



PUBLIC NOTICE

SEP 22 6 51 AM '05

Federal Communications Commission
445 12th St., S.W.
Washington, D.C. 20554

News Media Information 202 / 418-0500
Internet: <http://www.fcc.gov>
TTY: 1-888-835-5322

DA 05-2481
September 21, 2005

THE FCC'S ADVISORY COMMITTEE FOR THE 2007 WORLD RADIOCOMMUNICATION CONFERENCE APPROVES RECOMMENDATIONS ON WRC-07 ISSUES

IB Docket No. 04-286

On September 14, 2005, the World Radiocommunication Conference Advisory Committee (WRC-07 Advisory Committee) approved recommendations to the Commission on a number of issues that will be considered by the 2007 World Radiocommunication Conference (WRC-07). The WRC-07 Advisory Committee was established by the Commission in January 2004 to assist it in the development of proposals for WRC-07. To that end, the WRC-07 Advisory Committee has forwarded the recommendations it has developed since the beginning of 2004 to the Commission for consideration. We appreciate the substantial amount of work that the WRC-07 Advisory Committee has put into developing its recommendations. We have attached to this Public Notice the WRC-07 Advisory Committee's recommendations that were approved at the September 14, 2005 meeting and request comments on these recommendations.

Based upon our initial review of the recommendations forwarded to the Commission, the International Bureau in coordination with other Commission Bureaus and Offices tentatively concludes that we can generally support the attached WRC-07 Advisory Committee recommendations. We seek comments on the recommendations that appear in all of the WRC-07 Advisory Committee documents and on our initial impressions.

In addition, the National Telecommunications and Information Administration (NTIA) has provided to the Commission a draft proposal that has been developed by the Executive Branch Agencies. We also request comments on this document.

The comments provided will assist the FCC in its upcoming consultations with the U.S. Department of State and NTIA in the development of U.S. positions for WRC-07. The recommendations that are attached to this Public Notice may evolve in the course of interagency discussions as we approach WRC-07 and, therefore, do not constitute a final U.S. Government position on any issue.

The complete text of these recommendations is also available in the FCC's Reference Information Center, Room CY-A257, 445 12th Street, SW, Washington, DC 20554 or by accessing the FCC's WRC-07 world wide web site at: <http://www.fcc.gov/wrc-07>. Comments on the recommendations may be filed by referencing IB Docket 04-286 using the Commission's Electronic Comment Filing System (ECFS) or by

filing paper copies. Parties are encouraged to file electronically by following the instructions at: <http://www.fcc.gov/cgb/ecfs> Parties who choose to file paper copies only should submit an original and four copies of each filing. Guidelines and address for paper filings are available at: <http://www.fcc.gov/osec> . In addition, please submit one copy of your comments electronically or by paper to Alexander Roytlat, FCC WRC-07 Director, Federal Communications Commission, Room 6-A865, 445 12th Street, SW, Washington, DC 20554; e-mail: WRC07@fcc.gov. Comments should refer to IB Docket No. 04-286 and to specific recommendations by document number. The deadline for comments on the recommendations is October 3, 2005. It is necessary that comments be received by October 3, 2005 in order to give us enough time to consider them in the formulation of the U.S. positions for the upcoming meeting of the Inter-American Telecommunication Commission, Permanent Consultative Committee II, WRC-07 Working Group that is scheduled for October 24-28, 2005.

I. Recommendations by the Advisory Committee for the 2007 World Radiocommunication Conference:

INFORMAL WORKING GROUP 1 (IWG-1) **Terrestrial and Space Science Services**

Document WAC/063(14.09.05):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.2 (Res. 746, resolves 1) to invite ITU-R to conduct sharing analyses between geostationary meteorological satellites operating in the space-to-Earth direction and the fixed, fixed-satellite and mobile services in the band 18.0-18.4 GHz to define appropriate sharing criteria with a view to extending the current 18.1-18.3 GHz geostationary meteorological satellite allocation in the space-to-Earth direction to 300 MHz of contiguous spectrum.

Background Information

Presently the meteorological satellite (MetSat) service is allocated by footnote 5.519 in the band 18.1-18.3 GHz. The band is allocated on a primary basis to the Fixed Satellite Service (FSS), the Fixed Service and the Mobile Service in all three Regions and these allocations also exist for these same services in the band 17.8-18.1 GHz in all regions. In both bands the FSS is allocated in both the space-to-Earth and Earth-to-space directions. Additionally, in 18.1-18.4 GHz band the FSS (space-to-Earth) allocation has associated with it Nos. 5.484A and 5.516B. The first provision applies to non-Geostationary satellite systems. However, the latter provision states that the band 18.3-19.3 GHz has been identified for use by high-density applications in the Fixed Satellite Service in Region 2.

WP-7B has been the lead ITU-R group concerned with analyzing the sharing potential with other services in the band and it has exchanged several Liaison Statements with WP-4A. As a consequence of the information provided by WP-4A, those involved in the

design of the next generation meteorological satellite service have optimized the design to maximize the level of homogeneity between FSS and Metsat systems. It is envisioned that this would maximize compatibility and facilitate coordination for operation of both type of systems in the space-to-Earth direction.

In accordance with No. 5.516 the band 18.0-18.1 GHz in the Earth-to-space direction is used for feeder links for the Broadcasting Satellite Service. Compatibility studies have been performed to estimate the typical required separation distances in reverse band sharing situations between receiving MetSat earth stations and transmitting BSS feeder uplink stations. In the worst case, it has been determined that around 40 km separation is required. Therefore it is expected that with some care in situating the limited number of MetSat receive stations international coordination would rarely be required.

In Region 2, GSO FSS satellite networks in the band 18.3-18.4 GHz have been developed and are being deployed which, as a consequence of a 2 degree spacing requirement, will employ earth stations with a minimum diameter on the order of 0.65 meters. Such earth stations are being deployed ubiquitously under "blanket" authorization regulations. Under such an arrangement, these "HDFSS" type earth stations may be deployed anywhere without a requirement for coordination. In addition, it is expected that the number of systems being deployed will grow significantly over the next several years. This type of implementation could lead to possible concerns or difficulties in identifying suitable locations for MetSat satellites and/or receive stations.

While the expected design of the MetSat satellite networks envisioned for operation in the 300 MHz wide band appears to be generally compatible with FSS systems being implemented, it would appear that, for Region 2, operating MetSat systems below 18.3 GHz would avoid several potential difficulties. Given the desire to have a common MetSat allocation in all three Regions, a global allocation of 18.0-18.3 GHz is proposed. In addition, ITU-R studies have shown that, in conjunction with extending the MetSat allocation, extending the existing FSS coordination arc principle in this band to the case of MetSat systems coordinating with FSS networks would help to alleviate unnecessary coordination exercises between these systems. As such, a modification to Table 5-1 of Appendix 5 to include this change is also proposed.

Proposal:

USA/ /1 **MOD**

5.519 *Additional allocation* : **the band 18.0-18.3 GHz is also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Its use is limited to geostationary satellites and shall be in accordance with the provisions of Article 21, Table 21-4.**

Reasons: Adding the additional 100 MHz in the band 18.0-18.1 GHz will provide greater flexibility and assurance of protection for the meteorological satellite service.

15.4-18.4 GHz

Allocation to services		
Region 1	Region 2	Region 3
15.4-15.43	AERONAUTICAL RADIONAVIGATION 5.511D	
15.43-15.63	FIXED-SATELLITE (Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION 5.511C	
15.63-15.7	AERONAUTICAL RADIONAVIGATION 5.511D	
15.7-16.6	RADIOLOCATION 5.512 5.513	
16.6-17.1	RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513	
17.1-17.2	RADIOLOCATION 5.512 5.513	
17.2-17.3	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513 5.513A	
17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 BROADCASTING-SATELLITE Radiolocation 5.514 5.515 5.517	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514
17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE <u>5.519</u>	17.7-17.8 FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.516 BROADCASTING-SATELLITE Mobile 5.518 5.515 5.517 17.8-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE <u>5.519</u>	17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE <u>5.519</u>

18.1-18.4	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 MOBILE 5.519 5.521
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Reasons: Consequential to adding the additional 100 MHz in the band 18.0-18.1 GHz to No. 5.519.

