For Agenda

RCS - 1760_2

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

APR 30 2004

Mr. Donald Abelson
Chief, International Bureau
Federal Communications Commission
445 12th Street, S. W.
Washington, D. C. 20554

Dear Mr. Abelson:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch Agencies, wishes to bring to your attention a set of recently approved draft preliminary Executive Branch views considering federal agency inputs toward the development of U. S. Preliminary views for WRC-2007.

The enclosure is forwarded for review by the Commission. Jim Vorhies of my staff is the primary contact for NTIA.

Sincerely,

Fredrick R. Wentland
Associate Administrator
Office of Spectrum Management

Enclosure

Radio Conference Subcommittee (RCS)

Preparation for ITU Radiocommunication Conferences

UNITED STATES

DRAFT PRELIMINARY VIEWS ON WRC-07

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

ISSUE: Resolution **746 (WRC-03)**, "Issues dealing with allocations to science services", contains the following two issues:

1. possible additional 100 MHz for geostationary meteorological satellites operating in the space-to-Earth direction extending the current 18.1-18.3 GHz geostationary meteorological satellites allocation to 300 MHz of contiguous spectrum;

2. consideration of the sharing conditions between the EESS (passive) and the SRS (passive) on one hand and the fixed and mobile services on the other hand in the band 10.6-10.68 GHz to determine appropriate sharing criteria and to consider the inclusion of such sharing criteria within the Radio Regulations;

and Resolution **742 (WRC-03)**, "Use of the frequency band 36-37 GHz" deals with;

3. consideration of sharing criteria between the passive services and the fixed and mobile services in the band 36-37 GHz to determine appropriate sharing criteria and to consider the possible inclusion of such sharing criteria within the Radio Regulations.

BACKGROUND: A primary allocation to the geostationary meteorological satellite (space-to-Earth) exists in the band 18.1-18.3 GHz in RR No. **5.519**. However, Resolution **746** recognizes that the bandwidth requirements for transmission of data from high-resolution sensors on the next generation geostationary meteorological satellites to be launched in the time-frame 2015 to 2020 are in excess of 200 MHz. Therefore, an extension to the existing 200 MHz allocation by 100 MHz within the band 18-18.4 GHz is being considered. The band 18-18.4 GHz is allocated to the fixed, fixed-satellite and mobile services. Sharing studies are needed to determine if such an extension to the existing allocation is feasible and have begun within the ITU-R. One fact that could facilitate sharing in an extension band is that the number of earth stations that would be deployed to support these meteorological satellites will be low (on the order of five per Region). The United States makes significant use of both the fixed and the fixed-satellite services in the 18-18.4 GHz band and these services would need to be protected.

The frequency band 10.6-10.68 GHz is allocated to the Earth exploration-satellite service (EESS) (passive), radio astronomy and space research (passive) services on a primary basis. This band is also allocated to the mobile (except aeronautical mobile) and the fixed services on a primary basis, taking into account RR No. **5.482**. Passive sensing of Earth and its atmosphere has been done using this band for many years. It is an important resource for remote sensing of such things as rain, snow, sea state, ocean wind, and soil moisture content and is often used in conjunction with a

number of other passive sensing bands to extract such data. The United States flies a variety of scientific spacecraft with instruments that utilize this band. However, the United States also makes extensive use of this band for the fixed service. Furthermore, footnote RR **5.482** already places power and e.i.r.p. restrictions on the fixed and mobile services. Therefore it may be difficult to alter the current sharing conditions without placing undue constraints on the terrestrial services in this band.

The frequency band 36-37 GHz is allocated to the Earth exploration-satellite (passive), the space research (passive), the fixed and the mobile services on a primary basis. Passive sensing of the Earth and its atmosphere has been done using this band for many years. It is an important resource for remote sensing of such things as rain rates, snow, sea ice and clouds and is often used in conjunction with a number of other passive sensing bands to extract such data. The United States flies a variety of scientific and meteorological spacecraft with instruments that utilize this band.

