of radiolocation. The radiolocation service, while recognizing the special needs of radionavigation services noted in RR **S.4.10**, has a long successful history of sharing the band 2 900-3 100 MHz with radionavigation systems. The radiolocation service needs this spectrum to provide primary spectrum contiguous with the band 3 100-3 400 MHz. ITU-R WP8B will conduct studies on technical and operational issues related to the upgrading of the radiolocation service allocation taking into account Nos. **S5.425**, **S5.426** and **S5.427**.

**U.S. VIEW:** Based upon the long history of successful co-band operations it may be possible to achieve this upgrade for radiolocation with the incumbent services by regulatory text similar to that contained in RR **S5.448B**. However, the situation regarding radiolocation sharing with communications systems such as FWA in the fixed service, is not promising. Sharing studies are just now getting under way in the ITU-R. (May 18, 2001)

---



**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.18**

**WRC-03 AGENDA ITEM 1.18:** to consider a primary allocation to the fixed service in the band 17.3-17.7 GHz for Region 1, taking into account the primary allocations to various services in all three Regions;

**ISSUES:**

- A Region 1 primary allocation to the fixed service in the 17.3-17.7 GHz band may adversely impact U.S. worldwide radar operations in the band.
- A Region 1 primary allocation to the fixed service in the 17.3-17.7 GHz band may adversely impact the BSS allocation in the 17.3-17.7 GHz band in Region 2.
- Fixed service systems may potentially interfere with BSS feeder links operating in the fixed-satellite service (Earth-to-space) in the band 17.3-18.1 GHz.

**BACKGROUND:** The 17.3-17.7 GHz band is allocated to the fixed-satellite service (Earth-to-space) on a primary basis in all three Regions, while the use of the band by geostationary satellites is limited to BSS feeder links under **S5.516**. The broadcasting-satellite service is also allocated on a primary basis in Region 2, and radiolocation is allocated on a secondary basis in all three Regions. The European Common Proposals to WRC-2000 noted that in Region 1 the only primary service allocated in the band 17.3-17.7 GHz is the FSS (Earth to space), and that the band is considered of significant interest for point-point and point-multipoint systems in the fixed service.

**U.S. VIEW:**

- The requirements of all existing allocated services must be taken into account when considering an allocation to the fixed service in the 17.3-17.7 GHz band.
  - Protection of a new fixed service allocation in Region 1 must not constrain the deployment of future BSS networks in the 17.3-17.7 GHz band in Region 2.
  - Studies should be completed confirming the feasibility of sharing between the fixed service and the currently allocated services. (May 31, 2001)
-

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.19**

**WRC-2003 AGENDA ITEM 1.19:** to consider regulatory provisions to avoid misapplication of the non-GSO FSS single-entry limits in Article **S22** based on the results of ITU-R studies carried out in accordance with Resolution **135 (WRC-2000)**;

**ISSUE:** The single-entry equivalent power flux-density (epfd) limits in Tables **S22-1** (epfd<sub>↓</sub>), **S22-2** (epfd<sub>↑</sub>), and **S22-3** (epfd<sub>is</sub>) of Article **S22** are the sum of the power flux-densities produced at a GSO receive station by the emissions from all the transmit stations within a non-geostationary-satellite system. Misapplication of non-GSO FSS single-entry epfd limits could occur by artificially splitting or combining the number of transmit stations associated with a non-GSO FSS system.

**BACKGROUND:** WRC-97 adopted, in Article **S22**, provisional epfd limits to be met by non-GSO FSS systems in order to protect GSO FSS and GSO BSS networks in parts of the frequency range 10.7-30 GHz. CPM-99 specifically identified possible misapplication of single-entry limits as one area that may require possible procedural/regulatory actions. As stated in the CPM Report to WRC-2000, it was agreed that such misapplication would invalidate the entire basis of the derivation of the single-entry limits. Resolution **135 (WRC-2000)** was adopted for the purpose of conducting technical studies and considering regulatory procedures, in time for consideration by WRC-2003, to ensure that there will not be any misapplication of limits in Tables **S22-1** (epfd<sub>↓</sub>), **S22-2** (epfd<sub>↑</sub>), and **S22-3** (epfd<sub>is</sub>) of Article **S22**.

Misapplication of these limits, including artificial splitting or combining of non-GSO FSS systems, could:

- a) cause excess interference into GSO networks;
- b) reduce the number of non-GSO FSS systems that could be implemented in an allocated frequency band;
- c) affect the regulatory requirements for a non-GSO FSS system in the ITU coordination notification process; and
- d) affect non-GSO FSS systems that meet the single-entry limits in Article **S22**.

**U.S. VIEW:**

1. It is in the interest of all administrations to avoid any misapplication of the single-entry epfd limits. Misapplication could distort the regulatory or interference situation by violating the assumptions upon which the single-entry epfd limits were based and adversely impact the GSO FSS and BSS networks to be protected.
2. Misapplication could artificially increase the number of non-GSO FSS systems, and thereby increase the interference to GSO networks over the levels agreed at WRC-2000.
3. Misapplication could reduce the number of competing non-GSO FSS systems, make coordination between non-GSO systems more difficult, or lead to differing regulatory effects for non-GSO FSS systems which meet the limits and those which misapply the limits. Misapplication should be avoided in order to protect compliant non-GSO systems. (May 23, 2001)

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.20**

**WRC-2003 AGENDA ITEM 1.20:** to consider additional allocations on a worldwide basis for the non-GSO MSS with service links operating below 1 GHz, in accordance with Resolution **214 (Rev.WRC-2000)**;

**ISSUE:** Additional allocations at WRC-03 for non-GSO MSS (Little LEO) service uplinks below 1 GHz.

**BACKGROUND:** Non-GSO MSS below 1 GHz systems have been implemented and additional systems are planned to initiate service before WRC-03. Spectrum needs have been identified in CPM 99 in the range of 17 MHz for service links, and 4 MHz for feeder links. ITU-R studies conducted at several frequencies below 1 GHz (148-149.9 MHz and 450-470 MHz) have shown that frequency sharing is technically feasible with terrestrial allocations under certain technical and operating constraints such as:

- limiting the duration of burst transmissions by the MSS,
- limiting the duty cycle of transmissions,
- time constraints before reuse of an uplink frequency,
- use of dynamic channel assignment techniques (as referenced in ITU-R Rec. **M. 1039**)

Currently operating non-GSO MSS systems below 1 GHz continue to demonstrate the practical feasibility of co-frequency sharing in the VHF band with fixed and mobile systems similar to those in other fixed and mobile bands below 1 GHz. Already completed ITU-R studies on MSS and terrestrial system frequency sharing have resulted in sharing models to be applied (Rec. **M.1039**), technical characteristics of MSS systems (Rec. **M. 1184**), technical characteristics of land mobile systems (PDNR 8A/[LMS.CHAR]), and sharing criteria for MSS and terrestrial systems. Sharing study results have been included in the CPM Reports to WRC-97 and WRC-2000. Additional studies are planned for completion prior to WRC-03. Completed sharing studies since 1995 include:

- a. A NGSO system operating in the 460 MHz band vs. a modeled land mobile analogue system (or digitally modulated, binary-FSK system) in which the worst case interference would reduce the land mobile availability less than 0.1 %, or from 99.0 to 98.9 %. The mean time between interference events for a land mobile user with 0.01 Erlangs of traffic was calculated to range from 10 hours to 21 months, which is much less than 0.1% decrease in channel availability.
- b. Using a different non-GEO MSS network operating in a portion of the 450-470 MHz band, and constraints similar to those now used in the 148-149.9 MHz band, another study concluded that shared access to a minimum of 4 MHz of spectrum by five non-voice, non-GSO MSS can meet the modeled land mobile service (LMS) protection requirements.
- c. third study analyzed non-GSO interference to active remote pickup unit (RPU) channels linked to a sound broadcasting station in an urban noise environment (assumed to be -138 dBW). The remote unit antenna height was 15 m and the base station receiving antenna height was 60 m. The simulation results showed that the probability of interference was 0.00015% (due to one interfering non-GSO MSS system). This is equivalent to a single short, one-half second, interference event every four days, assuming that the RPU is operating continuously for that period.

- d. Studies of sharing between an MS system and the mobile units and the base stations of two digital trunked land mobile systems which may be deployed in Region 1 and other countries, and in Region 2. Four different geographical regions were used in the studies, Europe, North America, South America, and Central America & Caribbean. For the range of parameters studied, the maximum probability of interference into a single terrestrial link was 0.0030% for the first system and 0.0027% for the second system. The results may be viewed as 99% channel availability being reduced to 98.9970% for the highest probability of interference in the cases studied.
- e. Other studies were performed on two kinds of land mobile wireless systems used by broadcasting utilities. One of these systems is used in one administration for monitoring of incoming signals 24 hours per day at base stations located at an altitude of up to 1 000 m. Additional interference due to MES transmissions in the presence of a waiting mode receiver may increase the number of times that the squelch is activated and decrease the lifetime of the squelch relay to some extent. Some MES transmissions may be too short to activate the squelch circuit.

At WRC-95 and WRC-97 limited regional and country footnote allocations to the non-GSO MSS were made in 454-456 MHz and 459-460 MHz. Although this was a useful first step, these bands must be converted to worldwide allocations for the non-GSO MSS to be viable for these global systems. Due to the shared nature of these uplink bands and the permissive sharing techniques employed by the non-GSO MSS systems, additional worldwide allocations are needed for service uplink bands. Additional bandwidth allocated to the MSS will insure that the non-GSO MSS systems will be able to find adequate channels, while maintaining a very low probability of interference to other systems sharing that spectrum.

**U.S. VIEW:** Additional worldwide allocations for shared non-GSO MSS uplink service use should be made at WRC-03. NVNG MSS < 1 GHz systems have proven their ability to share effectively in the 148.0-149.9 MHz band. Studies completed in the ITU-R Study Groups have further confirmed the ability of Little LEO systems to share service uplink channels with fixed and mobile systems in other frequency bands under similar conditions.

- Additional allocations for service uplink channels are urgently needed to maintain the viability of multiple non-GSO MSS systems due to the sharing of uplink frequencies with other services. For this reason, uplink channels are more urgently needed at this time than downlink service channels.
  - Numerous sharing studies have been done to support additional allocations. Studies on sharing with specific systems are planned for completion prior to WRC-03. (May 18, 2001)
-

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.21**

**WRC-2003 AGENDA ITEM 1.21:** to consider the progress of the ITU-R studies concerning the technical and regulatory requirements of terrestrial wireless interactive multimedia applications, in accordance with Resolution **737 (WRC-2000)** with a view to facilitating global harmonization;

**ISSUE:** What if any actions are needed by the ITU-R to facilitate the development of terrestrial wireless interactive multimedia?

**BACKGROUND:** At WRC-2000, a proposal from several European administrations indicated a desire to address spectrum for terrestrial wireless interactive multimedia applications. After much discussion, an agenda item was developed for WRC-03 to consider progress on the studies related to this issue. WRC-2000 also adopted Resolution **737**, which invites the ITU-R to: pursue studies to facilitate worldwide spectrum allocations or identifications for terrestrial wireless interactive multimedia technologies and applications, review the regulatory means to facilitate the worldwide harmonization of spectrum for terrestrial wireless interactive multimedia, and to review service definitions in the light of convergence of applications, if necessary.