TABLE 5-1 (continued) (Rev.WRC-073)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.7 GSO/GSO (cont.)		3) 17.7-20.2 GHz, (Regions 2 and 3), 17.3-20.2 GHz (Region 1) and 27.5-30 GHz	i) Bandwidth overlap, and ii) any network in the FSS and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 8^\circ$ of the nominal orbital position of a proposed network in the FSS		
		4) <u>18.0-18.3 GHz</u> 54) Bands above 17.3 GHz, except those defined in § 3) <u>and 4)</u> 65) Bands above 17.3 GHz	i) <u>Bandwidth overlap, and</u> ii) <u>any network in the FSS or MetSat service and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 8^\circ$ of the nominal orbital position of a proposed network in the FSS or MetSat service</u> i) Bandwidth overlap, and ii) any network in the FSS and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 8^\circ$ of the nominal orbital position of a proposed network in the FSS (see also Resolution 901 (WRC-03)) i) Bandwidth overlap, and ii) any network in the FSS or BSS, not subject to a Plan, and any associated		

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.7 GSO/GSO (cont.)		76) All frequency bands, other than those in 1), 2), 3), 4), 5) and 65), allocated to a space service, and the bands in 1), 2), 3), 4), 5) and 65) where the radio service of the proposed network or affected networks is other than the space services listed in the threshold/condition column, or in the case of coordination of space stations operating in the opposite direction of transmission	<p>space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 16^\circ$ of the nominal orbital position of a proposed network in the FSS or BSS, not subject to a Plan, except in the case of a network in the FSS with respect to a network in the FSS (see also Resolution 901 (WRC-03))</p> <p>i) Bandwidth overlap, and</p> <p>ii) Value of $\Delta T/T$ exceeds 6%</p>	Appendix 8	<p>In application of Article 2A of Appendix 30 for the space operation functions using the guardbands defined in § 3.9 of Annex 5 of Appendix 30, the threshold/condition specified for the FSS in the bands in 2) applies.</p> <p>In application of Article 2A of Appendix 30A for the space operation functions using the guardbands defined in § 3.1 and 4.1 of Annex 3 of Appendix 30A, the threshold/condition specified for the FSS in the bands in 4) applies</p>

Reason: ITU studies have shown that extending the $\pm 8^\circ$ coordination arc, currently applicable to FSS networks in this band, to meteorological satellite (MetSat) services in this band would reduce the number of unnecessary coordinations for such systems without compromising the technical integrity of either the FSS or Metsat services.

Document WAC/064(14.09.05):

PRELIMINARY VIEWS ON WRC-07

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 U.S. and other Administrations at WRC-03 and placed on the agenda for WRC-07. In addition, a CITEL IAP in support of this agenda item was accomplished and supported by the U.S. and other CITEL Administrations. This agenda item seeks to address a large and growing shortfall in spectrum available to conduct aeronautical telemetry. The shortfall is due to rapidly increasing telemetry data rates associated with the testing of new technologies. It has been exacerbated by the loss of MS spectrum for non-aeronautical telemetry applications. Without additional MS spectrum, aeronautical platform 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).

Aeronautical mobile telemetry ("AMT") is an application within the Mobile Service. While Mobile Service allocations are available for AMT except where expressly excluded, it is important that, to the extent possible, additional spectrum be expressly identified/designated as available for the purpose so as to foster international harmonization of test equipment. This will enable U.S. manufacturers to offer prospective customers aircraft with common test equipment packages, and, thus, help them achieve additional economies in the aircraft life-cycle -- a very significant factor as global competition in the aircraft industry intensifies. Moreover, by making additional spectrum specifically available for AMT, the world community will not only be adhering to consistent ITU practice over the past 40 years, but the U.S. flight test community will have a measure of additional certainty for the enormous investment in range infrastructure that will be incurred in equipping new bands for flight test operations.

Within the ITU, the responsible group for this agenda item is WP 8B, with WP 8A as the contributing group and WP 3M (point-to-point/earth-space propagation), 4A (orbit/spectrum utilization), 6S (satellite delivery), SG-7 (science services), and 9D (fixed service sharing) as interested groups. It is anticipated that WP 8B will deal with all of the aeronautical telemetry studies, and that its work will be completed in time for Administrations to prepare proposals.

U.S. VIEW: The United States supports further studies in order to determine how best to satisfy this Agenda Item while recognizing protection of incumbent services. Upon completion of these studies, the U.S. will be in a position to make a specific proposal to meet aeronautical mobile telemetry spectrum requirements. While the U.S. will continue to evaluate possible regulatory solutions under this agenda item (including possible new allocations to the Mobile Service), one approach the U.S. currently contemplates for some of the bands under study in ITU-R WP 8B would be footnote identification/designation of existing Mobile Service bands for use by aeronautical telemetry. U.S. requirements are for telemetry only in the air-to-ground direction inasmuch as telecommand functions, which are narrowband, can be accommodated in other spectrum.- Any such identification/designation would not preclude the use of these bands by other services to which the bands are allocated on a co-primary basis and, in particular, would not establish any sort of priority for aeronautical mobile telemetry as against other co-primary services. Administrations would be urged to take this into account when considering regulatory provisions in relation to these bands.

The new spectrum will not be used for the protection of life and property, and the footnotes will be consistent with this principle. Such uses will continue to be accommodated by legacy telemetry applications in MS spectrum in the L and S bands provided for in current footnote designations (Nos. 5.342, 5.343, and 5.394) in the Radio Regulations. Hence, aeronautical mobile telemetry applications in other spectrum will not require the level of protection associated with operations in the L and S bands.

INFORMAL WORKING GROUP 2 (IWG-2)
Satellite Services and HAPS

Document WAC/065(14.09.05):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

WRC-07 Agenda Item 1.8 (Res. 122 (Rev.WRC-03) only): *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: Matters related to 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).

Resolution 122 (Rev. WRC-03)

"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 other services"

Background Information:

The ITU has been considering the implications of HAPS in the fixed service in the 47.2-47.5 GHz and 47.9-48.2 GHz band since 1997, when WRC-97 first made provision for the operation of HAPS within the fixed service. Studies have been ongoing under versions of Resolution 122 since WRC-97.

Resolution **122 (Rev. WRC-2000)** indicated that sharing studies remain to be completed between the fixed-satellite service (FSS) and HAPS operations in the FS. Pending the completion of studies, Resolution **122 (Rev. WRC-2000)** instructed the Radiocommunication Bureau "that from 22 November 1997, and pending review of the sharing studies in *considering j)* and review of the notification process by WRC-99, the Bureau shall accept notices in the bands 47.2-47.5 GHz and 47.9-48.2 GHz only for high altitude platform stations in the FS and for feeder links for the broadcasting-satellite service (BSS), shall continue to process notices for FSS networks (except for feeder links for the broadcasting-satellite service) for which complete information for advance publication has been received prior to 27 October 1997, and shall inform the notifying administrations accordingly." In other words, notices received after 22 November, 1997 from non-BSS feeder link FSS networks in the 47.2-47.5 GHz and 47.9-48.2 GHz bands have not been accepted.

Resolution **122 (Rev. WRC-03)** extended the restriction on processing of notices for FSS networks other than those providing service exclusively within Region 2. It also instructed the Bureau to maintain, until a date to be decided by a future WRC, notices concerning HAPS that were received by the Bureau prior to 22 November 1997 and provisionally recorded in the Master International Frequency Register. This is a substantial exception to No. 11.26, which provides that "[n]otices relating to assignments for high altitude platform stations in the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz shall reach the Bureau not earlier than five years before the assignments are brought into use."

The studies regarding HAPS in the 47.2-47.5 GHz and 47.9-48.2 GHz bands have been completed and the results are contained in Recommendation ITU-R SF.1481. This recommendation makes clear that co-frequency operations between HAPS in the fixed service and FSS networks and systems are feasible in the 47.2-47.5 GHz and 47.9-48.2 GHz bands, even while noting that "there may be a need to develop the maximum allowable power flux-density at satellites on the GSO due to aggregate interference caused by ground user terminals of high altitude platform networks." The revision to Resolution **122** that was approved at WRC-03 confirms that co-existence between HAPS in the FS and the FSS at 47.2-47.5 GHz and 47.9-48.2 GHz is feasible, as administrations were encouraged to facilitate interservice coordination.