Resolution **742** calls for sharing studies between EESS (passive) and the fixed and mobile services in the band 36-37 GHz to determine appropriate sharing criteria for this band. It should be noted that the EESS (passive) protection criteria are contained in Recommendation ITU-R SA.1029-2 and that Recommendation ITU-R F.758-2 provides characteristics of fixed service point-to-multipoint systems operating in the band 36-37 GHz, but does not provide information on characteristics of fixed service point-to-point systems operating in this band. Furthermore, the band 36-37 GHz is not available for high-density applications in the fixed service as stipulated in RR No. **5.547**. Due to the sensitivity and applications of passive radiometers used in remote sensing, the EESS (passive) operating in the band 36-37 GHz could receive interference from the emissions of systems of these active services. There is no current use of the band in the United States by the fixed or mobile services. However, determination of appropriate sharing criteria should not place undue constraints on the future use of the band by the fixed and mobile services.

U.S. VIEW: The United States supports the study of the possible extension to the existing geostationary meteorological-satellite service allocation within the 18-18.4 GHz band. If studies show that sharing is feasible without placing undue constraints on the incumbent services, the United States could support such an extension for high data rate transmission from future meteorological satellites. If supported at WRC-07, the existing footnote **5.519** could be modified to show the geostationary meteorological-satellite service allocation within the 18-18.4 GHz band or the table of allocations could be modified to show the allocation and footnote **5.519** would be modified to show only the limitation of the meteorological-satellite service allocation to geostationary orbits. Concerning the 10.6-10.68 GHz band, while the United States supports studying the sharing conditions in this band, it is skeptical about altering the current sharing conditions given the existence of RR No. **5.482**. Any proposed alteration of the existing sharing conditions would have to be examined with respect to their possible impact on the current operation of the fixed service in this band. Finally, the United States supports studies to determine the appropriate sharing conditions between the EESS (passive) and the fixed and mobile services in the band 36-37 GHz. However, implementation of any constraints on these terrestrial services would have to be evaluated with respect to the future operations of such services in this band. (April 30, 2004).

Radio Conference Subcommittee (RCS)

Preparation for ITU Radiocommunication Conferences

DRAFT PRELIMINARY VIEW FOR WRC-07

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

ISSUE: Resolution **747(WRC-03)** further resolves that, taking into account the results of ITU-R studies, WRC-07 consider:

1 the upgrading of the radiolocation service to a primary allocation in the bands 9 000-9 200 MHz and 9 300-9 500 MHz; and

2 the possible extension by up to 200 MHz of the allocation in the band 9 500-9 800 MHz to the EESS (active) and the space research service (active),

These allocations must ensure the protection of the incumbent services already allocated to these bands.

BACKGROUND: There is a need to provide contiguous spectrum in the bands around 9 GHz for the radiolocation service allocated on a primary basis worldwide, in order to provide adequate spectrum for new radar systems to function. Emerging requirements for increased image resolution and increased range accuracy necessitate wider contiguous emission bandwidths than are currently available. Therefore, there is a need to upgrade the status of frequency allocations to the radiolocation service in the frequency range 9 000-9 200 MHz and 9 300-9 500 MHz in order for existing and planned radar systems to satisfy their required missions.

The bands 9 000-9 200 MHz and 9 300-9 500 MHz are allocated on a primary basis to Aeronautical radionavigation and Radionavigation, respectively. While radionavigation is recognized as a safety service as delineated in No. **4.10** of the Radio Regulations, radiolocation services have demonstrated compatible operations with radionavigation services in the bands 9 000-9 200 MHz and 9 300-9 500 MHz over many years through the use of similar system characteristics such as low-duty cycle emissions and scanning beams as well as interference reduction techniques. Previous and ongoing studies within the ITU-R addressing other frequency bands indicate that sharing in the bands 9 000-9 200 MHz and 9 300-9 500 MHz between the radionavigation and radiolocation services is likely to be feasible. It should be noted that Recommendation ITU-R M.1313 contains the technical characteristics and protection criteria for maritime radars in the band 9 300-9 500 MHz and that Recommendation ITU-R M.1372 identifies interference reduction techniques which enhance compatibility among radar systems. Further study is ongoing within the ITU-R to confirm the compatibility between the radiolocation and radionavigation services in these bands.