WRC-2000 also decided that any allocation changes or regulatory work on this issue would be discussed at WRC-06.

Following WRC-2000, CPM-00 (CACE/186) decided to establish Joint Task Group 1-6-8-9 to address the technical and regulatory requirements of terrestrial wireless interactive multimedia applications as discussed in Resolution **737**. That group has met once (October 2000, Geneva), agreeing that its work should be focused on developing the draft CPM Report on agenda item 1.21 for WRC-03. Liaison statements asking for comment on the service, technical and regulatory aspects of terrestrial wireless interactive multimedia applications were developed for transmittal to the ITU-R groups working on related issues. Liaison statements are not due back to JTG 1-6-8-9 until its November 2001 meeting.

**U.S. VIEW:** WRC-2003 will consider the progress of ITU-R studies in response to agenda item 1.21 and the results will be reported to WRC-06, which will take any action required. (May 15, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.22**

**WRC-2000 AGENDA ITEM 1.22:** to consider progress of ITU-R studies concerning future development of IMT-2000 and systems beyond IMT-2000, in accordance with Resolution **228 (WRC-2000)**;

**ISSUE:** To study spectrum requirements and potential frequency range suitable for the future development of IMT-2000, enhancements of IMT-2000, and systems beyond IMT-2000, and in what time frame such spectrum would be needed.

**BACKGROUND:** WRC-2000 considered issues related to IMT-2000, resulting in the identification of additional spectrum for the terrestrial component of IMT-2000 in the Radio Regulations **S5.317A** and **S5.384A**. This spectrum was identified in addition to that identified for initial IMT-2000 deployment at WARC-92 in footnote **S5.388**. WRC-2000 also identified existing global MSS allocations as being available for use by the satellite component of IMT-2000, in accordance with Resolution **225**.

In Resolution **228 (WRC-2000)**, the ITU-R was invited to continue studies on overall objectives, applications and technical and operational implementation for the future development of IMT-2000 and system beyond. These requirements are to be reviewed by WRC-05/06, taking into consideration the results of ITU-R studies presented to WRC-03.

ITU-R Working Party 8F continues to work on issues relevant to WRC-03 agenda item 1.22. WP 8F will continue to develop a preliminary draft new recommendation (PDNR) on the vision and objectives for the ongoing enhancement of IMT-2000 and of systems beyond IMT-2000.

**U.S. VIEW:** WRC-2003 will consider the progress of ITU-R studies in response to agenda item 1.22 and the results will be reported to WRC-06, which will take any required action. (May 18, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.23**

**WRC-2003 Agenda Item 1.23:** to consider realignment of the allocations to the amateur, amateur-satellite and broadcasting services around 7 MHz on a worldwide basis, taking into account Recommendation 718 (WARC-92);

**ISSUE:** The need for a worldwide exclusive spectrum allocation for the amateur and amateur-satellite services in the three ITU Regions.

**BACKGROUND:** Before 1938 the amateur service was allocated 300 kHz, 7 000-7 300 kHz, on a worldwide basis. At the 1938 Cairo Conference, the 300 kHz was reduced to 150 kHz for Regions 1 and 3. The allocation was further reduced to 100 kHz for Regions 1 and 3 at the 1947 Atlantic City Conference. The 200 kHz from 7 100-7 300 kHz was reallocated to the broadcasting service on a primary basis for Regions 1 and 3 for broadcasting within those regions.

Although the amateurs in Region 2 retained a 300 kHz exclusive allocation, 7 000-7 300 kHz, they have to protect the broadcasting service in Regions 1 and 3 that were broadcasting to areas within Regions 1 and 3 (RR S5.142). In addition, certain country footnotes further limit the amateurs' allocation by assigning 7 000-7 050 kHz to the fixed service on a primary basis (RR S5.140 & S5.141).

WARC-92 agreed to Recommendation 718 (WARC-92) to consider realignment of the bands around 7 MHz at a future conference. An agenda item was eventually agreed for inclusion on the agenda for WRC-03.

As the only primary allocation to the amateur service between 4 and 14 MHz, the 7 MHz band is in heavy use 24 hours each day. During daylight hours, the band carries the bulk of amateur sky wave communication over distances of less than 1300 km. During the winter and during periods of low solar activity, and at other times when the maximum usable frequency (MUF) falls below 10 MHz, it must support the bulk of amateur intercontinental communication during the hours of darkness. As such, the amateur service is heavily dependent upon the 7 MHz band during natural disasters, when communications provided by radio amateurs may be the only means of maintaining critical communications links.

The requirement for at least a 300 kHz allocation is even greater today than in the past, owing to the increasing number of amateur stations and the expanding diversity of modes of emission used in the amateur service. However, the requirement is being met only in Region 2 and in certain countries in Regions 1 and 3 that permit their amateur stations to operate in the band 7 100-7 300 kHz under the provisions of Radio Regulation S4.4, and then only at those times (mostly during daylight hours) when broadcasting interference does not preclude full use of the band by amateur stations. In most countries in Regions 1 and 3, amateurs are limited to the portion of the band that is exclusively amateur, worldwide: 7 000-7 100 kHz.

Congestion in the amateur service is a significant problem and a return to the previous allocation of 300 kHz, worldwide, in the vicinity of 7 MHz is indicated (Res 641, Rev.HFBC-87).

**U.S. VIEW:** The United States supports the alignment of the bands around 7 MHz to eliminate the Regional differences between the allocations to the broadcasting service and the amateur services. The United States supports the allocation of a contiguous 300 kHz of spectrum around 7 MHz on a worldwide primary basis to the amateur services. The spectrum allocated on an exclusive basis to the maritime mobile, aeronautical mobile (OR), and aeronautical mobile (R) services should not be considered for any reallocation (September 18, 2001).

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.24**

**WRC-03 AGENDA ITEM 1.24:** to review the usage of the band 13.75-14 GHz, in accordance with Resolution **733 (WRC-2000)**, with a view to addressing sharing conditions;

**ISSUE:** To determine sharing conditions required by the fixed-satellite service (FSS), radionavigation, radiolocation, and space research services while taking into consideration:

- 1) the constraints in footnote **S5.502** regarding the minimum antenna diameter of geo-stationary orbit (GSO FSS) Earth stations and alternatives to those constraints,
- 2) review the e.i.r.p. for operation of radiolocation service,
- 3) the needs of the space research service per **S5.503**.

**BACKGROUND:** Prior to WRC-2000, footnote **S5.502** contained constraints such as, e.i.r.p. and antenna size limits on the fixed-satellite service and e.i.r.p. limits on the radiolocation service. Footnote **S5.503** contained e.i.r.p. limits on the fixed-satellite service to protect the space research service. These constraints were intended to accommodate a delicate sharing of the band among these services. These constraints were developed based upon the planned use of 13.75-14.0 GHz by gateway earth stations operating with geostationary satellites in the FSS, and were intended to limit the number of FSS earth stations to the point that sharing could occur, though a potential for interference from the limited number of earth stations would still exist. Since the time that the regulatory constraints were developed, GSO FSS operators have expressed interest in operating small earth stations. This is due to the increased requirement for broadband data services delivered to businesses, hospitals, schools, etc., in both rural and urban areas. Radiolocation operators have expressed interest in using higher than currently allowed e.i.r.p. values and the operators of data relay satellite networks are interested in extending the protected bandwidth centered at 13.775 GHz from 6 MHz to 10 MHz to satisfy International Space Station requirements. WRC-2000 modified footnotes **S5.502** and **S5.503** to include:

- within footnote **S5.502** that the protection of the receiving space stations in the FSS operating with earth stations that, individually, have an e.i.r.p. of less than 68 dBW shall not impose constraints on the operation of the radiolocation and radionavigation stations operating in accordance with the Radio Regulations.
- within footnote **S5.503** - that the e.i.r.p. density of emissions from any earth station in the FSS operating with a space station in the geostationary satellite orbit shall not exceed 71 dBW in the band 13.772 to 13.778 GHz until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band; that the e.i.r.p. density of emissions from any earth station in the FSS operating with a space station in non-geostationary satellite orbit shall not exceed 51 dBW in the band 13.772 to 13.778 GHz until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band.

A joint decision of Study Groups 4, 7 and 8 (Document CVC-11/9, dated 8 June 2000) established Joint Task Group 4-7-8 to carry out the studies under Resolution **733** on the sharing conditions in footnotes **S5.502** and **S5.503** with a view to review the minimum antenna diameter of GSO FSS Earth station's and the e.i.r.p. constraints of the radiolocation service.



ITU-R studies are in progress that will consider whether there is a technical or regulatory basis for implementing alternative sharing conditions taking into account the protection requirements of the radiolocation, space research and fixed satellite services.

**U.S. VIEW:** The U.S. is committed to the process initiated by Resolution **733 (WRC-2000)**. The U.S. will consider alternative sharing conditions based on the results of the JTG 4-7-8 studies, recognizing that existing services need to be protected. (May 31, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.25**

**WRC-2003 Agenda Item 1.25:** to consider, with a view to global harmonization to the greatest extent possible, having due regard to not constraining the development of other services, and in particular of the fixed service and the broadcasting-satellite service, regulatory provisions and possible identification of spectrum for high-density systems in the fixed-satellite service above 17.3 GHz, focusing particularly on frequency bands above 19.7 GHz;

**ISSUES:**

- Adoption of regulatory provisions and identification of certain fixed-satellite service (FSS) bands to facilitate high-density applications in the FSS (HDFSS).
- Taking account of existing and planned services and systems.

**BACKGROUND:** The demand for broadband services is increasing. Provision of these services by satellites to ubiquitously deployed user terminals provides an attractive, competitive alternative to terrestrial communication systems. Satellite systems typically require a much longer lead time than do terrestrial systems to develop and implement; therefore, some regulatory assurances that terminal deployment will be commercially viable are essential.

HDFSS means ubiquitous deployment of a large number of small FSS earth stations. This type of earth station deployment is not compatible either with site-by-site coordination between fixed service (FS) and HDFSS stations within a country, or with a regime in which an individual authorization is required for each earth station. Therefore, it is appropriate for administrations to authorize HDFSS earth stations under a class ("blanket") licensing policy. Identification of frequency bands for HDFSS or implementation of class licensing procedures does not eliminate the need for satellite network coordination in accordance with the ITU Radio Regulations (or applicable national regulations) or preclude FSS networks with other types of earth stations and characteristics. Nor does class licensing relieve an HDFSS network from the ITU requirements to coordinate with FS networks, where required, across international borders. This type of licensing or authorization regime does, however, greatly facilitate the early and efficient introduction of HDFSS earth stations, and hence HDFSS services, into a country.