In the WRC-03 revision of Resolution **122**, the ITU-R was invited to study power limitations on HAPS ground stations to facilitate sharing with space station receivers, regulatory provisions to address deployment of HAPS in the FS near country borders, and technical sharing criteria

between HAPS in the FS and both radio astronomy and FSS systems (taking into account the operational environments and the requirements of FSS systems). With the exception of interference to and from FSS spacecraft, and border area coordination matters in the FS, the deployment of HAPS is a national issue. The issue of interference between the FSS satellite and HAPS networks can be addressed through coordination using Articles 9 and 11 of the Radio Regulations. As a result, Resolution 122 can be suppressed, provided that reference to the use of Article 9 for HAPS is included in the Radio Regulations. The Bureau should be instructed to retain all notices concerning HAPS that are maintained in the MIFR only by virtue of *instructs the Director of the Radiocommunication Bureau* 1 of Resolution 122 (Rev. WRC-03) only until 1 January 2010, unless the notifying administration earlier informs the Bureau that the notified assignments have been brought into use.

Proposal:

**USA/1.8/1
SUP**

RESOLUTION 122 (REV.WRC-03)

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 other services

Reasons: Studies called for in relation to HAPS at 47 GHz have been completed. The Resolution 122 application of the provisions of Article 9 is proposed for incorporation into the Radio Regulations (see USA/1.8/3 below).

**USA/1.8/2
MOD**

5.552A The allocation to the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz is designated for use by high altitude platform stations. The use of the bands 47.2-47.5 GHz and 47.9-48.2 GHz by high altitude platforms in the fixed service is subject to the provisions of No. 9.22, Resolution 122 (WRC-97). All notices for high altitude platform stations in these bands that were filed with the Bureau prior to 22 November 1997 shall be canceled as of 1 January 2010 unless the notifying administration informs the Bureau before this date that the notified assignments have been brought into use.

Reasons: Consequential to the suppression of Resolution 122. While studies have been completed, HAPS systems still need to be subject to the provisions of Article 9 to ensure coordination with the FSS at 47 GHz. Nos. 9.17 and 9.18, which apply for the coordination of terrestrial stations, including HAPS, with earth stations, are currently applicable without having to be called out in a footnote to Article 5 of the Radio Regulations. No. 9.22 is a new provision

(see USA/1.8/3 below) that is intended to address the previously unaddressed coordination case of transmitting HAPS ground-based stations with receiving space station of the FSS, when the HAPS ground station appears in the coverage area of a satellite network. The final sentence of the provision is needed because Resolution 122 (Rev. WRC-03) instructs the BR to maintain HAPS notices received prior to 22 November 1997 “until a date to be decided by a future WRC.”

**USA/1.8/3
MOD**

9.22 ~~Not used.~~ g) for a transmitting station which is part of a high altitude platform station network as defined by 1.66A of the Radio Regulations, for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to this provision, in respect of a space station in any frequency band allocated with equal primary rights to the space service of the existing or planned space station and to the terrestrial service in which the high altitude platform station network is to operate.

Reasons: Addresses a coordination scenario for HAPS stations.

**USA/1.8/4
MOD**

9.5B.1 The only terrestrial stations to be taken into account are those for which the requirement to coordinate is under Nos. **9.11, 9.11A, ~~and 9.21,~~ and 9.22.**

Reasons: Consequential to the addition of No. **9.22** (see USA/1.8/3 above).

**USA/1.8/5
MOD**

9.30 Requests for coordination made under Nos. **9.7 to 9.14, ~~and 9.21 and 9.22~~** shall be sent by the requesting administration to the Bureau, together with the appropriate information listed in Appendix 4 to these Regulations.

Reasons: Consequential to the addition of No. **9.22** (see USA/1.8/3 above) there is a need to determine what happens to the coordination information.

**USA/1.8/6
MOD**

9.36.1 The list of administrations identified by the Bureau under Nos. **9.11 to 9.14, ~~and 9.21 and 9.22~~** is only for information purposes, to help administrations comply with this procedure.

Reasons: Consequential to the addition of No. **9.22** (see USA/1.8/3 above), the identification of affected administrations by the BR in the case of a HAPS network will be for information only.

**USA/1.8/7
MOD**

9.50 An administration having received a request for coordination under Nos. **9.7** to **9.21**~~**9.22**~~, or having been included in the procedure following action under No. **9.41**, shall promptly examine the matter with regard to interference which may be caused to or, in certain cases, by its own assignments²⁰, identified in accordance with Appendix 5²¹.

Reasons: Consequential to the addition of No. **9.22** (see USA/1.8/3 above), the affected administrations must examine the HAPS information.

**USA/1.8/8
MOD**

9.52C For coordination requests under Nos. **9.11** to **9.14**, ~~and **9.21** and **9.22**~~, an administration not responding under No. **9.52** within the same four-month period shall be regarded as unaffected and, in the cases of Nos. **9.11** to **9.14**, the provisions of Nos. **9.48** and **9.49** shall apply.

Reasons: Consequential to the addition of No. **9.22** (see USA/1.8/3 above), the affected administrations must examine the HAPS information.

**USA/1.8/9
MOD**

9.53A Upon expiry of the deadline for comments in respect of a coordination request under Nos. **9.11** to **9.14**, ~~and **9.21** and **9.22**~~, the Bureau shall, according to its records, publish a Special Section, indicating the list of administrations having submitted their disagreement or other comments within the regulatory deadline. (WRC-2000)

Reasons: Consequential to the addition of No. **9.22** (see USA/1.8/3 above), the BR will publish those administrations that have objected to the HAPS network.

USA/1.8/10
MOD

APPENDIX 5
TABLE 5-1 (WRC-2003)

Technical conditions for coordination
(see Article 9)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.22 <u>HAPS/GSO, non-GSO</u>	<u>a transmitting station which is part of a high altitude platform station network as defined by 1.66A of the Radio Regulations, for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to No. 9.22, in respect of a space station.</u>	<u>Frequency bands for which a footnote refers to No. 9.22</u>	<u>Bandwidth overlap</u>	<u>Check using assigned frequencies and bandwidths</u>	

Reasons: Consequential to the addition of No. 9.22 (see USA/1.8/3 above), Table 5-1 needs to be updated to take No. 9.22 into account.

Document WAC/066(14.09.05):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.19: to consider the results of ITU-R studies regarding spectrum requirements 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 provisions, taking also into account No. 5.516B of the Radio Regulations.

Background Information: WRC-03 adopted this agenda item which relates to the identification of globally harmonized fixed-satellite service frequency bands for broadband applications via satellite. It is important to note that all FSS frequency bands, including the bands, listed in No. 5.516B, can be and in many cases are used for internet applications.

ITU-R Working Party 4A has the lead in preparing the technical basis for this agenda item at WRC-07. It has carried out a number of studies at its last three meetings and has prepared draft CPM text. The studies have examined the issues associated with this agenda item. These include the question of harmonized frequency bands and the status of internet applications being implemented in FSS bands.

The initial global spectrum allocations for the Fixed Satellite Service (FSS) were made at WARC-71, and WARC-79. These included spectrum through the 20/30 GHz range. Additional global allocations to the FSS were made in the 40/50 GHz range at subsequent conferences. Many of these bands are heavily utilized delivering a diversity of services. The FSS allocations are being used by over 200 geostationary radiocommunication satellites including those indicated in No. 5.516B identified for use in high density applications. Most of the FSS allocations are global in nature and therefore harmonized in all three ITU-R Regions.

There has been a proliferation of different size earth stations for different types of applications during the over 25 years these allocations have been available. As these applications have evolved so too have the basic Radio Regulations to provide for them. Access to the internet using FSS satellite systems is being implemented in a number of ways. Examples are illustrated in the table below.

Application	Bands	Example Terminal Size
Direct-to Business or Residence	11/14 GHz 20/30 GHz	1.2 m 0.6 m
ESV	4/6, 11/14 GHz	2.4 m, 1.2 m
Bundled with TV Services	11/14 GHz 20/30 GHz	0.6-2.4 m 0.6 m
V-sat RLAN	11/14 GHz	0.6-2.4 m

As illustrated in the table there has been a variety of internet applications which have developed. These have taken place within the harmonized Regional allocations to the FSS. Today's service provider often initiates an internet service using only a few transponders (partial sections of a satellite) of a satellite for economic reasons rather than incurring the capital expense of a whole satellite for a single type of application. In addition, ground equipment suitable for broadband/Internet applications can be adapted to other bands, and as internet applications are being pursued in a wide range of FSS allocations, it would be counter-productive to identify any subset of frequencies especially for internet applications.