The band 9 500-9 800 MHz is allocated on a primary basis to the Earth exploration-satellite (EESS) (active), space research (active), radiolocation and radionavigation services, taking into account the

constraints of footnote **5.476A**. The allocation of this band to the EESS (active) and SRS (active) was decided by WRC-97 largely based on studies that were completed in ITU-R Joint Working Party 7-8R. In order to satisfy global environmental monitoring requirements for improved resolution, EESS (active) and the space research service (active) allocations require an increase by up to 200 MHz. There are plans to enhance synthetic aperture radars (SAR) that operate near 9.6 GHz to improve the spatial resolution to the order of 1 meter, which would require up to 500 MHz bandwidth. This additional bandwidth would greatly improve the resolution of the features for global monitoring and for environmental and land-use purposes.

Previous ITU-R studies have resulted in a number of pertinent Recommendations. Recommendation ITU-R SA.516 indicates the general feasibility of sharing between the EESS (active) and the radiolocation service for active sensors. Recommendation ITU-R SA.1166 contains the technical characteristics and protection criteria for Earth sensors operating near 9 500 MHz. Finally, Recommendation ITU-R SA.1280 addresses the selection of active spaceborne sensor emission characteristics to mitigate the potential for interference to terrestrial radars operating in frequency bands 1-10 GHz. Further study is ongoing to confirm the compatibility between EESS (active), SRS (active) and the incumbent services in the possible extension bands around 9 500-9 800 MHz.

U.S. VIEW: While there is a long history of successful co-band operations between radiolocation and radionavigation systems near 9 GHz, new systems may not necessarily be compatible with existing systems. Therefore, the United States supports measurement tests and ITU-R studies to verify the feasibility of sharing in these bands. If the outcome of these measurements and studies is favorable, the United States anticipates supporting the allocation upgrades for radiolocation. However, it is the position of the United States that there would also need to be regulatory text in the form of a footnote to protect aeronautical radionavigation and radionavigation systems so that there will be no constraints on ARNS/RNS use in these bands, regardless of the outcome of the studies. Concerning the possible extension to the EES and SRS allocations, the United States could support such an extension provided that there is a favorable outcome from the sharing studies and that the incumbent services are protected. Some regulatory text in the form of one or more applicable footnotes may be necessary to ensure such protection. (April 9, 2004)

Radio Conference Subcommittee (RCS)

Preparation for ITU Radiocommunication Conferences

UNITED STATES

DRAFT PRELIMINARY VIEWS ON WRC-07

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

ISSUE: The actions associated with this agenda item include; additional applications for advanced wireless services beyond those identified for IMT-2000 systems, the spectrum requirements associated with these requirements, and candidate bands where these requirements may be satisfied. The primary issue from these actions will be the availability of the required spectrum and the impact to incumbent users.

BACKGROUND: WRC-2000 and prior WRCs, identified 749 MHz of spectrum for terrestrial IMT-2000. During the period between WRC-2000 and WRC-03, the ITU continued its work on the radio interface technology standards and future market requirements. WRC-03 did not identify new spectrum, however there was an expectation at the conference that new spectrum would be required for systems beyond IMT-2000. WP8F is studying new market and service requirements and additional spectrum needs. Upon completion of these studies, WP8F will select candidate bands and conduct sharing studies with existing services.