Working Party 4-9S identified three possible candidate bands for HDFSS in the space-to-Earth direction that are not allocated to the FSS in that direction: 17.3-17.7 GHz, 21.4-22 GHz, and 47.2-50.2 GHz. Regarding the band 17.3 - 17.7 GHz, in all three Regions this is a planned band for BSS feeder links (Earth-to-space) (AP S30A). In Region 2, the FSS (Earth-to-space) allocation in this band is limited to GSO BSS feederlinks. Also, in Region 2, as per S5.517, an allocation to the BSS in the band 17.3-17.8 GHz shall come into effect on 1 April 2007. Radiolocation systems, including aeronautical systems, operate worldwide in the 17.3-17.8 GHz band (on a secondary basis). Furthermore, there is an agenda item (1.18) of WRC-03 to possibly introduce a primary FS allocation in the 17.3-17.7 GHz sub-band for Region 1. Regarding the band 21.4-22 GHz (space-to-Earth), numerous administrations in Region 2, including the U.S., utilize this band extensively for the fixed service for voice, data and video. Regarding the band 47.2-50.2 GHz (space-to-Earth), radio astronomy observations are made in the band 48.94-49.04 GHz (see S5.555). The receivers at the radio astronomy sites will be susceptible to interference from both in-band and adjacent band interference.

Many administrations, including the U.S., through national spectrum management regulations have developed or are developing rules that facilitate the deployment of HDFSS. In particular many administrations have implemented policies to allow HDFSS applications in the 29.5-30.0 GHz and

19.7-20.2 GHz bands, due to great demand for use of this band and the fact that there is no co-primary FS allocation in these bands in the ITU Table of Frequency Allocations. The bands 18.8-19.3 GHz/28.6-29.1 GHz have also been included for HDFSS in many countries. In the U.S., in order to facilitate HDFSS, the FCC has adopted rules that allow class (i.e., blanket) licensing of FSS terminals and has prohibited the use of FS in these bands. This policy eliminates the need to coordinate each FSS earth station with FS stations (except for transition periods when there is already use of FS in the band and near international borders). Moreover, the adoption of the U.S. rules takes into account existing and planned FSS operations in the bands 17.8-20.2 GHz with other types of earth stations and characteristics that are not subject to the class licensing procedures. In order to ensure compatibility with these networks, the FCC has required that their satellite licensees coordinate with these networks. Other administrations are currently in the process of determining how to appropriately provide for HDFSS services in their countries. Some of these administrations are looking to the ITU for guidance on spectrum management issues concerning the FS and HDFSS.

In the 37.5-50.2 GHz range, many administrations have submitted ITU filings for FSS systems in the bands 40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) and propose to use these bands for global HDFSS. WRC-00 advised administrations that may be contemplating HDFSS use of the bands 39.5-40 GHz and 40.5-42 GHz to take into account constraints to HDFSS due to the potential deployment of high-density applications in the FSS. Further, Resolution **84 (WRC-2000)** urges administrations considering regulatory provisions relating to the band 40-40.5 GHz to take into account that there were a number of proposals to WRC-2000 to identify the band for HDFSS applications.

**U.S VIEW:** The identification of appropriate frequency bands for high-density applications in the FSS, and the adoption of associated regulatory provisions to facilitate deployment of HDFSS earth terminals, can help administrations and HDFSS satellite system operators in their earth station deployment.

The U.S. objective of enabling HDFSS in specific bands will be pursued by identifying certain bands for use by high-density applications in the FSS within existing FSS allocations, while specifically recognizing the use of these bands by other FSS applications. For those administrations desiring to take advantage of the benefits of HDFSS, this would facilitate their adoption of national regulatory procedures, such as class (blanket) licensing of FSS earth stations, and provide justification for limiting deployment of FS in the applicable bands in view of the sharing difficulties, in order to facilitate the introduction of HDFSS earth stations. The U.S. is still examining the best means of identifying bands for HDFSS, whether within the Radio Regulations or by other means.

In reviewing bands above 17.3 GHz, the U.S. has developed the following specific preliminary views:

- The U.S. does not support the removal or addition of any allocations in the existing International Table of Frequency Allocations under WRC-03 agenda item 1.25. Specifically, the U.S. does not support identification of any bands for HDFSS that are not currently allocated to the FSS, in the indicated direction, including the bands 17.3-17.7 GHz (space-to-Earth), 21.4-22 GHz (space-to-Earth), and 47.2-50.2 GHz (space-to-Earth).
- Identification of spectrum for HDFSS does not eliminate the need for coordination between satellite networks or require the imposition, in the ITU Radio Regulations, of additional regulatory constraints on the FSS, (i.e., the current rights of GSO and non-GSO FSS systems should be maintained).

The U.S. supports identification of the following existing FSS frequency bands for HDFSS on a global basis, while specifically recognizing the use of these bands by other FSS applications:

- The bands 29.5-30.0 GHz and 19.7-20.2 GHz are allocated globally to the FSS in the Earth-to-space and space-to-Earth directions, respectively. There is no co-primary FS allocation in the ITU Table of Frequency Allocations in these bands.
- The bands 28.6-29.1 GHz and 18.8-19.3 GHz are allocated globally to the FSS in the Earth-to-space and space-to-Earth directions, respectively. Furthermore, these are the only bands where NGSO FSS systems are not required to protect every current and future GSO FSS system and therefore represent the best opportunity for ubiquitously deployed NGSO FSS user terminals.
- The bands 18.58-18.8 GHz, and 40-42 GHz (all space-to-Earth), and 28.35-28.6 GHz, 29.25-29.5 GHz and 48.2-50.2 GHz (all Earth-to-space), are also planned for use by many administrations for HDFSS applications.

The U.S. will continue to participate in ITU-R studies related to agenda item 1.25 and develop views on other frequency bands as appropriate. (June 11, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.26**

**WRC-2003 AGENDA ITEM 1.26:** To consider the provisions under which earth stations located on board vessels could operate in fixed satellite networks taking into account the ITU-R studies in response to Resolution **82 (WRC-2000)**.

**ISSUE:** What provisions (technical and/or regulatory) need to be added to the radio regulations in order for earth stations on board vessels (ESVs) to operate in FSS networks without causing interference to the other allocated services.

**BACKGROUND:** For several years some administrations have provided authorizations to operate ESVs under **S4.4** (non-interference basis) at ports, in territorial waters, and outside of territorial waters to a distance beyond which no coordination with terrestrial services is required. This has occurred even though the ship on which the ESV is located does not necessarily carry the flag of the administration that could receive interference.

WRC-2000 established provisions in Resolution **82** relating to ESVs operating in FSS networks in the bands 3.7-4.2 GHz and 5.925-6.425 GHz. In Resolution **82** provisional guidelines are included for use by administrations licensing ESVs and those affected in the establishment of bilateral or multilateral agreements. Resolution **82** also notes that ESVs may operate under **S4.4** in the absence of such agreements. Furthermore, Resolution **82** calls on the ITU-R to conduct several studies including methods for coordination (with terrestrial services), the minimum coordination distance and mitigation techniques including dual-band systems (operation in a band without terrestrial services such as 14 GHz) to avoid detailed coordination.

The CITEL-PCC-III has adopted Resolution **108** calling on member countries to address the ESV guidelines in Resolution **82 (WRC-2000)**.

Several actions are now underway in ITU-R study groups to develop recommendations related to this agenda item. These include:

- a. In Working Party 4A a recommendation is being developed on the Characteristics of ESVs.
- b. In Joint Working Party 4-9S several recommendations are being developed on methods to be used for achieving coordination with fixed stations when ESVs are in motion near the shore, including definition of a distance beyond which no coordination is necessary.

**PRELIMINARY VIEW:** The U.S. supports the current activity within the ITU-R to develop recommendations that can be used by administrations seeking to introduce earth stations on board vessels and to protect the existing services operating in accordance with the radio regulations. The U.S. believes that these recommendations can serve as the basis for reaching bilateral or multilateral agreements between the concerned administrations, recognizing the primacy of the radio services that are currently allocated in the bands under consideration.

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.27**

**WRC-2003 AGENDA ITEM 1.27:** to review, in accordance with Resolutions **540 (WRC-2000)** and **735 (WRC-2000)**, the ITU-R studies requested in those resolutions, and modify, as appropriate, the relevant regulatory procedures and associated sharing criteria contained in Appendices **S30** and **S30A** and in the associated provisions;

**ISSUE:** Resolution **540**, technical criteria and regulatory procedures associated with Appendices **S30/S30A** (BSS and Feederlink Plans). Resolution. **735**, regulatory, operational and technical studies in the bands allocated to the BSS and the FSS (Earth-to-space) or terrestrial services with respect to **S9.19**.

**BACKGROUND:** WRC-2000 adopted a new Regions 1 and 3 BSS 12 GHz Plan and associated feederlink Plan, based on updated technical parameters. In addition, regulatory and technical procedures for a new Regions 1 and 3 List were developed for the use of non-standard BSS parameters instead of allowing modifications to the Regions 1 and 3 Plan.

WRC-2000 also adopted new sharing criteria between some of the primary allocated services in the Appendix **S30** and **S30A** Plans.

Resolution **540** calls for the ITU-R to review:

- Changes made to regulatory procedures contained in Articles **4 - 7** of Appendices **S30** and **S30A** as well as related modifications made to Articles **S9** and **S11** and Appendix **S5**;
- Certain sharing criteria contained in parts of Annexes **1, 3, 4** and **6** of Appendix **S30** and, Annexes **1** and **4** of Appendix **S30A**;
- The limitations of Section **A3** of Annex **7** of Appendix **S30** in the context of any changes made to the sharing criteria discussed above.

Resolution **735 (WRC-2000)** calls for studies of sharing procedures and criteria between receiving earth stations in the broadcasting-satellite service and transmitting earth stations or terrestrial stations in frequency bands allocated to the broadcasting-satellite service and the fixed-satellite service (Earth-to-space) or to terrestrial services. There are also ongoing ITU-R studies to define the permissible pfd levels required at the edge of coverage of the BSS service area.

**U.S. VIEW:****Resolution 540**

Sharing criteria contained in Annexes **1, 3, 4** and **6** of Appendix **S30** and Annexes **1** and **4** of Appendix **S30A**, concerning inter-Regional and inter-Service sharing, need to be reviewed, and updated if necessary. Additionally, regulatory aspects contained in parts of Appendices **S30**, **S30A** and **S5** and Articles **S9** and **S11** need further review for consistency and completeness. Any changes to the above criteria must ensure protection of existing U.S. BSS and FSS systems and their ability to evolve in the future. The U.S. agrees with adopting criteria that eliminates unnecessary coordination between BSS systems and between BSS and FSS systems, while still protecting the Region 2 services.

The new pfd levels adopted at WRC-2000 for determining whether BSS systems impact terrestrial services do not need further study, this is consistent with invites ITU-R (1) of Resolution **540**.

The new pfd levels for Section 6 of Annex **1** to Appendix **S30** adopted at WRC-2000 for inter-regional sharing (Region 2 BSS modifications to protect the Regions 1 and 3 FSS and for Regions 1 and 3 List

modifications to protect the Region 2 FSS), currently contained in Annex 1 to Resolution 540 (WRC-2000), are sufficient and should not be modified. The U.S. supports including these pfd limits in Section 6 of Annex 1 of Appendix S30.

Region 2 accepted a relaxation in the orbital arc limitations of Annex 7 at WRC-2000 to allow more BSS assignments in the Regions 1 and 3 Plan and the List. The U.S. considers that any further relaxation will unduly impact the ability of Region 2 to fully use their allocation.