The current Radio Regulations for access, coordination and notification of satellite networks fully accommodate the ability of FSS systems to provide internet access. In addition, commercially available ground equipment suitable for broadband/internet applications is frequency agile and is fully capable of operating with the existing and planned FSS satellite systems in the allocated frequency bands.

Proposal:

USA/ / 1

NOC

Reason: There are many existing and planned FSS satellite systems in a number of different FSS frequency bands that carry internet applications. They are in use and will continue to be used on a worldwide basis in the 4/6 GHz, 11/14 GHz, and 20/30 GHz allocations. The identification of specific FSS frequency bands for internet applications will not improve nor will it facilitate the provision of these applications. Consequently, no changes to the Radio Regulations are necessary.

INFORMAL WORKING GROUP 3 (IWG-3)

IMT-2000 and 2.5 GHz Sharing Issues

Document WAC/069(14.09.05)¹:

IWG-3 COMMENTS ON THE RCS PROPOSAL ON AGENDA ITEM 7.2 (including Agenda Item 2.8 in Resolution 803(WRC-2003), Preliminary agenda for the 2010 World Radiocommunication Conference)

2.8 to consider the progress of the ITU-R studies concerning the development and regulatory requirements of terrestrial wireless interactive multimedia applications, in accordance with Recommendation 722 (WRC-03) and to take any appropriate action on this subject;

ISSUE

WRC-07 will set the agenda for the subsequent WRC, WRC-10. The preliminary, or tentative, WRC-10 agenda resides in Resolution 803(WRC-03). The issue is whether or not the regulatory developments in terrestrial wireless interactive multimedia applications (TWIMs) require review by WRC-10 for action to be taken.

BACKGROUND

WRC-10 provisional agenda item 2.8 derives from the WRC-03 agenda item 1.21, "to consider 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." At WRC-2000, some European administrations insisted that the TWIMs matter be on the WRC-03 agenda, but no significant input was submitted to the ITU-R group formed to develop the text for this agenda item for the CPM Report to WRC-03, the Joint Task Group (JTG) 1-6-8-9. Therefore, there were no substantial study results that could form a basis for proposals to accordingly modify/amend the Radio Regulations (RRs) at WRC-03. WRC-03 consequently formed this tentative agenda item 2.8 for WRC-10.

Since WRC-2003, Working Party (WP) 1B of ITU-R SG 1 has been developing a Working Document Towards a Preliminary Draft New Report on Technical Convergence with Respect to Terrestrial Fixed, Mobile, and Broadcasting Interactive Multimedia Applications per Question ITU-R 224/1, "Technical Convergence with respect to Terrestrial Fixed, Mobile, and Broadcasting Interactive Multimedia Applications and the Associated Regulatory Environment." This item currently under study in WP 1B can be considered a follow on to the original WRC-03 TWIMs agenda item.

CPM06-01 gave WPs 1B and 4A (of ITU-R SG 4) the lead for responding to Resolution 951 (WRC-03), "Options to Improve the International Spectrum Regulatory Framework". This Resolution instructs the

¹ These are IWG-3's comments on a draft proposal originated by the Radio Conference Subcommittee (RCS) of the National Telecommunications and Information Administration, Document WAC/057(22.06.05).

Director of the ITU Radiocommunication Bureau to include the results of these studies in his report to WRC-07, with the purpose of consideration of the suitability of this subject on a future WRC agenda. After WRC-03, Study Group (SG) 1 developed a new Study Question, 229/1, pursuant to the matter of Res. 951(WRC-03). Likewise, SG 1 has sent a liaison statement (Doc. 4A/131, 8/53, 9B/84, etc.) to several WPs across various SGs, seeking their input from their radio service perspective on options to improve the international spectrum regulatory framework. WPs 8A and 8F of SG 8, and several WPs of SG 9 have already replied to this query from SG 1. Doc. 1B/50, Annex 5 is the current Working Document Towards the Report to the BR Director in response to the Resolution 951 matter.

Although no action was taken on WRC-03 agenda item 1.21 at WRC-03, its legacy is still present in ongoing ITU-R studies. The Resolution 951(WRC-03) study, the results of which will be reported to WRC-07, is similar to the TWIMs matter in that replies from ITU-R groups to the above-mentioned SG 1 liaison statement have focused on the issues of convergence of current and future wireless applications, and how they fit into the spectrum regulatory framework. Doc. 1B/50, Annex 4, indicates in its introduction that the scope of these issues may be perceived to fall under the scope of Resolution 951(WRC-03).

IWG-3 RECOMMENDATION ON RCS VIEW

Given that the ITU-R studies pursuant to Rec. 722(WRC-03) and Res. 951(WRC-03) are still ongoing and have not yet presented results, IWG-3 is of the view that the US should wait until these studies have concluded before reaching a decision on the retention and final wording of agenda item 2.8 for the WRC-10 agenda.

If this agenda item is retained, it is likely more suitable to modify its language to relate it to the Res. 951(WRC-03) studies, since the results of these will be presented to WRC-07 by the Radiocommunication Bureau.

A possible outcome would be to replace the “terrestrial wireless interactive multimedia applications” reference with text such as “convergence of radio technologies and wireless applications,” and “flexible allocation framework”. Even if a modified WRC-10 agenda item remove the direct reference to TWIMs, Rec. 722(WRC-03) and the WP 1B studies on TWIMs should be noted in the companion resolution to the agenda item, as background information.

INFORMAL WORKING GROUP 4 (IWG-4) **Broadcasting and Amateur Issues**

Document WAC/070(14.09.05):

Draft Preliminary View on WRC-07 Agenda Item 1.11

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

ISSUE

In the United State (US) the 620-790 MHz band is used only by terrestrial services. This band has been mostly used by the broadcasting services; however, with the transition to digital TV, other terrestrial users in the mobile service will start to use parts of this band.

Therefore, the protection of these terrestrial services from harmful interference from broadcast-satellite transmissions is a relevant issue in the US. Given the possibility that satellites using the HEO orbit may be deployed in the band (see **BACKGROUND** for more information), US interests should participate in the AI (agenda item) 1.11 studies to insure minimum adverse impact to their operations in the 620-790 MHz.

Res. 545 details the technical and regulatory procedures relating to the operation of BSS networks in this band. In summary, BSS networks that were not operational at the end of WRC-03, will neither be coordinated, nor notified, nor brought into use until the end of WRC-07, so that this WRC can reach a conclusion based on the AI 1.11 studies. Per *resolves 6)* of Res. 545, the relationship between GSO and non-GSO networks in this band will be decided by WRC-07. In the interim, No. 22.2 applies to networks received by the Bureau before WRC-03. Even though the US does not use this band for BSS, which type of network would have precedence over the other in coordination is of interest to the US, since non-GSO (such as HEO) and GSO networks impact terrestrial networks differently in terms of interference mechanisms.

BACKGROUND

This matter actually had its genesis in discussions surrounding AI 1.37 (to consider the regulatory and technical provisions for satellite networks using highly elliptical orbits) at WRC-03. Proposal EUR/13A37/3, a draft Resolution on the study of provisional pfd limits and studies concerning regulatory and technical provisions for satellite systems using highly elliptical orbits (HEOs), included a *resolve* on provisions applicable to HEO satellite systems using the 620-790 MHz BSS allocation. Likewise, Arab administrations proposed that HEO use in the 620-790 MHz band also be studied for WRC-07 (see ARB/27A31/3).

These proposals resulted in WRC-03 establishing agenda item 1.11 for WRC-2007 and resolution, **Res. 545(WRC-03)**, "*Technical and regulatory procedures relating to the broadcasting-satellite service networks operating in the 620-790 MHz band.*"

BSS operation can occur in the 620-790 MHz band via the provision **5.311 (WRC-03)** of the Radio Regulations, subject to agreement by affected administrations and with a pfd constraint.

What renders the landscape of this issue even more complicated in the Regional Radiocommunication Conference (RRC) activity, which is to plan for the digital TV transition in the 174-230 MHz and 470-862 MHz bands for all of Region 1 and some adjoining parts of Region 3. The 2nd and final RRC will occur in May 2006. Therefore, any space-terrestrial co-existence studies undertaken for this agenda item must take this into consideration. Analog and digital systems will have different transmitter/receiver characteristics, and the results of sharing studies may be impacted by RRC activity. The first RRC meeting, RRC-04, produced Resolution COM 4/1, "Protection of digital terrestrial broadcasting from broadcasting-satellite service networks operating in the 620-790 MHz band", that specifically treats the matter of the use of the 620-790 MHz band by BSS

satellites. The two resolves of this Res. essentially render the BSS space and earth station usage in this band secondary.