U.S. VIEW: Before an agreement can be reached on additional bands to be identified for systems beyond IMT-2000, the bandwidth requirements must be fully agreed in the ITU-R and the bands chosen must be available for use. The bandwidth requirements must consider, in as realistic fashion as possible, the expected future applications and demand for these applications. In addition, the availability of existing bands for IMT-2000 and beyond must be included. The bands identified for these future applications must also be available for use globally and/or regionally. Available for use implies that sharing can be accomplished with existing users or the incumbents can be accommodated in an equitable fashion. For systems beyond IMT-2000, proponents must demonstrate that the spectrum already allocated for their use is insufficient and that *X* amount of spectrum is required to meet their future requirement for *Y* years. While a global solution is preferred, regional solutions are appropriate for resolution at an ITU level. National solutions should not drive the work in identifying these bands. (April 30, 2004)

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Preparation for ITU Radiocommunication Conferences

UNITED STATES

DRAFT PRELIMINARY VIEWS ON WRC-07

Agenda Item 1.5: to consider spectrum requirements and possible additional spectrum allocations for aeronautical telecommand and high bit-rate aeronautical telemetry;

ISSUE: Obtaining sufficient spectrum to satisfy wideband aeronautical mobile telemetry requirements and associated telecommand above 3 GHz, possible sharing with existing services, and continued protection of incumbent services.

BACKGROUND: This agenda item has its origins in efforts undertaken by the Space Industry prior to WRC-97. The issue was pursued by the United States, CITEL and other regions at WRC-03 and placed on the agenda for WRC-07. This agenda item seeks to address a large and growing shortfall in spectrum necessary to conduct aeronautical telemetry. The shortfall is due to rapidly increasing telemetry data rates associated with the testing of new technologies. The shortfall is exacerbated by the loss of telemetry spectrum diverted to other than telemetry applications. Without additional spectrum, aeronautical development will be subject to major delays, escalating costs, and the impairment of global competitiveness of the aerospace industry (including equipment manufacturers, civilian space programs and test ranges, airlines, and passengers). In addition, the benefits of new worldwide telemetry spectrum will greatly aid most other countries and the international aeronautical community, as Administrations continue to support their national airlines and some administrations initiate their own space programs. Existing international allocations used for aeronautical telemetry will need to remain available without additional constraints for current applications.

U.S. VIEW: The United States supports additional spectrum allocations for aeronautical telemetry. Once the ITU-R completes its studies, the United States can make a recommendation regarding the methods by which the agenda item can be best satisfied. (April 30, 2004)

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DRAFT PRELIMINARY VIEWS ON WRC-07

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

ISSUE: Resolution **744 (WRC-03)**, deals with sharing between the mobile satellite service (MSS) (Earth-to-space) and the space-research (passive) service in the band 1 668 – 1 668.4 MHz and between the MSS (Earth-to-space) and the fixed and mobile services in the band 1 668.4 – 1 675 MHz.

BACKGROUND: At WRC-03, a new global allocation was made to the MSS (Earth-to-space) in the band 1 668 – 1 675 MHz and a global allocation to the MSS (space-to-Earth) in the band 1 518 - 1 525 MHz. MSS interests provided support for this agenda item. In the United States, the band 1 668 – 1 668.4 MHz is allocated to the space research (passive) and radio astronomy services (RAS) and the band 1 668.4-1 670 MHz is allocated to meteorological aids (MetAids) (radiosonde) and radio astronomy, both on a primary basis. The band 1 670 - 1 675 MHz is currently planned for use in the United States for the fixed and mobile services, and the MSS shall not claim protection from fixed and mobile stations operating within the United States. One Region 2 Administration also expressed interest in new allocations for the MSS at the WRC and thus there may be cross-border issues, involving coordination zones that need to be resolved.

U.S. VIEW:

1. The United States supports the completion of studies demonstrating how: a) Radio astronomy and Space Research (passive) services, and b) Radio astronomy stations and MetAids earth stations can be protected from interference from mobile earth stations, in the bands 1 668 – 1 668.4 MHz and 1 668.4-1 670 MHz, respectively. Preliminary studies within the ITU-R show that co-frequency sharing between RAS stations and mobile earth stations (MES) is feasible, e.g. by employing coordination zones of radii on the order of 300 km, under worst case scenarios. To date, these studies considered only terrestrial MES; the airborne case was not considered. Interference by MES operating in the 1 670-1 675 MHz band can be prevented by much smaller coordination radii, on the order of 50 km.