The U.S. will review the Bureau's findings on the impact of the Regions 1 and 3 Plan and List assignments on the BSS and other services in Region 2 when available. The principle on which the replan took place (that the Region 2 Plan should be protected) must be continued.

**Resolution 735**

Under S9.19, terrestrial stations coordinate with unplanned BSS, the threshold/condition in APS4 is bandwidth overlap and PFD of the terrestrial station at the edge of the BSS service area exceeding permissible levels. For ubiquitous BSS receivers, it is not practicable to coordinate on a specific earth station basis; therefore, BSS receive earth stations should be protected on a service area basis consistent with the existing Radio Regulations. (May 18, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.28**

**WRC-2003 AGENDA ITEM 1.28:** to permit the use of the band 108-117.975 MHz for the transmission of radionavigation satellite differential correction signals by ICAO standard ground-based systems.

**ISSUE:** Provision for the transmission of ICAO standard augmentation systems supporting aids to air navigation and any directly associated ground-based facilities in the band 108-117.975 MHz.

**BACKGROUND:** An aviation requirement has emerged for the transmission of differential correction (augmentation) data for the Global Navigation Satellite System (GNSS), to be used by aircraft receivers to satisfy the stringent accuracy and integrity requirements for GNSS applications. Following ICAO studies, the new ground-based augmentation systems (GBAS) are planned to operate in the present VOR/ILS band at 108-117.975 MHz (initially, 112-117.975 MHz).

The band is currently allocated to the aeronautical radionavigation service used for ILS localizer and VOR stations. It has been argued that GBAS does not fall within the definition of a radionavigation service. Therefore a new provision in the allocation table is needed to allow the transmission of GNSS augmentation data.

Compatibility and frequency planning criteria for the VOR/ILS and the new service are being developed by ICAO.

**U.S. VIEW:** If ICAO determines that it is feasible to operate ICAO standardized aids to air navigation and any directly associated ground-based facilities in the 108-177.975 MHz band and that no harmful interference will be caused to ILS localizer or VOR stations operating in the band, the U.S. would support regulatory provisions that would permit their use of the band for these systems on a worldwide basis.

Provision for these systems to operate in the band 108-117.975 MHz would be with the understanding that they will not impose any further restrictions on broadcast stations operating in the FM broadcast bands below 108 MHz (see ITU-R Recommendation IS.1009). (May 31, 2001)



**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.29A**

**WRC-2003 AGENDA ITEM 1.29A:** to consider the results of studies related to Resolutions **136 [COM5/3] (WRC-2000)** and **78 [COM5/23] (WRC-2000)** dealing with sharing between non-GSO and GSO systems;

**ISSUE (Resolution 136):** Frequency sharing in the range 37.5-50.2 GHz between GSO and non-GSO FSS networks.

**BACKGROUND:** Both GSO FSS and non-GSO FSS systems are planned for operation within the 37.5-42.5 GHz and 47.2-50.2 GHz bands. FSS systems based on the use of new technologies associated with both geostationary and non-geostationary orbits are capable of providing the most isolated regions of the world with high capacity and low-cost means of communications. WRC-2000 took several steps toward harmonized use of the band 37.5-42.5 GHz by fixed and space services. The band 37.5-42.5 GHz is now allocated to the FSS (space-to-Earth) on a primary basis in all three ITU Regions.

WRC-2000 adopted, in Article **S21**, power flux-density (pfd) limits on GSO and non-GSO FSS space stations in the bands 37.5-40 GHz and 40.5-42.5 GHz in order to protect terrestrial services. The new limits are provisional, and are subject to review under Resolution **84 [COM5/28] (WRC-2000)** at WRC-2003. The pfd limits vary between different band segments, and between geostationary and non-geostationary systems within each band segment, and will have to be taken into consideration when addressing sharing between GSO and non-GSO FSS systems in those band segments. WRC-2000 also adopted, in Article **S21**, pfd limits on GSO and non-GSO space research satellites in the 37-38 GHz band. The U.S. does not believe that this agenda item is intended to consider pfd for space research. The limits for space research for the 37-38 GHz band are adequate and should be left unchanged.

Sharing studies between GSO FSS networks and non-GSO FSS systems in the frequency range 37.5-50.2 GHz are underway taking into account the significant propagation losses at these frequencies, duration of interference events, differences in planned earth station antenna sizes, availability requirements, potential mitigation techniques such as polarization isolation, and the pfd limits in Article **S21**. Sharing between GSO FSS and non-GSO FSS systems in this range is currently regulated under **S22.2** of the Radio Regulations, which provides that “[n]on-geostationary-satellite systems shall not cause unacceptable interference to geostationary-satellite systems in the fixed-satellite service and the broadcasting-satellite service operating in accordance with these Regulations.”

In Resolution **130 (WRC-97)**, WRC-97 recognized that “the diverging interpretations arising from **S22.2** result in an ambiguous regulatory status for both existing and future GSO and non-GSO systems in the FSS in the bands where this provision applies, with consequential risks for both types of systems.” Because there has been little or no deployment of satellite systems to date in the band 37.5-50.2 GHz, WRC-2000 recognized in Resolution **136 (WRC-2000)** that both GSO FSS and non-GSO FSS operators should be expected to exhibit flexibility in achieving the appropriate balance in the sharing environment, and urged administrations, in the application of Article **S22** to their GSO and non-GSO FSS systems in this range prior to WRC-03, to seek balanced sharing arrangements. Resolution **136** invites the ITU-R to undertake the appropriate technical, operational, and regulatory studies on sharing arrangements which achieve an appropriate balance between GSO FSS networks and non-GSO FSS systems in the 37.5-50.2 GHz frequency range.

**U.S. VIEW:** The development of sharing criteria between GSO and non-GSO FSS systems in the 37.5-50.2 GHz range should, notwithstanding the current applicability of No. **S22.2**, seek a balanced sharing arrangement between these two types of systems. Nevertheless, a first-come/first-served regime (e.g., **S9.11A**) without appropriate technical standards is insufficient. (May 25, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.29B**

**WRC-2003 AGENDA ITEM 1.29B:** to consider the results of studies related to Resolution 78[COM5/23] (WRC-2000) dealing with sharing between non-GSO and GSO systems.

**ISSUES:** Resolution 78 (WRC-2000), *Development of procedures in case the operational or additional operational limits in Article S22 are exceeded*, invites the ITU-R to undertake the appropriate regulatory studies to develop procedures in cases where the operational  $\text{epfd}_{\downarrow}$  limits in the bands 10.7-12.75 GHz, 17.8-18.6 GHz, and 19.7-20.2 GHz or the single-entry additional operational  $\text{epfd}_{\downarrow}$  limits for 3 and 10 meter antennas in the 10.7-12.75 GHz band are exceeded at an operational GSO earth station.

**BACKGROUND:** WRC-2000 adopted a combination of single-entry validation, operational and, for 3 and 10 meter antennas in the 10.7-12.75 GHz band, single-entry additional operational  $\text{epfd}_{\downarrow}$  limits contained in Article S22, along with the aggregate  $\text{epfd}_{\downarrow}$  limits in Resolution 76 (WRC-2000), which apply to non-GSO FSS systems to protect GSO networks in the bands 10.7-12.75 GHz, 17.8-18.6 GHz, and 19.7-20.2 GHz. The operational  $\text{epfd}_{\downarrow}$  limits were adopted to protect *operational* GSO FSS networks from interference levels that may result in loss of synchronization, or loss of capacity, or severe degradation in performance.

Compliance with the operational  $\text{epfd}_{\downarrow}$  and additional operational  $\text{epfd}_{\downarrow}$  limits is not subject to verification by the ITU-BR but by individual administrations. In the case of operational  $\text{epfd}_{\downarrow}$  limits, verification would be made by measurement conducted by administrations and/or their GSO system operators. A commitment by the administration (and their non-GSO operator) that the system filed will meet the additional operational  $\text{epfd}_{\downarrow}$  limits is part of the Appendix S4 coordination data. A non-GSO system causing interference must reduce its  $\text{epfd}_{\downarrow}$  power levels towards the affected GSO earth station to meet the single-entry operational  $\text{epfd}_{\downarrow}$  limits unless otherwise agreed by the concerned administrations. The ITU-R has identified the need for specific procedures that correct in the most expeditious manner any cases where the operational  $\text{epfd}_{\downarrow}$  (see Tables S22-4A through S22-4C) or additional operational  $\text{epfd}_{\downarrow}$  limits (see Table S22-4A1) are exceeded, by the inclusion of appropriate procedures in the Radio Regulations.

The U.S. supports the development of ITU-R recommendations such as the preliminary draft new recommendation concerning Methodologies for measuring  $\text{epfd}_{\downarrow}$  interference levels from a non-GSO space station to verify compliance with operational  $\text{epfd}_{\downarrow}$  limits (WP 4A Chairman's Report 4A/93, TEMP/42), preliminary draft new recommendation on estimating the accuracy of the  $\text{epfd}_{\downarrow}$  measurements (WP 4A Chairman's Report 4A/93, TEMP/28) and the draft new recommendation concerning Procedure for the identification of non-GSO satellites causing interference into an operating GSO earth station approved during the September 2000 WP 4A meeting. These recommendations provide the methodologies needed by administrations and/or their GSO system operators to assess operational  $\text{epfd}_{\downarrow}$  levels and were requested in resolves 1 of Resolution 137 (WRC-2000).

**U.S. VIEW:**

- 1) The U.S. recognizes the need to correct in an expeditious manner any cases where the single-entry operational or additional operational limits in Section II of Article S22 are exceeded. The U.S. continues to evaluate the following options in case the single-entry operational or additional operational limits in Section II of Article S22 are exceeded:

- a) Use of the guidelines contained in Annex 1 to Resolution **78 (WRC-2000)**, without modification.
  - b) Use of the guidelines contained in Annex 1 to Resolution **78 (WRC-2000)**, with modification.
  - c) Rely on the current procedure contained in Section V of Article **S15** of the Radio Regulations for Reports of Infringements.
- 2) The U.S. will identify a preferred alternative after evaluating the key issues identified by Working Party 4A (4A/TEMP/115) as requiring resolution before establishing the procedures. (May 31, 2001)
-

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.30A**

**WRC-2003 AGENDA ITEM 1.30A:** to consider possible changes to the procedures for the advance publication, coordination and notification of satellite networks in response to Resolution **86** (Minneapolis, 1998)

**ISSUE A: Coordination-Arc Approach** - Potential modifications to Articles **S9** and **S11** of the Radio Regulations (RR) and associated appendices to the RR (e.g., Appendix **S4**) with respect to the coordination-arc approach.

**BACKGROUND:** Resolution **86** (Minneapolis, 1998) resolves to request WRC-2000 and subsequent WRCs to continually review and update the advance publication, coordination and notification procedures, including the associated technical characteristics, and the related Appendices of the Radio Regulations, so as to ensure that they reflect the latest technologies, as well as to achieve additional simplification and cost savings for the Radiocommunication Bureau and administrations.