In 1997 the US Congress passed legislation requiring TV channels 60 to 69 to be made available for other services as a result of the transition to digital TV. In view of this statutory mandate, the US Federal Communications Commission (FCC) conducted proceedings that also made available channels 52 to 59 and developed and adopted two band plans; one for 698-746 MHz, the lower 700 MHz band plan (former UHF broadcasting channels 52-59); and the upper 700 MHz plan for the 746-806 MHz band (former UHF channels 60-69). The upper 700 MHz band has 36 MHz allocated for commercial use (746-794 MHz), and the remaining 24 MHz allocated for public safety use.

Congress established 31 December 2006 as the target date for the completion of the transition to digital TV. The FCC has already auctioned off 18 MHz of the lower 700 MHz band, and no auction date for the remaining spectrum in this segment has been announced. A 6 MHz channel in the upper 700 MHz spectrum has so far been auctioned.

The 620-698MHz band (UHF channels 39-51) will constitute a major part of the total bands allocated to television broadcasting, particularly as the US transitions from analog to digital television.

For further details on the reallocation of the 698-790 MHz band in the US, see Doc. 8A-160, *"Information paper on the reallocation of the 698-806 MHz frequency band in the United States,"* April 11-15, 2005 meeting of ITU-R WP 8A.

US VIEW

Since the US has a long history of terrestrial broadcasting in the band 620-790 MHz, and the future US use of this band will continue to be for terrestrial applications; the US is first and foremost concerned with the unconstrained and unhindered development and of these applications, be they broadcasts, public safety, and other mobile applications in the reallocated segment. In order for the US to support the deployment of BSS networks in the band 620-790 MHz, sharing studies underway in the ITU-R need to demonstrate that BSS deployment in this band will not negatively impact the current and future use of this band by terrestrial services. US interests should participate in these ITU-R studies.

INFORMAL WORKING GROUP 5 (IWG-5)

Regulatory Issues

Document WAC/071(14.09.05)²:

Preliminary Views on WRC-07

WRC-07 Agenda Item 1.10 to review the regulatory procedures and associated technical criteria of Appendix 30B without any action on the allotments, the existing systems or the assignments in the List of Appendix 30B.

1) General Views on Agenda Item 1.10

Issue

Appendix 30B delineates allotments within portions of C-band and Ku-band for each country; each allotment provides for national coverage under specific technical conditions (e.g., maximum power densities and minimum antenna sizes). While this plan was intended to preserve the opportunity for all countries to obtain real benefits from use of satellite systems in the geostationary satellite orbit (GSO), the actual number of systems put into operation pursuant to this appendix since its original adoption in 1988 has been quite limited.

Some aspects of the regulatory procedures and technical criteria are outdated and serve to restrict, rather than foster, the development of real, economical systems.

Background

Since the adoption, in 1988, of Appendix 30B, satellite technologies have advanced dramatically. And at the same time, many countries have recognized that satellites offer great potential to facilitate access to digital broadband services such as the Internet, thereby leaping past antiquated technologies. Yet, only slight changes have been made to Appendix 30B, rendering it still poorly-suited to satisfy these new technology requirements. WRC-03 has only just begun to address the issue. For example, full account has yet to be taken of the widespread use of digital modulation techniques that facilitate high capacity at substantially lower interference margins than envisaged when the appendix was originally adopted.

WRC-03 made two notable changes to the appendix that involve the technical criteria for analyses carried out from 5 July 2003: 1) the interference criteria for aggregate and single entry C/I thresholds were relaxed by 3 dB, and 2) an improved earth station off-axis gain pattern was decided to be applied for cases requiring the additional discrimination to resolve interference issues. Based on these decisions, and the instructions of Resolution 146, the BR has prepared a new reference plan reflecting these changes.

² The revision marks on this document indicate changes to an earlier preliminary view from IWG-5, Document WAC/012(08.06.04).

WRC-03 also recognized that additional changes to the regulatory procedures and associated technical criteria of Appendix 30B may be productive and thus put this item on the agenda for WRC-07. The CPM referred this topic to WP-4A and the Special Committee (SC) for study and it has been extensively addressed in meetings of both groups in 2004 and 2005. At its April 2004 meeting, WP 4A, as the lead group for this item, considered several contributions, including one from the USA, related to this topic. As a result of work jointly conducted by WP-4A and the SC, prepared a summary of the specific issues to be studied has been developed. These issues will be further considered in the upcoming meetings of WP 4A and the SC in November/December 2005, for which contributions to its next meeting in October are encouraged.

U.S. Views

The U.S. is of the view that the general guidelines in 1 through 6 below should continue to be followed in the work pertaining to this agenda item.

1. The U.S. does not advocate any action on the allotments, the existing systems or the assignments in the List of Appendix 30B.
2. The U.S. supports continued improvements to the regulatory procedures and associated technical criteria of Appendix 30B and is committed to working through the study groups and with other administrations toward that end.
3. The U.S. considers that future technical criteria should be based on realistic parameters that reflect digital communications technology in use today and foreseen for the near future.
4. The U.S. considers that sufficient flexibility should be built in to the regulatory procedures to permit reasonable accommodation of new technologies without requiring additional revisions to Appendix 30B post WRC-07.
5. The U.S. intends to focus its efforts on improvements to the regulatory procedures and associated technical criteria for the Ku-band portion of Appendix 30B, as it considers this offers the greatest opportunity for improvements that can yield cost-effective access to satellite broadband services.
6. The U.S. considers that the bands subject to Appendix 30B should be among those considered for the global broadband satellite systems serving Internet applications addressed under agenda item 1.19.

2) Specific Views on Agenda Item 1.10

Consistently with these above guidelines, the U.S. has submitted contributions on Appendix 30B issues to WP 4A and has actively participated in the discussions of this topic both in WP 4A and in the SC. In particular, as discussed in more detail sections A2 and B below, the U.S. is of the view that significant increases in flexibility can be obtained through changes to the regulatory procedures in two specific areas: the definition of additional uses and subregional systems; the processing of the submissions for additional uses and subregional systems.

A-A. Definition of Additional Uses and Subregional Systems

The orbit/spectrum resources corresponding to the Appendix 30B frequencies are primarily associated with allotments and assignments resulting from the conversion of allotments. Allotments guarantee to each administration the right to use the Appendix 30B

frequencies for national coverage and under specific technical conditions, including a nominal orbital location and a Pre-Determined Arc (PDA) within which the orbital location can be selected. Allotments can be converted into assignments without any change to orbital location or other parameter. However, most likely conversion into an assignment will include modification of several parameters of the allotment.

In addition, Appendix 30B frequencies can be utilized by other systems that currently fall into three categories: subregional systems, additional uses and existing systems.

Existing systems are associated with satellite networks that had been filed with the ITU before 8 August 1985 (First Session of the Conference that developed the Appendix 30B Plan). These systems have either been brought into use or the corresponding filings have expired.

Section II of Article 6 of Appendix 30B describes the procedure for the introduction of subregional systems while Section III of the same Article 6 contains supplementary provisions applicable to additional uses in the planned bands. Table 1 below summarizes the main characteristics of these two types of use of the Appendix 30B frequency bands.

Table 1. Current Characterization of Subregional Systems and Additional Uses in the Appendix 30B Frequencies

<u>Attribute</u>	<u>Subregional System</u>	<u>Additional Use</u>
<u>Coverage</u>	<u>Necessarily includes 2 or more neighboring countries (see No. 2.5 of AP30B)</u>	<u>Can include one or more countries (see No. 2.6 of AP30B)</u>
<u>Relationship to Allotments</u>	<u>May be associated with the suspension of allotments of one or more of the participating administrations</u>	<u>To be implemented in addition to allotments or assignments (no suspension of allotments foreseen)</u>
<u>Compatibility with Allotments and Assignments</u>	<u>Be compatible with: allotments; assignments in the List; and assignments for which complete information has been received</u>	
<u>Use of the PDA Concept</u>	<u>May change orbital locations of other allotments or assignments within the PDA (see Nos. 6.48 through 6.50 of AP30B)</u>	<u>Is not allowed to changed orbital locations of other allotments or assignments unless authorized by the administrations affected (see No. 6.56 of AP30B)</u>
<u>Period of validity</u>	<u>Not specified</u>	<u>15 years</u>

It can be concluded from the several provisions addressing subregional systems that this option was introduced in order to allow neighboring countries to combine their allotments into a system with regional coverage. This interpretation is consistent with the suspension of allotments associated with subregional systems as well as with other advantages granted to these systems and not to additional uses (e.g. use of the PDA concept, unlimited period of validity).