2. The United States supports the completion of sharing studies between the mobile service and MSS in the band 1 668.4 – 1 675 MHz, recognizing that stations in the MSS shall not claim protection from fixed and mobile stations operating in the United States, as stated in the *resolves* of Resolution **744**. (April 30, 2004).

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DRAFT PRELIMINARY VIEWS ON WRC-07

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

ISSUE: Resolution **145** invites WRC-07 to review and consider appropriate refinement of the regulatory provisions for the use of HAPS within the bands 27.5-28.35 and 31-31.3 GHz. The resolution limits the use of HAPS to 300 MHz in each band, and such use shall not cause harmful interference to, nor claim protection from, other stations of services operating in accordance with the Table of Frequency Allocations of Article **5**, and, further, that the development of these other services shall proceed without constraints by HAPS operating pursuant to this resolution.

Resolution **122** deals with the use of the bands 47.2-47.5 GHz and 47.9-48.2 GHz by high altitude platform stations (HAPS) in the fixed service and by systems and networks in the fixed-satellite service (FSS).

BACKGROUND: WRC-97 first made a provision for the operation of HAPS, also known as stratospheric repeaters, within a 2 X 300 MHz portion of the fixed-service allocation in the bands 47.2-47.5 GHz and 47.9-48.2 GHz. During WRC-2000, several countries expressed a need for a lower frequency band for HAPS due to excessive rain attenuation that occurs at 47 GHz. WRC-2000 decided to make additional allocations for HAPS in the bands 27.5-28.35 and 31-31.3 GHz in Region 3, but did not allow operation in the entire bands until studies could be completed to determine how best to protect existing services in these and nearby frequency bands. WRC-03 decided to permit operation in the full allocated bands by HAPS and created Resolution **145**, which considers the additional possibility of allowing HAPS operations in the bands 27.5-28.35 and 31-31.3 GHz in Region 2. Additionally, WRC-03 specified certain regulatory provisions for the use of HAPS in these bands to protect existing and nearby allocated services.

U.S. VIEW: The existing HAPS ground station power density limits described in No. **5.543A** adequately protect passive satellite services operating in 31.3-31.8 GHz, yet provide sufficient power for operation of ground-to-HAPS links. The United States anticipates supporting no change to the existing No. **5.543A**.

The United States supports studies on the power limitation to be applied to HAPS ground stations to protect space station receivers in the band 47.2-47.5 GHz and 47.9-48.2 GHz. (April 30, 2004)

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DRAFT PRELIMINARY VIEWS ON WRC-07

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

ISSUE: This agenda item deals with the development of sharing criteria and regulatory provisions to facilitate use of the band by satellite and terrestrial services without placing undue constraints on any services allocated in the band. To protect U.S. terrestrial services, there may need to be studies to ensure Region 1 and 3 space service uses does not cause interference.

BACKGROUND: One of the bands identified for IMT-2000 at WRC-2000 was the 2 500-2 690 MHz band. In the United States this band has been identified for advanced terrestrial wireless services (FCC Report and Order 03-269). Internationally, in addition to the band being identified for IMT-2000 use, parts of the band are allocated for the broadcast satellite service (BSS) and the mobile satellite services (MSS). Within WP8F, there have been preliminary attempts at defining a band plan for terrestrial use of this band and it is expected this would continue. The sharing issues between NGSO BSS (Sound) and terrestrial services have been addressed by WRC-03 and it is anticipated that they will not be reopened under this agenda item.