Pursuant to proposals under Resolution **86** for simplification, WRC-2000 implemented a coordination-arc approach to replace the Appendix **S8** ( $\Delta T/T$ ) coordination threshold, in certain FSS frequency bands, in determining which administrations and networks are affected by a network entering the coordination phase. The coordination-arc approach affects certain 6/4, 14/11, and 30/20 GHz FSS bands. The determination of the need for coordination between GSO FSS networks is based on coordination arcs of  $\pm 10$  degrees, in the bands 3 400-4 200 MHz, 5 725-5 850 MHz (Region 1) and 5 850-6 725 MHz,  $\pm 9$  degrees in the bands 10.95-11.2 GHz, 11.45-11.7 GHz, 11.7-12.2 GHz (Region 2), 12.2-12.5 GHz (Region 3), 12.5-12.75 GHz (Regions 1 and 3), 12.7-12.75 GHz (Region 2), and 13.75-14.5 GHz, and  $\pm 8$  degrees in the bands 17.7-20.2 GHz and 27.5-30.0 GHz about the nominal orbital positions of those networks. An administration may request that a co-frequency GSO FSS satellite network outside the coordination arc be included in coordination when the administration can demonstrate by analysis that the increase in the system noise due to the proposed network ( $\Delta T/T$ ) exceeds 6%. A co-frequency GSO FSS satellite network within the coordination arc may also be excluded from the coordination when the increase in system noise to the network is less than 6%. Although it is unlikely that WRC-03 will see an expansion of the coordination-arc concept to FSS other bands without agreement on the arcs within Study Group (SG) 4, there may be proposals to expand the arc concept to other bands.

**U.S. VIEW:** The coordination-arc approach should be limited to the frequency bands identified by WRC-2000 unless SG4 comes to an agreement on additional specific FSS bands where the coordination-arc concept is warranted, and develops appropriate coordination arcs for these bands. The effectiveness of the coordination arc approach in improving satellite network coordination procedures should be demonstrated before expanding the concept to other bands. (May 18, 2001)

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.30B**

**WRC-2003 AGENDA ITEM 1.30B:** to consider possible changes to the procedures for the advance publication, coordination and notification of satellite networks in response to Resolution **86 (Minneapolis, 1998)**;

**ISSUE [b]: Reduction of Data Requirements** - Potential modifications to Articles **S9** and **S11** of the Radio Regulations (RR) and associated appendices to the RR (e.g., Appendix **S4**) with respect to the amount and type of information submitted to the Radiocommunication Bureau for coordination and notification.

**BACKGROUND:** Resolution **86 (Minneapolis, 1998)** resolves to request WRC-2000 and subsequent WRCs to continually review and update the advance publication, coordination and notification procedures, including the associated technical characteristics, and the related Appendices of the Radio Regulations, so as to ensure that they reflect the latest technologies, as well as to achieve additional simplification and cost savings for the Radiocommunication Bureau and administrations.

There is still a 32-month backlog for ITU publication of coordination special sections for satellite networks. WRC-2003 may see proposals to simplify the RR procedures to speed up processing of coordination requests. There has been a proposal within WP4A such that a minimum amount of information would be sent to the BR for coordination. The WP4A proposal may proceed successfully through the Study Group process and become a proposal to WRC-2003.

The idea of the WP4A proposal is to submit to the Bureau only the data for the most interfering links and the links most sensitive to interference. This minimum amount of information is all that is needed by the BR to determine affected administrations or for other administrations to determine whether they need to be brought into the coordination procedure. However, in practice administrations need information in greater detail to effect coordination. Furthermore, it may be difficult to identify the most interfering and most sensitive carriers since the carrier parameters of the satellite to which interference is caused or from which interference is received, the modulation type, and channel plan may need to be taken into account.

Some satellite operators have found it difficult to obtain clarification on network characteristics prior to coordinations. Reductions in the mandatory Appendix **S4** coordination/notification information (**ApS4/II**) would make it even more difficult to perform the necessary interference analysis resulting in operators not being fully prepared for coordination discussions/meetings.

There are other means to simplify the data solely by not requiring redundant information. Information in the current Appendix **S4** filings is essentially repeated one or more times for the same network (e.g., for each polarization and for each beam) where the information is identical. Significantly reformatting the Appendix **S4** data to reduce repetition could lead to a need to modify the ITU software for capturing, validating and storing the data.

**U.S. VIEW:** Any reduction in mandatory Appendix **S4** coordination/notification information (**ApS4/II**) should be approached cautiously so that information essential to interference analyses is not eliminated. Additionally, any reduction in the **ApS4/II** data should not inadvertently eliminate administrations or networks for which coordination would be required under the existing Radio Regulations and Appendix **S4**. The benefits from simplifying or reformatting the Appendix **S4** data to reduce repetition should be carefully weighed against the potential cost of consequential modifications to the ITU software for capturing, validating and storing the data. Elimination of redundant information could be acceptable with appropriate cross-references. (May 17, 2001)

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.30C**

**WRC-2003 Agenda Item 1.30[c]:** to consider possible changes to the procedures for the advance publication, coordination and notification of satellite networks in response to Resolution **86** (Minneapolis, 1998);

**ISSUE [c]: Reduction of Data Requirements** - Potential modifications to Articles **S9** and **S11** of the Radio Regulations (RR) and associated appendices to the RR (*e.g.*, Appendix **S4**) with respect to the amount and type of information submitted to the Radiocommunication Bureau for coordination and notification.

**BACKGROUND:** Resolution **86 (Minneapolis, 1998)** resolves to request WRC-2000 and subsequent WRCs to continually review and update the advance publication, coordination and notification procedures, including the associated technical characteristics, and the related Appendices of the Radio Regulations, so as to ensure that they reflect the latest technologies, as well as to achieve additional simplification and cost savings for the Radiocommunication Bureau and administrations.

There is still a 32-month backlog for ITU publication of coordination special sections for satellite networks. WRC-03 may see proposals to simplify the RR procedures to speed up processing of coordination requests. There is ongoing work in WP4A related to proposed simplification of filings. WP4A is addressing the restructuring of the data to be supplied in notices to the ITU as well as suggesting amendments to Appendix S4 that would require certain data only for most interfering and most sensitive carriers and provision of e.i.r.p. instead of input power to antennas. The re-structuring and the amendments to Appendix **S4** are closely linked. The current WP4A studies cover certain congested FSS bands only, with the intention of expanding ultimately to remaining FSS bands and other services. The WP4A work may be reflected in the CPM 2002 report.

**U.S. VIEW:** The U.S. is in favor of simplification of filings for coordination and notification. Any reduction in mandatory Appendix **S4** coordination/notification information (**ApS4/II**) should be such that information essential to interference analyses is not eliminated. Additionally, any reduction in the **ApS4/II** data should not inadvertently eliminate administrations/networks for which coordination would be required under the existing Radio Regulations and Appendix **S4**. The benefits from simplifying or reformatting the Appendix **S4** data to reduce repetition should be carefully weighed against the potential cost of consequential modifications to the ITU software for capturing, validating and storing the data. Elimination of redundant information is encouraged. (*February 4, 2002*)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.31A**

**WRC-2003 AGENDA ITEM 1.31A:** to consider the additional allocations to the mobile-satellite service in the 1-3 GHz band, in accordance with **Resolutions 226 (WRC-2000)** and **227 (WRC-2000)**;

**ISSUE:** Allocations to MSS (space-to-Earth) in the 1 518-1 525 MHz band

**BACKGROUND:** WRC-2000 considered proposals for an allocation to the mobile-satellite service (MSS) (space-to-Earth) in Regions 1 and 3 in the frequency band 1 518-1 525 MHz. This band is adjacent to the 1 515-1 559 MHz band in use by GSO MSS operators. An earlier proposal, using the 1 559-1 567 MHz band considered in response to Resolution **220 (WRC-97)**, was dismissed by WRC-2000 and this band will not be considered further for MSS use.

The frequency band 1 492-1 525 MHz is allocated to the MSS (space-to-Earth) in Region 2 on a primary basis, except in the United States where, as an alternative allocation, the band 1 452-1 525 MHz is allocated to the fixed and mobile services on a primary basis under the provisions of No. **S5.344**. No. **S5.343** gives priority in Region 2 to the aeronautical mobile service for telemetry over other uses by the mobile services. There has been no MSS implemented in the 1 492-1 525 MHz band due to the incompatibility between aeronautical telemetry and MSS systems.

In Regions 1 and 3, 1 518-1 525 MHz is allocated to the fixed service on a primary basis, to the mobile service on a primary basis in Region 3, and to the mobile, except aeronautical mobile, service on a primary basis in Region 1. In a number of countries in Region 1, 1 429-1 535 MHz is allocated to the aeronautical mobile service on a primary basis exclusively for the purposes of aeronautical telemetry within their national territories under the provisions of No. **S5.342**.

WRC-2000 concluded in Resolution 226 that the proposed allocation to the MSS (space-to-Earth) at 1 518-1 525 MHz due to their potentially widespread emissions upon the Earth from either geostationary or non-geostationary systems, could have an impact on the terrestrial mobile service, including aeronautical mobile and aeronautical mobile telemetry, in all three Regions. Resolution 226 also states there is a need to review the pfd values in Appendix **S5** in order to ensure that they are adequate to protect new point-to-multipoint systems operating in the fixed service in the band, as well as, a need to study sharing between the MSS and aeronautical mobile telemetry in all the Regions in the band.

Recommendation ITU-R M.1459 gives the values needed for protection of the aeronautical mobile service for telemetry systems in the 1 452-1 525 MHz band from geostationary satellites operating in the MSS. The required separation distances between co-frequency telemetry and MSS operations are very large, making the feasibility use of the 1 518-1 525 MHz band by MSS anywhere in the world questionable.

**U.S. VIEW:** Use of the 1 518 to 1 525 MHz band for MSS is incompatible with aeronautical telemetry and other services in the band. Therefore, new allocations to MSS should not be made in this frequency band and consideration should be given to removing the MSS allocation in Region 2. (May 31, 2001)



**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.31B**

**WRC-2003 AGENDA ITEM 1.31B:** to consider the additional allocations to the mobile-satellite service in the 1-3 GHz band, in accordance with Resolutions **226 (WRC-2000)** and **227 (WRC-2000)**;

**ISSUE:** Allocations to MSS (Earth-to-space) in the band 1 683-1 690 MHz

**BACKGROUND:** WRC-2000 considered proposals for worldwide allocation of the band 1 683-1 690 MHz to the MSS (Earth-to-space) in response to Resolution **213 (WRC-95)**. The frequency band 1 675-1 710 MHz is allocated to the MSS (Earth-to-space) in Region 2 on a co-primary basis. However, the 1 683-1 690 MHz is mainly used by the meteorological-satellite (MetSat) and meteorological aids (MetAids) services. While there are only a limited number of main MetSat earth stations operating in this band in all three Regions, there are a large number of MetSat earth stations operating in Regions 2 and 3, and the locations of many of these stations are unknown. Sharing between MetSat and MSS in the band 1 675-1 690 MHz is feasible only if appropriate separation distances are maintained.

Sharing between MetSat and MSS may not be feasible in those countries where a large number of MetSat stations are deployed. Recommendation ITU-R **SA.1158-2** indicates that additional studies are required in order to determine the criteria for coordination between MSS and the MetSat service for GVAR/S-VISSR stations operated in the band 1 683-1 690 MHz in Regions 2 and 3.