However, up to now the submissions for subregional systems have never included requests for suspension or partial suspension of allotments in application of Section II of Appendix 30B and such submissions have been implemented in a way that does not affect allotments in the Plan or assignments in the List. Therefore, subregional systems have actually been implemented as “additional uses” in the sense that they will coexist with allotments and assignments as additional uses do. Moreover, one element in the regulations that might draw a distinction between these two categories (subregional systems are “created by agreement among neighbouring countries” - see No. 2.5 of AP30B) has been recognized as difficult to apply because there is no clear definition for the term “neighbouring countries”.

Given all the above, there is no reason for the distinction between these two types of use of Appendix 30B frequencies and the U.S. is of the view that these two categories should be merged into one category as described below. The new category would still be called “additional uses” and would have the attributes given in Table 2.

**Table 2. Possible New Characterization of Additional Uses
in the Appendix 30B Frequencies**

<u>Attribute</u>	<u>“Additional Use”</u>
<u>Coverage</u>	<u>Can include one or more countries without the need to obtain agreement from other countries included in the coverage area</u>
<u>Relationship to Allotments</u>	<u>To be implemented in addition to allotments or assignments</u>
<u>Compatibility with Allotments and Assignments</u>	<u>Be compatible with: allotments; assignments in the List; and assignments for which complete information has been received</u>
<u>Use of the PDA Concept</u>	<u>May change orbital locations of other allotments or assignments within the PDA (see Nos. 6.48 through 6.50 of AP30B)</u>
<u>Period of validity</u>	<u>Not specified</u>

As it can be seen from Table 2, the need for obtaining agreement from other countries included in the coverage area that currently applies to subregional systems and to additional uses is being dropped. No rights of an administration A with territory included in the coverage area are in any way being violated. Any rights of administration A with respect to the use of FSS space stations in the Appendix 30B frequencies are automatically protected because the additional use has to be compatible with allotments; assignments in the List; and assignments for which complete information has been received. Terrestrial systems in the territory of administration A are protected by the power-flux density limits of Article 21 of the Radio Regulations. This regulatory framework is no different than that associated with the operation of an FSS space station in any other frequency band and there is no reason why the treatment of “additional uses” in the Appendix 30B frequencies should deviate from such framework.

In case it is deemed of interest to retain the “subregional systems” category, the regulations should make clear that this category intends to provide flexibility to countries that want to combine their allotments to operate a system with enlarged coverage area, i.e. the allotments of all participating administrations would be suspended in their totality. By

introducing this requirement, no loss of flexibility would be imposed on any administration because allotments able to co-exist with the subregional system could, for instance, be proposed as additional use. Further, the requirement for participants to be neighbouring countries could be dropped.

B. Processing of Submissions for Additional uses and Subregional Systems

Currently all submissions associated with Appendix 30B frequencies are considered in a single queue. More flexibility can be achieved if submissions are treated differently depending on whether they are associated with “capacity in the Plan” or with “capacity beyond that in the Plan”. Capacity in the Plan would include allotments and submissions for converting allotments into assignments even if the assignments are not within the envelope of the original allotments.

Uses of Appendix 30B frequencies would then fall into two categories: “the Plan” and “additional uses” (with the class of additional uses redefined to also include subregional systems as discussed in Section A above³). As a result, there is a need to set the rules that define the coexistence between satellite networks within each category as well as the coexistence between satellite networks in different categories.

Within “the Plan”, the current rules continue to apply. This means that vis-à-vis allotments and assignments resulting from the conversion of allotments any future submission for conversion of an allotment will follow the current rules. This would maintain unchanged the rights of allotments and assignments resulting from the conversion of allotments.

Within the “additional uses” category, co-existence would be governed by the rules of Articles 9 and 11 of the Radio Regulations, more broadly by the provisions of the Radio Regulations applicable to non-planned FSS bands. This seems to be a natural way to treat these uses of the Appendix 30B frequencies since they are actually associated with “capacity beyond that in the Plan”.

In particular, the need for coordination between two additional uses will be determined by the rules applicable in non-planned FSS bands. As a result, for instance, a submission in the “additional uses” category will be allowed to have a pending coordination with respect to another additional use submission with an earlier date of submission. Not being able to obtain a coordination agreement within a limited period of time does not constitute grounds for returning the filing to the administration that had originated it. This treatment contrasts with the current situation in which a non-implemented additional use that has successfully entered the List of assignments (see 5.5 in Article 5 of Appendix 30B) may block the consideration of subsequent additional uses. For instance, if one of these subsequent additional uses AU2 is not compatible with the additional use AU1 already in the List and cannot either modify its parameters or coordinate with AU1 within a limited period of time, then the submission of AU2 is discarded.

In view of the above, the BR will have to maintain two different lists. List A will include: (i) allotments; (ii) assignments resulting from the conversion of allotments; and (iii) additional uses that meet two conditions: (a) have been determined to be compatible with allotments and assignments resulting from the conversion of allotments; and (b) have completed all required coordinations with all additional uses (both in List A as well as in List B defined below).

³ In case it is decided to maintain the category of subregional systems, the treatment of submissions being proposed here for additional uses would apply to both additional uses and subregional systems.

List B will include additional uses that have been determined to be compatible with all allotments and assignments resulting from the conversion of allotments but have not yet obtained agreements from all other additional uses with which there is a need for coordination. Additional use submissions not compatible with allotments and assignments resulting from the conversion of allotments would still be treated as in the current rules.

The reference situation that will be used to verify compatibility with allotments and assignments resulting from the conversion of allotments is based only on List A. Taking into account additional uses in List B in the calculation of the reference situation would have the drawback of distorting this reference situation with many additional use submissions that may never be able to complete the required coordinations or being ultimately implemented.

Additional U.S. Views

The U.S. is of the view that:

21) Consistent with these above -guidelines, that significant increases in flexibility can be obtained through changes to the regulatory procedures in two specific areas: the definition of additional uses and subregional systems; the processing of the submissions for additional uses and subregional systems.

23) With regard to the definition of additional uses and subregional systems, there is no reason for the distinction between these two types of use of Appendix 30B frequencies and that these two categories should be merged into one category that would continue to be called “additional uses” and would have the following attributes:

- a) Coverage: Can include one or more countries without the need to obtain agreement from other countries included in the coverage area.
- b) Relationship to Allotments: Would be implemented in addition to allotments or assignments.
- c) Compatibility with Allotments and Assignments: Would be compatible with allotments, assignments in the List, and assignments for which complete information has been received.
- d) Use of the PDA Concept: May change orbital locations of other allotments or assignments within the PDA
- e) Period of Validity: Not specified.

34) In case it is deemed of interest to retain the “subregional systems” category, the regulations should make clear that this category intends to provide flexibility to countries that want to combine their allotments to operate a system with enlarged coverage area, i.e. the allotments of all participating administrations would be suspended in their totality.

45) With regard to the processing of submissions, uses of the Appendix 30B frequencies would fall into two categories: “the Plan” and “additional uses”. With the Plan, the current rules continue to apply. Within the “additional uses” category, co-existence would be governed by the rules of Article 9 and 11 of the Radio Regulations, more broadly by the provisions of the Radio Regulations applicable to non-planned FSS bands.

56) Taking into consideration items 32, 43 -and 54, above, the BR would be required to maintain two lists. List A will include: (i) allotments; (ii) assignments resulting from the conversion of allotments; and (iii) additional uses that meet two conditions: (a) have been determined to be compatible with allotments and assignments resulting from the conversion of allotments; and (b) have completed all required coordinations with all additional uses (both in List A as well as in List B defined below).

List B will include additional uses that have been determined to be compatible with all allotments and assignments resulting from the conversion of allotments but have not yet obtained agreements from all other additional uses with which there is a need for coordination. Additional use submissions not compatible with allotments and assignments resulting from the conversion of allotments would still be treated as in the current rules.

The reference situation that will be used to verify compatibility with allotments and assignments resulting from the conversion of allotments is based only on List A.

In the case that category of- “subregional systems” is maintained, the treatment of submissions being proposed for “additional uses” would apply to both additional uses and subregional systems.