U.S. VIEW: In the United States this band is designated for advanced terrestrial wireless applications and there is a strong possibility that this band could be used to meet future IMT-2000 requirements, thereby relieving pressure on the identification of new bands. (April 30, 2004)

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PRELIMINARY VIEWS ON WRC-07

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

ISSUE: There are three areas to be addressed:

a. to consider frequency assignments for frequency adaptive systems in frequency bands allocated for fixed/mobile operation per Resolution **729**,

b. that, as soon as the ITU-R studies are completed, a future competent conference should consider necessary changes to Appendix **17** to enable the use of new technology by the MMS per Resolution **351**,

c. to consider identification of additional spectrum for HF broadcasting between 4-10 MHz per Resolution **544**. In particular focus has been given to the following bands:

   4 500-4 650 kHz
   5 060-5 250 kHz
   5 840-5 900 kHz
   7 350-7 650 kHz
   9 290-9 400 kHz
   9 900-9 940 kHz,

BACKGROUND: There are three separate issues to be addressed within agenda item 1.13. Each Resolution, although related due to possible impact to systems, will be studied in a separate ITU-R WP as the primary lead. The commonality between these items comes in the form of interested ITU-R WPs:

a. Resolution **729** is a hold-over from WRC-97 and has not been successfully completed at this time. The lead group is WP 9C.

b. Resolution **351** from WRC-03 and the studies for a technology or interoperable technologies have not been completed. The lead group is WP 8B.

c. Resolution **544** from WRC-03, where it was agreed that no allocation would be considered for WRC-03. It was put to WRC-07 to resolve this issue on additional HF broadcasting spectrum. This was a very difficult issue at WRC-03 and in past WRCs where it has been discussed. The lead group is WP 6E.

U.S. VIEW: These issues, although related should still be addressed separately in the groups assigned primary responsibility with cooperation from other groups achieved through liaison statements and cross participation from administration experts that attend the contributing groups for each issue.

Resolution 729 – Before this Resolution can be resolved, development ITU-R Recommendations on characteristics for HF Frequency Adaptive systems is needed. In addition, review of the utilization of current and future fixed HF operations is required. Once this has been accomplished within WP 9C, then the feasibility and need of modifying the HF channel plans to accommodate HF adaptive systems can be investigated. Every attempt should be made to accomplish these tasks prior to WRC-07 to keep this resolution from being "rolled-over" to the next conference. Also this resolution is not limited to the 4-10 MHz band, and could impact all fixed HF channel plans (3-30 MHz).

Resolution 351 – Given the vital nature of the safety systems in Appendix **17**, that a thorough review of the digital techniques for the HF/MF bands must be accomplished before any changes are made. Recommendations that detail the characteristics of these digital systems and a review of Appendix **17** operations must be accomplished to fully determine the impact of any changes. Every attempt should be made to accomplish these tasks prior to WRC-07 to keep this resolution from being "rolled-over" to the next conference. This resolution is not limited to the 4-10 MHz band, and could impact all of Appendix **17**.

Resolution 544 – This contentious resolution dealing with the 4-10 MHz band must be considered carefully, taking into account impact on existing services after a careful review of broadcasting service requirements. Initial investigation shows that the allocation of all of the spectrum identified as "preferred" bands is problematic for the United States given that vital government systems operate in all these bands. In a proposal to WRC-03 the United States limited allocations to 250 kHz of spectrum for the broadcasters. The United States is investigating the current requirement that is needed to meet broadcasting needs.

The United States agrees with the need for a thorough study of the consequences of the current situation, augmented with projections of future broadcasting HF use. 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 of additional allocated broadcasting spectrum, including the case where no new spectrum for broadcasting is added. (April 30, 2004)

Radio Conference Subcommittee (RCS)

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DRAFT PRELIMINARY VIEWS ON WRC-07

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

ISSUE: Resolution **745 (WRC-03)**, deals with the protection of existing services in all Regions from non-geostationary-satellite feederlinks for mobile-satellite service links below 1 GHz operating in the fixed-satellite service and using the frequency bands around 1.4 GHz on a secondary basis.