Other spectrum identified in Resolution **213** included 1 690-1 710 MHz, however, it has been concluded in the ITU-R that co-channel sharing between MSS and MetAids is not feasible and that co-frequency sharing between MetAids and MetSat services is not feasible. WMO has identified future spectrum requirements for MetAids operations as limited to the 1 675-1 683 MHz portion of the 1 675-1 700 MHz band, but some administrations will continue to require spectrum in the range 1 683-1 690 MHz for MetAids operations.

The existing Region 2 allocation includes the provision that MSS operation should not constrain current and future development of the MetSat service, as specified in No. **S5.377**. No MSS services have been implemented under the Region 2 allocation in this band.

Resolution **227** invites the ITU-R to complete technical and operational studies on the feasibility of sharing between MSS and MetSat, by determining appropriate separation distances between mobile earth stations and MetSat stations, including GVAR/S-VISSR stations, in the band 1 683-1 690 MHz, (Recommendation ITU-R **SA.1158-2**); and to assess the current and future spectrum requirements of the MetAids service, taking into account improved characteristics, and of the MetSat service in the band 1 683-1 690 MHz, taking into account future developments.

**U.S. VIEW:** MSS is not compatible with existing services in the 1 683-1 690 MHz band and no additional MSS allocations should be made in this band. Consideration should be given to removing the Region 2 allocation for MSS in this band. (May 22, 2001)

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.32A**

**WRC-2003 AGENDA ITEM 1.32A:** to consider technical and regulatory provisions concerning the band 37.5 - 43.5 GHz, in accordance with Resolutions **128 (Rev. WRC-2000)** and **84 (WRC-2000)**;

**ISSUES:** Adequacy of provisional limits on power flux-density (PFD) produced into the radio astronomy (RA) service band at 42.5 - 43.5 GHz by non-GSO satellites operating in the space-to-Earth direction in the fixed-satellite service (FSS) or broadcasting-satellite service (BSS) in the band 41.5 - 42.5 GHz, and by GSO FSS or BSS satellites operating in the space-to-Earth direction in the band 42.0 - 42.5 GHz.

Identification of technical and operational measures that FSS/BSS satellite networks can take to protect RA operations in the 42.5 - 43.5 GHz band, and of measures that may be implemented by RA service users to reduce the susceptibility of stations in the RA service to harmful interference.

**BACKGROUND:** The band 42.5 - 43.5 GHz is allocated to the RA service on a co-primary basis, while the frequency bands immediately below 42.5 GHz are allocated to the FSS and BSS (both space-to-Earth) on a co-primary basis with each other and with terrestrial services. To protect operating RA stations, WRC-2000 established a new footnote **S5.551G**, which contains a provisional PFD limit - not to exceed  $-167 \text{ dB(W/m}^2\text{)}$  in any 1 MHz band at the site of a radio astronomy station for more than 2% of the time - on emissions produced into the 42.5 - 43.5 GHz band by non-GSO FSS or BSS systems operating in the 41.5 - 42.5 GHz band. A similar limit was imposed on emissions that GSO FSS or BSS satellites operating in the 42.0 - 42.5 GHz band may produce at the sites of RA stations operating in the 42.5 - 43.5 GHz band.

Pursuant to Resolution **128 (Rev. WRC-2000)**, the ITU-R is to conduct studies to review these provisional PFD limits; to identify technical and operational measures in the band 41.5 - 42.5 GHz, including possible mitigation techniques to protect RA operations; and to propose measures that may be implemented to reduce the susceptibility of stations in the RA to harmful interference.

**U.S. VIEWS:** For agenda item 1.32a, protection should be provided for RA sites from emissions produced into the 42.5 - 43.5 GHz band by non-GSO FSS and BSS satellites operating in the 41.5 - 42.5 GHz band, as well as from GSO FSS or BSS satellites operating in the 42.0 - 42.5 GHz band. For the protection of RA from FSS, a guardband of 500 MHz appears to be adequate, in conjunction with the provisional limits in footnote **S5.551G**. (May 21, 2001)

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.32B**

**WRC-2003 AGENDA ITEM 1.32B:** to consider technical and regulatory provisions concerning the band 37.5 - 43.5 GHz, in accordance with Resolutions **128 (Rev. WRC-2000)** and **84 (WRC-2000)**.

**ISSUES:**

1. How to achieve the successful co-existence of the fixed service (FS) (including high-density applications in the FS), the fixed-satellite service (FSS) (including high-density applications in the FSS), the mobile-satellite service (“MSS”) and the broadcasting-satellite service (BSS) within the 37.5 - 42.5 GHz frequency range.
2. How to ensure that FSS satellites that operate in clear sky conditions in the 37.5 - 40.0 GHz and 42.0 - 42.5 GHz bands at reduced power flux-density (PFD) levels use downlink fade compensation to overcome fading conditions in the least intrusive way practicable.
3. How to ensure that ubiquitously-deployed FSS terminals in the 40.0 – 42.0 GHz band will be protected from interference caused by co-frequency FS transmitters.

**BACKGROUND:** Various segments of the 37.5 - 43.5 GHz band are allocated to the FS, FSS, BSS and MSS on a co-primary basis. Segments of this band are being used or planned for high-density applications in the FS (“HDFS”), and other segments of the band are planned for deployment of high-density applications in the FSS (“HDFSS”). Co-frequency sharing is not feasible between HDFS and HDFSS systems, but sharing situations where only one of the services operates with ubiquitously deployed small terminals may be practicable.

Significant actions were taken at WRC-2000 with respect to the 37.5 - 43.5 GHz band:

1. A framework for a comprehensive sharing arrangement for terrestrial and satellite services in the 37.5 - 43.5 GHz band was established, based on each service using some portions of the band more intensively than others.
  - (a) The 40.5 - 42.5 GHz band allocation for FSS was harmonized across all three ITU Regions.
  - (b) The 37.5 - 40.0 GHz and the 40.5 - 43.5 GHz bands, among others, were identified for HDFS applications in footnote **S5.547**, noting the potential deployment of HDFSS applications in the bands 39.5 - 40.0 GHz and 40.5 - 42.0 GHz and the constraints such deployments may impose on use by HDFS.
  - (c) PFD limits were established in Article **S21** (Table **S21-4**) for the FSS (space-to-Earth) in the bands 37.5 - 40.0 GHz and 42.0 - 42.5 GHz, and for the MSS (space-to-Earth) in the band 39.5 - 40.0 GHz, which are favorable to high-density applications in the FS, but which also permit “gateway”-type FSS operations. The PFD limits in the bands 40.0 - 40.5 GHz and 40.5 - 42.0 GHz are favorable for high-density applications in the FSS.
  - (d) In the bands 37.5 – 40.0 GHz and 42.0 - 42.5 GHz, footnote **S5.551AA** provides that non-GSO FSS systems should employ power control or other methods of downlink fade compensation, on

the order of 10 dB, to reduce the level of interference to the FS while ensuring that the satellite systems are at power levels required to meet the desired link performance.

- (e) With regard to the consideration of regulatory provisions for the band 40.0 - 40.5 GHz, Administrations were urged to take into account that WRC-2000 received a number of proposals to identify the band 40.0 - 40.5 GHz for high-density applications in the FSS.
  - (f) ITU-R is to study criteria and techniques to address interference from transmitters of FS into earth station receivers in high-density applications in the FSS in the bands 39.5 - 40.0 GHz and 40.5 - 42.0 GHz intended to operate in the same geographic area.
  - (g) WRC-2000 established provisional PFD limits on BSS satellites in the band 40.5 - 42.5 GHz and requested the ITU-R to study technical and operational characteristics of BSS and to review the provisional PFD limits.
2. HDFS deployments in the 37.0 - 40.0 GHz band in ITU Region 2 were provisionally afforded greater protection from interference from FSS systems than they are in ITU Regions 1 and 3. In Region 2, prior to WRC-03, before an Administration brings into use a frequency assignment for a GSO FSS network in the 37.5 - 40.0 GHz band, it shall seek the agreement of any Administration in Region 2 on whose territory the PFD produced exceeds the values in Table S21-4 minus 12 dB.
  3. ITU-R is to conduct studies to determine whether the PFDs in Article S21 in the bands 37.5 - 40.0 GHz and 42.0 - 42.5 GHz will adequately protect the FS from FSS and MSS transmissions (39.5 - 40.0 GHz only), taking into account the need to ensure a proper balance in terms of the impact on both the FS and space services sharing the same band.
  4. ITU-R is to conduct studies to determine whether the PFDs in Article S21 in the band 40.5 - 42.0 GHz band will adequately protect systems in the FS, taking into account the requirements of the FSS and recognizing that some Administrations plan to deploy FSS systems using ubiquitous very small aperture terminals in the 39.5 - 42.0 GHz band.
  5. In the bands 37.5 - 40.0 GHz and 42.0 - 42.5 GHz, ITU-R is to study the nominal clear sky PFD levels, and the percentage of time during which they may be exceeded to overcome fading conditions for FSS, in order to protect the FS while permitting operation of FSS using coordinated large antennas.
  6. ITU-R is to study the use of mitigation techniques to improve sharing conditions between the space services and FS systems, taking account of the impact on systems of all affected services.
  7. WRC-2000 also adopted, in Article S21, pfd limits on GSO and non-GSO space research satellites in the 37 - 38 GHz band. The U.S. does not believe that this agenda item is intended to reconsider pfd for space research. The limits for space research in the 37-38 GHz band are adequate and should be left unchanged.

**U.S. VIEWS:** The U.S. continues to fully support the comprehensive sharing arrangement that the CITEL countries took into WRC-2000. This approach is equitable, and allows the competing needs of the FS and the FSS in the 37.5 - 43.5 GHz band to be satisfied.

The unique characteristics of some HDFS networks in the 37.5 - 40.0 GHz band, which include links across a very wide range of elevation angles, makes them much more sensitive to satellite downlink interference than more traditional FS networks or HDFS networks with smaller concentrations of high elevation angle links. The PFD limits established in Article **S21** (Table **S21-4**) for the FSS (space-to-Earth) in the bands 37.5 - 40.0 GHz and 42.0 - 42.5 GHz, and for the MSS (space-to-Earth) in the band 39.5 - 40.0 GHz should be maintained, and should be used for validation purposes. When GSO and non-GSO satellites operate in these bands under clear-sky conditions, their operational PFD levels should be reduced to the levels in Table **S21-4** minus 12 dB.

The U.S. supports a policy that allows FSS satellites operating at the nominal clear-sky levels (Table **S21-4** minus 12 dB) under clear-sky conditions in the bands 37.5 - 40.0 GHz and 42.0 - 42.5 GHz to increase PFD by up to 12 dB to compensate for fading conditions between the satellite and one or more geographically separated Earth stations. The U.S. is currently participating in ITU-R studies that will determine the appropriate percentage(s) of time during which satellite networks and systems will need to use downlink fade compensation, and any associated conditions that are appropriate to minimize the impact of such use on affected HDFS links.