II. Draft Proposal on WRC-07 Agenda Item 1.13 received from the National Telecommunications and Information Administration (NTIA):

Document WAC/062(14.09.05):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

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 channeling arrangements are in techniques and the spectrum requirements for HF broadcasting;

Background Information: This is a very broad agenda item, as there are multiple services allocated to the HF bands between 4 MHz and 10 MHz, including aeronautical mobile (OR), aeronautical mobile (R), amateur, broadcasting, fixed, maritime mobile and mobile services. Agenda item 1.13 covers three resolutions that deal with three separate issues. These issues are connected within the agenda item on the basis that they cover overlapping frequency ranges. The CPM convened following WRC-03 assigned the primary responsibilities for the separate issues to different working parties.

Resolution 351:

resolves

- “1) that, in order to provide full worldwide interoperability of equipment on ships, there should be one technology, or more than one interoperable worldwide technology, implemented under Appendix 17;
- 2) 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;”

The focus of Resolution 351 (WRC-03) is to identify a digital technology, or family of digital technologies, that provide interoperability and improved usage of the MF and HF bands allocated to the maritime mobile service under Appendix 17. The scope of this portion of the agenda item includes a review of all Appendix 17 assignments to facilitate the introduction of these advanced maritime mobile digital systems.

Resolution 351 (WRC-03) calls for studies to include; future requirements of the MMS, technical characteristics of the digital systems, the necessary modifications to Appendix 17 to enable the use of new technologies by MMS, a timetable for the introduction of new digital technologies, and recommendations on how digital technologies can be introduced while ensuring compliance with distress and safety requirements. In accordance with *resolves 2* of Resolution 351, as soon as the ITU-R studies are completed, a competent conference should consider necessary changes to Appendix 17, to enable the use of new digital maritime technologies by the MMS. These studies are still underway and should be refined to examine the requirements of GMDSS electronic messaging.

The future spectrum needs of the maritime mobile service in the HF bands are closely related to the introduction of new data exchange technologies into the maritime mobile service, as an alternative standard for narrow-band direct printing (NBDP). The use of NBDP is in rapid decline for commercial communications. IMO has noted NBDP is currently used for broadcasting of MSI, ship reporting, weather forecasts and for business communications, e.g., by fishing fleets. However, all these functions could in principle be provided by alternative HF data communications technology. A PDNR for the new MMS HF data exchange service has been developed based on commercial Orthogonal Frequency Division Modulation (OFDM) (see 8B/135).

NBDP remains useful for providing distress communications in the polar regions (sea area A4) when other terrestrial means of communication are no longer reliable because of atmospheric noise, and there is no coverage from geostationary satellite networks providing service to the maritime community. This NBDP functionality will be preserved using the HF distress and safety frequencies relocated to Appendix 15.

Because the studies on this issue are continuing, a revision of Resolution 351 to recognize the current views of the IMO regarding the technology transition, to note the transition that has

already taken place, and to direct additional studies regarding the spectrum needed for new technologies is appropriate.

Resolution 544:

resolves to invite ITU-R

“1 to carry out studies on this matter, particularly in respect of the bands identified in *noting* above, taking into account technical, operational, economic and other relevant factors, including the appropriate transitional arrangements, and how the introduction of digital emissions will affect the HF broadcasting requirements and how such reallocations will affect other services using these bands.”

further resolves

"to recommend a future competent conference to conclude, where appropriate, on additional spectrum requirements for the broadcasting service, taking into account the interest of all affected services"

Resolution 544 (WRC-03) resulted from work that was not completed at WRC-03. WRC-03 allocated 50 kHz in Region 2 to the broadcasting service as a result of the realignment of portions of the 7 MHz band under WRC-03 agenda item 1.23. Prior to WRC-03, the broadcasters identified a shortfall in the 4-10 MHz band of 250 kHz of spectrum to alleviate co-channel interference, and 800 kHz of spectrum to alleviate adjacent channel interference. The Resolution also calls for a review of the impact of relocating other services from current spectrum allocations if these broadcasting spectrum requirements were accommodated as well as what transitional arrangements should be made.

WARC-92 (5.136) decided to allocate 100 kHz of spectrum to the broadcasting service which will transition from fixed and mobile service allocations in 2007. Any further decrease in available spectrum may affect the ability of fixed and mobile services users to establish and maintain reliable essential and emergency communications services. Any consideration by WRC-07 of reallocating additional spectrum to the broadcast service should carefully consider the impact on existing and planned fixed and mobile services. Currently, there are 2 102 kHz between 4 and 10 MHz allocated to support the land mobile services and 2 712 kHz allocated to the fixed service. After April 1, 2007, implementation of the results of WARC-92 reduces that amount to 2002 kHz for land mobile and 2512 kHz for the fixed service as a result of the reallocation to the broadcast service. After March 29, 2009, in Region 2 an additional 50 kHz is allocated from the fixed and land mobile services to the broadcast service.

Because of their reliability and low cost, fixed and mobile HF services will continue to be required by Administrations. Administrations must be ready to support fluctuations in demand by the fixed and mobile service during emergency communications. The fixed and mobile services are unique in that requirements to use them increase during emergency situations. Public Protection and Disaster Relief operations depend on the availability of spectrum to support operations.

Displacement of current frequencies from the fixed and mobile service may require considerable expenses for realignment of communication networks and change (replacement) of antennas. In some cases it may be hard to establish required radio links based on the loss of currently

available portions of the spectrum and also due to spectrum crowding from realignment of assignments to account for any spectrum allocated from the fixed and mobile service to the broadcasting service.

The operational databases maintained by the HF Coordinating Committee illustrate that a broadcast primary allocation of 250 kHz of spectrum would alleviate co-channel interference, and 800 kHz of spectrum would alleviate adjacent channel interference. According to text contained in WP-8A/199, which originated from WP-6E, the broadcasters currently address this shortfall by using FS and LMS bands on a non-interference basis under Article 4.4. According to WP 6E/162, 80-85% of shortwave broadcasting hours in the 4-10 MHz band operate within broadcasting allocations and do not operate under Article 4.4.

There are interference risks associated with Article 4.4 operation. The HF Coordinating Committee and Administrations need to take these risks into account when assessing cross border interference potential and coordinating usage under Article 4.4. Some Administrations have reported interference from the broadcast service in the fixed and mobile bands. At least one incident resulted in discontinuation of broadcaster operations. Given this interference risk, Article 4.4 operations do not represent successful broadcaster occupancy of the fixed and mobile bands, nor do they justify reallocation of these portions of the fixed and mobile bands to the broadcasting service.

Broadcast providers are currently investing in alternate delivery methods which may be used to augment or replace programming hours. FM, cable, satellite, and Internet are beginning to provide alternate delivery in developed countries, but are problematic for developing countries due to cost, coverage, and reliability.

Recent natural disasters have demonstrated that the fixed and mobile services are unique in comparison to the broadcast service in that requirements are driven up rapidly during the development of emergency situations. Increased congestion is inevitable during periods of peak usage by the fixed and mobile services.

WP 9C has noted that during the 2004-2005 Indian Ocean Tsunami Relief Effort, the emergent need for HF communications drove up spectrum demand rapidly. Because of existing extensive usage of the HF bands in the disaster areas, it was not possible to provide all the required channels to meet required emergency communications.

Ionospheric (skywave) signal propagation is frequency selective and frequencies usable for communications between any two points change over time throughout the day. This is why several different segments of spectrum within the HF frequency range, are allocated to each radio service. This enables the users of the service to have full time access to frequencies that are usable throughout a 24-hour period.

For the fixed and mobile services, propagation concerns make it essential that the frequency channels or sub-bands of an HF pool are evenly spaced in order to adapt to the daily and seasonal changes in the ionosphere. Concentration of spectrum in large blocks with large gaps between them cannot be optimal based on HF propagation phenomena. Thus band spacing and

availability have become crucial factors which affect all services and have the potential to multiply requests for additional spectrum.

The fixed and mobile services transmit frequencies may change often, spreading the traffic over a wider spectrum. Statistically this may make it appear like there is lower occupancy of the HF spectrum. An adaptive system may find better propagation conditions and establish a link with lower power levels than non-adaptive systems. Given this agility, HF stations or HF circuits kept in a silent mode or on watch must be furnished with the full set of frequencies to meet emergency requirements at any moment in time.