BACKGROUND: At WRC-03, the Conference decided to make the bands 1 390-1 392 MHz and 1 430-1 432 MHz available for the fixed-satellite service (FSS) on a secondary basis for feeder links in the (Earth-to space) and (space-to-Earth) directions, respectively, for non-GSO satellite systems in the MSS with service links operating below 1 GHz, and subject to Resolution **745** as follows:

> **1** that the additional allocations for the FSS on a secondary basis in the bands 1 390-1 392 MHz and 1 430-1 432 MHz for feeder links in the (Earth-to space) and (space-to-Earth) directions, respectively, for non-GSO satellite systems in the MSS with service links operating below 1 GHz, shall not be used until the completion of ITU-R studies on all identified compatibility issues as shown in Annex 1 to this Resolution and the results of these studies shall be reported to WRC-07 and the decisions should be taken by WRC-07 accordingly;
>
> **2** to recommend that decisions taken by WRC-07, including any provisions for the protection of other services to which the bands in *resolves* 1 are allocated, and of passive services in the adjacent band, apply to all non-GSO FSS systems in these bands filed to the Bureau after 5 July 2003,

The band 1 350-1 400 MHz is allocated on a primary basis to the radiolocation, fixed and mobile services in Region 1 and to the radiolocation service in Regions 2 and 3, and the footnotes Nos. **5.149**, **5.338** and **5.339** also apply to this band. The band 1 400-1 427 MHz is allocated to the Earth exploration-satellite service (EESS) (passive), radio astronomy and space research (passive) services on a primary basis in all Regions and footnote No. **5.340** also applies to this band. The band 1 427-1 429 MHz is allocated in all Regions to the space operation (Earth-to-space), fixed and mobile (except aeronautical mobile) services on a primary basis. The band 1 429-1 452 MHz is allocated on a primary basis to the fixed service in all Regions, to the mobile service (except aeronautical mobile) in Region 1 and to the mobile service in Regions 2 and 3. It should also be noted that footnote No. **5.341** also applies to the band 1 400-1 452 MHz and that footnote No. **5.342** also applies to the band 1 429-1 452 MHz in Region 1. As can be seen from this discussion of the existing allocations prior to WRC-03, additional allocations in the frequency region are quite complicated as many other services are potentially impacted.

The CPM-02 Report indicated that there were significant technical challenges to be overcome in some areas if existing services, particularly passive services, were to be protected from harmful interference from the operation of feeder links around 1.4 GHz. The report also indicated that studies in ITU-R were incomplete for the radio astronomy, EESS (passive), space research, aeronautical mobile (aeronautical mobile telemetry (AMT)) and radiolocation services. This posed some difficulties for WRC-03 and the Conference decided to make the secondary allocation for the MSS feederlinks subject to completion of this work.

Studies are on-going in various ITU-R groups to complete this technical work and to determine the technical and operational means of enabling the use of the MSS feederlink allocations while at the same time protecting the existing services. While the amount of work necessary is substantial, the United States believes that these secondary allocations around 1.4 GHz to the fixed-satellite service (FSS) for feeder links for non-GSO satellite systems in the MSS with service links below 1 GHz will support the development of new services on a global basis and be very beneficial to many administrations, especially those in developing countries.

U.S. VIEW: The United States supports the completion of studies, and testing and demonstrations to validate such studies, on operational and technical means to facilitate sharing around 1.4 GHz, including the protection of the passive services in the band 1 400-1 427 MHz from unwanted emissions. Upon the successful completion of these studies, tests and demonstrations, the United States supports implementation of appropriate provisions in the Radio Regulations to protect existing services and the use of the bands 1 390-1 392 MHz and 1 430-1 432 MHz for non-geostationary-satellite feederlinks for mobile-satellite service links below 1 GHz operating in the fixed-satellite service (April 9, 2004).

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DRAFT PRELIMINARY VIEWS ON WRC-07

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

ISSUES:

1. Whether the current pfd limits in Article **21** for non-GSO systems in the FSS are adequate to protect the fixed service in the 17.7-19.7 GHz band from non-geostationary systems using highly-inclined orbits (HIOs) having an apogee altitude greater than 18000 km and an orbital inclination between 35° and 145° without unduly constraining the use of these non-GSO FSS systems.
2. Whether there are technical and operational measures in the band 17.7-19.7 GHz that could be implemented in the fixed service to mitigate interference from FSS space stations in HIO.
3. As a consequence of this agenda item, whether HIOs should be categorized as special type of non-GSO distinct from other non-GSOs such as low or medium earth orbit systems.