The PFD limits in the bands 37.5 - 40.0 GHz and 42.0 - 42.5 GHz should still be adequate to permit “gateway” type FSS operations. FS operations in the 40.0 - 42.0 GHz band should be able to be accommodated subject to constraints that would be imposed due to deployment of high-density applications in the FSS. (May 21, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.33**

**WRC-2000 AGENDA ITEM 1.33:** to review and revise technical, operational and regulatory provisions, including provisional limits in relation to the operation of high altitude platform stations within IMT-2000 in the bands referred to in No. **S5.388A**, in response to Resolution **221 (WRC-2000)**;

**ISSUE:** Resolution **221** asks for additional technical, operational and regulatory studies to be conducted in order to review and, if necessary, revise the provisional pfd limits. Resolution **221** also asks for consideration of appropriate regulatory and technical provisions to allow bilateral coordination of HAPS in IMT-2000 systems with affected neighboring administrations.

**BACKGROUND:** Provisions for operation of HAPS were originally made at WRC-97, for HAPS providing FS operations in the 47.2-47.5 GHz and 47.9-48.2 GHz bands (**S5.552A**). A definition of HAPS was also added to **S1.66A**. The use of HAPS as base stations to provide terrestrial IMT-2000 was considered at WRC-2000, resulting in provisions to facilitate this being added to the Radio Regulations **S5.388A**. In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz and, in Region 2, the bands 1 885-1 980 and 2 110-2 160 MHz may be used by high altitude platform stations. The use of HAPS as base stations within the terrestrial component of IMT-2000 is optional for administrations and does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution **221** resolves that HAPS shall not exceed provisional co-channel power flux-density limits to protect IMT-2000 stations in neighboring countries and provisional out-of-band power flux-density limits to protect fixed stations.

Additional ITU-R study is needed to consider compatibility of HAPS within IMT-2000 with some other services that share portions of these bands on a co-primary basis. Studies are also needed on the compatibility of HAPS within IMT-2000 with MMDS in the 2150-2160 MHz band in Region 2. Therefore, the impact of the provisional limits on the operation of MMDS systems is not clear at this time.

**U.S VIEW:** Introduction of HAPS in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3, and the bands 1 885-1 980 and 2 110-2 160 MHz in Region 2, shall not impose constraints upon existing primary allocated services in these bands. Depending upon the results of the ITU-R studies, new procedures and/or revisions to the provisional PFD limits may need to be incorporated in the Radio Regulations to allow for the coordination, with neighboring Administrations, of a HAPS platform operating as a base station. (May 16, 2001)

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.34**

**WRC-2003 Agenda Item 1.34:** to review the results of studies in response to Resolution **539 (WRC-2000)** concerning threshold values for non-GSO BSS (sound) in the band 2 630-2 655, and to take actions as required.

**ISSUE:** Should the provisional PFD thresholds for non-GSO BSS (sound) networks in Resolution **539** be made permanent or modified?

**BACKGROUND:** This agenda item was prompted by the provisions of footnote **S5.418** adopted at WARC-92 and modified at WRC-2000, and by actions taken at WRC-2000 that identified the band 2 500-2 690 MHz as an additional band for IMT-2000 systems. The referenced footnote provides for BSS (sound) systems in the band 2 630-2 655 MHz in the countries listed in the footnote\*, and exempts such type of systems from the PFD limits indicated in Table S21-4 of the Radio Regulations for BSS and FSS networks.

Resolution **539** addresses the use of the 2 630-2 655 MHz band by non-GSO BSS (sound) systems in Region 3 countries and, among other things, establishes provisional PFD threshold levels for such systems. Although agenda item 1.34 is limited to threshold values for non-GSO BSS (sound) systems in the band 2 630-2 655 MHz, invites 2 of Resolution **539** also refers to the band 2 535-2 655 MHz, which could impact other services. At least one Region 3 administrations is proposing a non-GSO BSS (sound) system in the 2 630-2 655 MHz band; other administrations either operate or are proposing GSO BSS systems in the 2 35-2 655 MHz band.

The lead group for development of CPM text is WP 6S (BSS). A very interested contributing group is WP 8F (IMT-2000). WP 6S has established Special Rapporteur Group (SRG) 6S/11 to prepare a report on the technical sharing issue, *i.e.*, the values of the PFD thresholds. There have been a number of technical contributions to SRG 6S/11 concerning this agenda item. In WP-8F meetings there has been particular disagreement between satellite and IMT-2000 advocates over what I/N value should be used as a protection criterion. In many countries, including the United States, studies are being performed to determine the appropriate bands for the implementation of IMT-2000. There are a number of incumbent services in this band that need to have continued access to the spectrum. For example, in the United States today there exists extensive ITFS, MMDS and two-way internet access systems.

**U.S. VIEW:**

1. The United States recognizes the need for a thorough analysis, and review at WRC-03 of the PFD threshold values for Region 3 non-GSO BSS (sound) systems operating in the band 2630-2655 MHz, and that the result should not place undue constraints on either terrestrial or non-GSO-BSS (sound) systems.
2. The United States recognizes the right of individual administrations to determine the use of this allocation within its territory.

---

\* Bangladesh, Belarus, Korea (Rep of), India, Japan, Pakistan, Singapore, Sri Lanka and Thailand.

3. The United States will participate in the work of WP 6S to ensure that its output is consistent with our existing and planned uses of the band. (October 16, 2001)
-



**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.35**

**WRC-2003 AGENDA ITEM 1.35:** to consider the report of the Director of the Radiocommunication Bureau on the results of the analysis in accordance with Resolution **53(Rev.WRC-2000)** and take appropriate action

**ISSUE:** Whether to incorporate into the Radio Regulations at WRC-2003 the results of the Resolution **53**-mandated analysis of incompatibilities between assignments in the WRC-2000 revision of the Regions 1 and 3 BSS/feeder link Plan and assignments in the Region 2 BSS/feeder link Plan as well as assignments in other services having primary allocations in the bands used for the Regions 1 and 3 Plan.

**BACKGROUND:** Regions 1 and 3 adopted new BSS and associated feeder link Plans for Regions 1 and 3 at WRC-2000 and also adopted new criteria and methodologies for calculating the compatibility of these Plans with the Region 2 BSS and feeder link Plans and with other services having primary allocations in the Plan bands in all three Regions. However, except for "existing" and "Part B" systems, the entries in the new Regions 1 and 3 Plans were not analyzed during WRC-2000 to determine whether they presented any inter-service and/or inter-Regional incompatibilities, especially with assignments in other services that had not been fully processed at the time of WRC-2000. Therefore, symbols were included in the "Remarks" column of the Regions 1 and 3 Plans to identify potential incompatibilities, both in terms of causing interference and receiving interference. The task of analyzing these potential incompatibilities after WRC-2000 was assigned to the Bureau by Resolution **53 (Rev.WRC-2000)**. Agenda item 1.35 calls upon WRC-2003 to review the results of the Bureau's analyses, as reported by the Director, and take appropriate action.

To fully understand the issues presented by this agenda item, it is first necessary to understand what Resolution **53** calls upon the Bureau and administrations to do in order to obtain the results, which the Director is to report to WRC-2003.

To begin with, Resolution **53 (Rev.WRC-2000)** resolves "that the Bureau, using the methodology and criteria adopted at this conference (i.e., WRC-2000) shall complete the required analyses based on the following notes explaining the nature of the "Remarks" column entries: Notes 3 to 7 in Section 9A.2 of Article **9A** of Appendix **S30A** and notes 5 to 8 in Section 11.2 of Article **11** of Appendix **S30**." Article **11** is the BSS Plan for Regions 1 and 3, and Article **9A** is the corresponding feeder link Plan. Certain of the assignments in these Plans have a numbered "note" in the remarks column of the Plan. These notes specify either the conditions under which the assignment in question can be brought into use (e.g., note 5 for Article **11**) or identify the other assignments from which it cannot claim protection (e.g., notes 6, 7, and 8 for Article **11**).

Resolution **53** also resolves that the Bureau shall publish, after the Conference, the results of its analyses together with its related conclusions, in a Circular Letter, and that, once this Circular Letter has been sent, administrations will have 120 days to decide whether they wish to continue appearing in the remarks as "affected or affecting administrations". No reply is taken as agreement to continue appearing. An affecting administration may request deletion but only with the agreement of the corresponding affected administration. After the 120 day period has expired, the Bureau will publish the final list of administrations to be included in the remarks column in a further Circular Letter. The coordination requirements identified in this Circular Letter then apply until the remarks are included in the Radio Regulations by a competent Conference. Finally, Resolution **53** instructs the Director of the BR to include the results of the Bureau's analyses of the remarks in his report to the next world radiocommunication conference.

There are thus two pre-conference action items. The first which must be dealt with in the 120 days following publication of the Bureau's first Circular Letter is to determine whether the "Remarks" contained in this Circular Letter correctly reflect which assignments in the Regions 1 and 3 Plans affect, or are affected by, assignments to services (BSS, FSS, and terrestrial) of interest. Within that 120 - day period, Administrations must notify the Bureau of any changes that are necessary, either to correct errors in the Bureau's analyses or to reflect coordination agreements with "affected" administrations in cases where it can be deleted as an "affecting" administration.

The second action item arises after the Bureau has reviewed its analyses in the light of requests from administrations and has published its second Circular Letter with the final list of "Remarks" and the Director has issued his report to the WRC-2003 Conference. Administrations must then review this Circular Letter and the Director's Report and decide on the extent to which it can accept incorporation of the proposed remarks into the Radio Regulations at WRC-2003.

It should be noted that, in order to allow time to complete its processing of the backlog of systems against which the compatibility of the Regions 1 and 3 Plans will be calculated, i.e., systems received by the Bureau prior to 12 May 2000, the Bureau Plans to wait until 2002 to begin its analyses. This means that the first of the two Circular Letters mandated by Resolution **53** may not be available before summer 2002.

**U.S. VIEW:** The U.S. can support incorporation into the Radio Regulations at WRC-2003 of the Remarks on the Regions 1 and 3 BSS and feeder link Plans to be proposed in the second of the two Circular Letters referred to in Resolution **53(Rev.WRC-2000)** provided that, in advance of WRC-2003, these Remarks have been validated in the manner described in the background section above. (May 18, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.36**

**WRC-2003 Agenda Item 1.36:** to examine the adequacy of the frequency allocations for HF broadcasting from about 4 MHz to 10 MHz taking into account the seasonal planning procedures adopted by WRC-97;

**ISSUE:** To determine the amount of additional spectrum required by the broadcasting service in the lower portion of the HF spectrum and likely bands within the 4–10 MHz band where an allocation might be made.

**BACKGROUND:** 790 kHz of additional spectrum were allocated at WARC-92 to the HF broadcasting service. Of this amount, only 200 kHz were allocated in frequencies below 10 MHz. Frequencies below 10 MHz are the most desirable, for propagation reasons, for many circuit applications, particularly during the several years of low sunspot activity. The problem of broadcast channel demand in excess of that which is available below 10 MHz is restated at the seasonal planning coordination meetings that precede every 6-month HF broadcasting schedule development. Necessary compromises reached at these coordination meetings, recognizing the inadequacy of the spectrum available, result in interference among the broadcasts that are assigned the limited frequencies below 10 MHz. Furthermore, many broadcasters are forced to use higher frequencies (above 10 MHz) where poorer propagation conditions result in lower than desired signal quality in the planned coverage areas.