The impact to the fixed and mobile services of allocating additional spectrum to the broadcasters would be too severe, since those additional allocations would come from bands assigned to these services. This situation will not change in the foreseeable future. Consequently Resolution 544 should be suppressed.

Resolution 729:

resolves

“1 that, in authorizing the operation of frequency adaptive systems in the MF and HF bands, administrations shall:

1.1 make assignments in the bands allocated to the fixed and mobile services;

1.2 not make assignments in the bands:

- allocated exclusively to the maritime or aeronautical mobile (R) services;
- shared on a co-primary basis with the broadcasting service, radiodetermination service or the amateur services;
- allocated to radio astronomy;

1.3 avoid use which may affect frequency assignments involving safety services made in accordance with Nos. 5.155, 5.155A and 5.155B;

1.4 take into account any footnotes applicable to the proposed bands and the implications regarding compatibility;

2 that frequency adaptive systems shall automatically limit simultaneous use of frequencies to the minimum necessary for communication requirements;

3 that, with a view to avoiding harmful interference, the system should evaluate the channel occupancy prior to and during operation;

4 that frequency adaptive systems shall be notified to the Bureau in accordance with the provisions of Article 11,”

Resolution **729 (WRC-97)** deals with implementation of adaptive HF systems and was not successfully addressed at either WRC-2000 or WRC-2003. Adaptive HF systems are systems that monitor the propagation environment on pre-established channels, and react to use the optimal frequencies available for transmission.

Frequency adaptive systems automatically limit simultaneous use of frequencies to the minimum necessary for communication requirements. According to 6E/223, which originated from WP-9C, this characteristic of adaptive systems does not necessarily reduce the number of frequencies that must be made available to ensure successful link establishment. Consideration must also be given to maintain quality of service for uses that fluctuate in response to situations such as those that arise during Public Protection and Disaster Relief. The number of frequencies in an adaptive frequency pool is directly interrelated to the specific HF propagation characteristics based on time of day, season, sunspot activity, etc. Therefore, efficiency improves as more frequencies are available. A network of stations is assigned a number of frequencies over which to communicate, and each station is assigned a unique address (*e.g.*, alpha-numeric).

Adaptive HF systems have been in use for over 20 years. No special consideration in the ITU Radio Regulations is required to fully implement adaptive HF systems. By their nature these systems already automatically limit simultaneous use of frequencies to the minimum necessary for communication requirements. These systems also automatically avoid harmful interference by evaluating the channel occupancy prior to and during operations.

To fully exploit modern HF technology, the availability of sufficient and coordinated spectrum resources is crucial, and bandwidth beyond the typical 3 kHz-channels must be available.

The channel bonding approach currently in use is based on the use of several 3 kHz contiguous channels. The advent of HF 64 kbps modems has begun to provide the ability to utilize HF spectrum for Internet, large file transfer, and advanced electronic messaging. Loss of HF spectrum allocated to the fixed and mobile services would constrain the development of advanced technologies such as messaging, file transfer, and the Internet.

The required studies related to adaptive HF technology have been adequately answered. Therefore, Resolution **729** can be suppressed.

However, there is an emergence of high bandwidth requirements in the form of advanced fixed and mobile HF systems which does require urgent study. Therefore a new resolution is required to examine the issues involved in implementing advanced fixed and mobile HF systems in the MF/HF bands.

Proposal:

USA/ /1

MOD

RESOLUTION 351 (WRC-~~03~~07)

Review of the frequency and channel arrangements in the MF and HF bands allocated to the maritime mobile service with a view to improving efficiency by considering the use of new digital technology by the maritime mobile service

The World Radiocommunication Conference (Geneva, ~~2003~~2007),

Reasons: Editorial

considering

- a) that the agenda of this Conference included consideration of the use of new digital technology in the maritime mobile service (MMS) in the MF and HF bands;
- b) that the introduction of new digital technology in the MMS shall not disrupt the distress and safety communications in the MF and HF bands including those established by the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended;
- c) that changes made in Appendix 17 should not prejudice the future use of these frequencies or the capabilities of systems or new applications required for use by the MMS;
- d) that the need to use new digital technologies in the MMS is growing rapidly;
- e) that the use of new digital technology on HF and MF frequencies allocated to the MMS will make it possible to better respond to the emerging demand for new services;
- f) that the HF bands allocated to the MMS for A1A Morse telegraphy and narrow-band direct-printing are significantly under-utilized at present;

USA/ /2

MOD

g) that the IMO supports replacing general communication narrow-band-direct-printing with new HF data exchange technology capable of working FEC NBDP,

h) that the IMO supports the frequencies of Appendix 15, concerning NBDP, be retained for the foreseeable future.

gi) that the ITU Radiocommunication Sector is conducting ongoing studies to improve the efficient use of these bands,

noting

a) that different digital technologies have already been developed and are in use in the MF and HF bands in several radiocommunication services,

b) that new maritime HF data transfer protocols have already been developed to replace general narrow-band-direct-printing communications using Appendix 17 frequencies,

noting also

that this conference has modified Appendix 17 to permit, ~~on a voluntary basis,~~ the use of various channels or bands identified in the MF and HF bands for ~~initial testing and future~~ the introduction of new digital technology,

resolves

1 that, in order to provide full worldwide interoperability of equipment on ships, there should be one technology, or more than one interoperable worldwide technology, implemented under Appendix 17;

2 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,

invites ITU-R

to finalize studies currently ongoing:

- to identify future requirements of the MMS;
- to identify the technical characteristics necessary to facilitate use of digital systems in the MF and HF bands allocated to the MMS, taking into account any relevant ITU-R Recommendations;
- to identify the digital system(s) to be used in the MF/HF bands by the MMS;
- to identify any necessary modifications to the frequency table contained within Appendix 17;
- identify maritime mobile HF spectrum for new systems, particularly in the range 10 to 18 MHz.
- identify additional spectrum resources in the range 9 to 10 MHz in order to facilitate the introduction of new technologies in the mobile maritime service, by overcoming the large gap between the 8 and 12 MHz maritime mobile bands;
- to propose a timetable for the introduction of new digital technologies and any consequential changes to Appendix 17;

- to recommend how digital technologies can be introduced while ensuring compliance with distress and safety requirements,

instructs the Secretary-General

to bring this Resolution to the attention of the International Maritime Organization, the International Civil Aviation Organization, the International Association of Marine Aids to Navigation and Lighthouse Authorities and the Comité International Radio-Maritime.

Reasons: There are still several studies underway that need to be completed prior to resolving this issue. These studies should be completed prior to the next Conference, where the appropriate changes to the RR can be considered.

USA/ /3 SUP

RESOLUTION 544 (WRC-03)

Identification of additional spectrum for the broadcasting service in the HF bands

Reasons: The impact to the Fixed and Mobile community is too severe to allocate additional spectrum to the broadcasters that would, in fact, come from bands assigned to these services. In addition, the long term need for additional broadcasting spectrum is unknown.

USA/ /4 SUP

RESOLUTION 729 (WRC-97)

Use of frequency adaptive systems in the MF and HF bands

Reasons: The studies under Resolution 729 have been completed. These studies have indicated that no changes to the RR are required to facilitate the introduction of adaptive techniques in the MF/HF bands.

RESOLUTION USA 1 (WRC-07)

**Bandwidth Requirements for Advanced Fixed and Mobile HF Technologies in
the 3 – 30 MHz Band**

The World Radiocommunication Conference (Geneva, 2007),

considering

- a) that there are a limited number of fixed and mobile 3 kHz bandwidth channels, and many channel bandwidths are below 500 Hz, in the planned portions of the 3-30 MHz band;
- b) that trials of advanced fixed and mobile HF frequency systems have demonstrated their feasibility and their associated spectrum efficiency;
- c) that advanced fixed and mobile HF frequency systems require larger channel bandwidth assignments which currently can only be accomplished through channel bonding;

noting

that some advanced fixed and mobile HF frequency adaptive systems utilize bandwidths of up to 12 kHz to support HF electronic messaging, HF Internet, and HF file transfer;

resolves to invite ITU-R

- 1 to determine the feasibility of changing the Radio Regulations to provide for the use of wider bandwidths to support advanced fixed and mobile HF systems in the 3 – 30 MHz band;
- 2 to bring the results of these studies to the attention of WRC-10

Reasons: Urgent studies are required to determine the suitability of changing the radio regulations to allow for wider bandwidths to the fixed and mobile services to accommodate advanced HF adaptive systems.

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