BACKGROUND: The ITU-R has been considering sharing aspects for non-GSO systems using HIOs, including systems in highly elliptical orbit (HEO), for a number of years. Several categories of orbits are encompassed within the term "highly-inclined", including "highly elliptical". These are all non-geostationary satellite systems and need to be treated as such. WRC-95 adopted provisional limits on the pfd produced at the surface of the Earth by non-GSO satellites operating in the FSS (space-to-Earth) in the band 17.7-19.3 GHz in order to protect terrestrial services. These limits were revised at WRC-97 and WRC-2000. WRC-03 determined that no changes were needed to the pfd limits and associated provisions in Section **V** of Article **21** that were finalized at WRC-2000 for all non-GSO FSS systems in the 17.7-19.7 GHz. WRC-03 adopted Resolution **141 (WRC-03)**, which invites the ITU-R to conduct studies to determine whether the current pfd limits in Article **21** for non-GSO systems in the FSS are adequate to protect the fixed service in the 17.7-19.7 GHz band from non-geostationary systems using HIOs, of the orbital characteristics as stated in considering g) of Resolution **141**, and whether there are technical and operational measures that could be implemented by the fixed service to mitigate interference from FSS space stations in HIO.

Studies previously performed by ITU-R on the sharing between non-homogeneous non-GSO satellite systems noted that sharing between non-GSO systems was self-limiting and assumed a maximum effective number of 3.5 systems for co-coverage, co-frequency, non-GSO systems, including HIO systems. It is noteworthy that at least one HIO system has been operating in the 17.7-19.7 GHz band for several years at the power levels in the applicable portion of Article **21**, and that to date, there have been no reports of interference from the non-GSO FSS into the fixed service.

U.S. VIEW:

1. The United States continues to support no change to the current limits and associated provisions in Section V of Article **21** for all non-GSO FSS systems in the 17.7-19.7 GHz frequency bands.
2. ITU-R studies on sharing between non-GSO systems using HIOs and FS networks should continue. The results of studies will be improved by considering only 2-3 HIO systems and using realistic assumptions for the characteristics for fixed satellite service and fixed service systems.
3. Satellite networks using HIOs should continue to be considered as non-GSOs and have the same regulatory standing as other types of non-GSOs such as those in low and medium earth orbits. There is no need to modify the Radio Regulations in a way that separates HIO-type non-GSO operations from other non-GSO systems (April 30, 2004).

Radio Conference Subcommittee (RCS)

Preparation for ITU Radiocommunication Conferences

UNITED STATES

PRELIMINARY VIEWS ON WRC-07

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

ISSUE: The purpose of this agenda item is to identify fixed satellite service (FSS) frequency bands for the use of internet applications, while keeping in mind the newly identified high density fixed satellite service (HDFSS) bands **(No. 5.516B)** and consider the appropriate regulatory and technical provisions.

BACKGROUND: WRC-03 adopted this agenda item to identify fixed satellite service bands for the use of broadband internet applications. It is not exactly clear what the objective is for this agenda item, but No. **5.516B** does reference Resolution **143**, which provides guidelines for the implementation of high-density applications in the fixed-satellite service in frequency band identified for this service. WP 4A is the Study Group lead, and the intent of the agenda item will become clear in the near future.

U.S. VIEW:

1. The United States supports the use of the underutilized FSS Allotment Band Plan (AP30B) for this particular application. The use of agenda item 1.10 and changes to the technical characteristics of the Plan, to make these bands more useful is supported, but replanning of the allotment plan is not supported.

2. The United States supports the use of the HDFSS bands (see RR No. **5.516B** and Resolution **143**) for broadband internet access applications. Taking this into account the appropriate regulatory provisions in the Radio Regulations are already in-place and there is no need for additional Radio Regulation modification. (April 9, 2004)