Therefore, after WARC-92, broadcasters proposed an agenda item to deal with this problem. However, this item was not placed in an agenda until WRC-03.

Any additional allocation for HF broadcasting will impact on the fixed service, either by removing the allocation over a period of time or permitting some level of sharing between the services. This assumes that the studies on capacity vs. demand, etc. that will be completed for inclusion in the CPM-02 report show a clear inadequacy of the existing HF broadcasting service allocations in the HF bands below 10 MHz.

Agenda Item 1.23, on alignment of the amateur/amateur-satellite and broadcasting services around 7 MHz, might be considered to be a “subset” of this agenda item.

**U.S. VIEW:**

1. The United States recognizes that there is a concern among HF broadcasters that they are prevented from providing a good quality service under many propagation conditions because there is an undersupply of spectrum for the broadcasting service in the bands below 10 MHz. Thus, the United States agrees with the need for a thorough study of the consequences of the current situation, augmented with projections of future use of HF bands for broadcasting. There should be a clear set of findings from this study of the maximum amount of spectrum desired, as well as what can be accomplished with lesser amounts, including the consequence if no new spectrum.
2. Concomitantly, the United States believes that study work is required on the current situation and projections of the use of the 4–10 MHz spectral region for the other services that have allocations there.

3. Furthermore, the United States believes that the bands allocated on an exclusive basis to the maritime mobile, aeronautical mobile (OR), and aeronautical mobile (R) services should not be considered for any reallocation. (September 18, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.37**

**WRC-2003 AGENDA ITEM 1.37:** to consider the regulatory and technical provisions for satellite networks using highly elliptical orbits;

**ISSUES:**

1. Categorization of highly elliptical orbits (HEOs) as a type of non-GSO and definition of the technical and operational parameters of satellite networks/systems using these orbits.
2. Sharing between non-GSO systems using HEOs and circular orbit non-GSOs, such as low earth orbit (LEO) and medium earth orbit (MEO) systems, including mitigation techniques and coordination criteria.
3. Sharing between non-GSO systems using HEOs and GSO networks in bands where the epfd limits in Article S22 do not apply.

**BACKGROUND:** The ITU-R has been considering the sharing aspects of HEO satellite systems (occasionally referred to as “quasi-geostationary” systems) in a number of contexts over the last several years. Several existing study questions within the ITU-R address this type of system, and sharing among non-GSO FSS systems (including HEO non-GSO FSS systems) is currently being studied under the terms of Resolution 137 (WRC-2000).

A subcategory of non-GSO systems, HEO systems are intended for operation or are already operational in several FSS bands above 3 GHz, as well as in BSS (sound) bands at around 2 GHz. In certain configurations, HEO systems offer promise in terms of their ability to facilitate the introduction of large numbers of such co-frequency non-GSO FSS systems, as well as in terms of their potential ability to co-exist successfully with GSO networks and terrestrial systems.

To date, several categories of non-GSO orbits that are encompassed within the term “highly elliptical” have been identified within the ITU-R. The characteristics of HEO systems are under evaluation, as is the ability of the various HEO systems to share with each other, with other types of non-GSO systems, with GSO systems (at least in bands outside of the bands where equivalent power-flux density (epfd) limits were adopted by WRC-2000 for the non-GSO FSS/GSO FSS and non-GSO FSS/GSO BSS sharing cases), and with terrestrial services. Much of the study activity to date has focused on HEO-type non-GSO FSS systems, but there is no question that space services other than the fixed-satellite service use or plan to use non-GSO systems in HEO orbits.

**U.S. VIEW:**

1. The U.S. favors the identification of mitigation techniques and sharing criteria which may facilitate coordination between and successful co-frequency operation of non-GSO FSS systems, including HEOs.
2. Satellite networks using HEOs should continue to be considered as non-GSOs. These networks should continue to be considered to have the same regulatory standing as other types of non-GSOs, such as MEOs and LEOs.
3. ITU-R studies on sharing between non-GSO systems using HEOs and GSO networks should continue, especially in bands for which epfd limits were not adopted by WRC-2000, to ensure the protection of GSO FSS and GSO BSS networks from non-GSO FSS systems.

4. Understanding of the results of studies being conducted for WRC-03 agenda item 1.37 will be improved by the use of common definitions in ITU-R Recommendations. There is, however, no need to modify the terms and definitions in the Radio Regulations to accommodate HEO-type non-GSO operations. (May 25, 2001)
-

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.38**

**WRC-2003 AGENDA ITEM 1.38:** to consider provision of up to 6 MHz of frequency spectrum to the Earth exploration-satellite service (active) in the frequency band 420-470 MHz, in accordance with Resolution 727 (Rev.WRC-2000);

**ISSUE:** Use of the frequency band 420-470 MHz by the earth exploration-satellite (active) service (Resolution 727 (Rev.WRC-2000))

**BACKGROUND:** A similar agenda item was debated at WRC-97 resulting in a decision not to adopt proposed allocations for the Earth exploration-satellite service in the 420-470 MHz band. The Earth sensing community has identified that the need for such an allocation, at a radio spectrum wavelength of approximately one meter, is important because experiments have shown good correlation of backscatter radiation with biomass and soil moisture, which are parameters needed for forest monitoring. The need for such forest monitoring was emphasized at the United Nations Conference on Economic Development (UNCED) (Buenos Aires - 1992). Subsequent to UNCED 1992, studies have identified a minimum bandwidth requirement of 6 MHz to satisfy mission objectives.

Studies to date have shown the potential for interference between EESS (active) sensors and ground-based radars when in the line of sight of the ground-based radars. Preliminary studies have also shown that there is a potential for interference from EESS (active) to airborne radars operating worldwide.

The amateur community is concerned with the possibility of harmful interference to amateur operations in the 430-440 MHz portion of the band. There are currently 16 amateur satellites in orbit that use frequencies within the band 435-438 MHz for both up and down links internationally.

The band 430–440 MHz is allocated to the amateur service on a co-primary basis in Region 1, and on a primary basis in eight Region 2 countries: Argentina, Colombia, Costa Rica, Cuba, Guyana, Honduras, Panama and Venezuela (No. **S5.278**). Elsewhere in Region 2 and in Region 3, the amateur service allocation is secondary. Additionally, the bands 420–430 MHz and 440–450 MHz are allocated to the amateur service on a secondary basis in Australia, the United States, Jamaica and the Philippines (No.**S5.270**).

The band 420-450 MHz is also allocated to the radiolocation service on a primary basis and is used for telemetry, telecommand and long-range surveillance by land, ship and airborne stations for early missile warning, detection of low-observable targets, and the tracking of all objects in Earth orbit. The band 450-470 MHz is used by the Fixed, Mobile and Mobile-Satellite services.

Studies to date have shown the potential for interference between EESS (active) sensors, and amateur stations when the SAR is in the line of sight of amateur stations, and specifically in the band 435-438 MHz, which would be the worst-case scenario for the amateurs.

**U.S. VIEW:** The U.S. opposes this allocation unless a) it can be shown that EESS (active) sensors would not cause harmful interference to radiolocation systems in the 420-450 MHz band and b) it can be shown that the EESS (active) sensors do not cause harmful interference to amateur systems and stations in the 420-450 MHz band. Due to existing use by the fixed, mobile and mobile-satellite services, the U.S. does not consider the 450-470 MHz band to be a viable option based on studies in the ITU-R. (May 17, 2001)

---



**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 1.39**

**WRC-2003 AGENDA ITEM 1.39:** to examine the spectrum requirements in the fixed-satellite service bands below 17 GHz for telemetry, tracking and telecommand of fixed-satellite service networks operating with service links in the frequency bands above 17 GHz;

**ISSUE:** Spectrum requirements for space operations in fixed-satellite service (FSS) bands below 17 GHz for telemetry, tracking and telecommand (TT&C) of FSS networks operating with service links in the frequency bands above 17 GHz.

**BACKGROUND:** Propagation conditions and spectrum availability are of primary consideration when implementing TT&C subsystems, which must meet high reliability criteria. Some systems utilize the existing Space Operation Service allocations (all of which are below 3 GHz) for TT&C while others use part of the FSS band allocations to perform this function (FSS (space-to-Earth) for space telemetry and tracking carriers, FSS (Earth-to-space) for telecommand).

Many advance publication and coordination notices for GSO and non-GSO systems in the FSS bands above 17 GHz have been received by the BR. Many of these systems propose use of bands below 17 GHz for TT&C operation, and filed accordingly. Under the ITU regulatory structure, FSS satellites systems may use any FSS allocation to perform TT&C functions.

WRC-2000 established an agenda item 1.39 for WRC-03 to examine the spectrum requirements in the FSS bands below 17 GHz for TT&C operation of FSS networks operating with service links in the frequency bands above 17 GHz. Transmissions above 17 GHz experience higher free-space and rain attenuation losses than those below 17 GHz. The U.S. is participating in the technical studies being performed in Working Party (WP) 4A and WP 4B in response to agenda item 1.39. These studies are investigating, among other things, the reliability and availability requirements of TT&C systems operating with service links in frequency bands above 17 GHz.

**U.S VIEW:** Once the ITU-R studies are completed, the U.S. can make a recommendation, if needed, regarding how the TT&C requirements for FSS systems operating above 17 GHz can best be satisfied, while keeping in mind the necessary reliability and flexibility needed for FSS systems to perform TT&C operations. (May 23, 2001)

---

**UNITED STATES PRELIMINARY VIEW FOR WRC-03 AGENDA ITEM 2**

**WRC-2003 AGENDA ITEM 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-2000)**, 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-2000)**;

**ISSUE:** Incorporation by reference.

**BACKGROUND:** A number of provisions of the Radio Regulations make reference to specific ITU-R Recommendations. As these referenced ITU-R Recommendations are updated at future meetings, it is then necessary for WRCs to review the corresponding Radio Regulations to see if the references they contain should be revised to reflect the new version. WRC-2000 revised the process of incorporation by reference and narrowed the purview of the standing agenda item. **Resolution 27 (Rev.WRC-2000)** contains principles and procedures for use of incorporation by reference in the Radio Regulations. As revised by Istanbul, proposals to clarify the status of references (*i.e.*, whether mandatory or non-mandatory) or to add wholly new references may only be considered where relevant to a specific substantive WRC agenda item. **Resolution 28 (Rev.WRC-2000)** directs WRCs to review ITU-R Recommendations incorporated by reference in the Radio Regulations that have been revised during the elapsed study period (based on the list to be provided by the Radiocommunication Assembly). To facilitate this task, the Director is instructed to present to the CPM prior to the WRC an initial list of those recommendations incorporated by reference that have been, or are likely to be, revised in time for the WRC.

**U.S. VIEW:** WRC-2003 should follow the incorporation by reference process in **Resolutions 27 and 28 (Rev.WRC-2000)**. It should, in accordance with **Resolution 28**, review those revised ITU-R Recommendations listed by the Director to the CPM and communicated by the Radiocommunication Assembly to the WRC to determine whether the updated version should be incorporated by reference in the Radio Regulations in place of the previous version. (May 17, 2001)