



PUBLIC NOTICE

Federal Communications Commission
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January 15, 2002

THE FCC'S ADVISORY COMMITTEE FOR THE 2003 WORLD RADIOCOMMUNICATION CONFERENCE APPROVES DRAFT PROPOSALS

On December 19, 2001, the World Radiocommunication Conference Advisory Committee (WRC-03 Advisory Committee) adopted recommendations to the Commission on numerous issues that the 2003 World Radiocommunication Conference (WRC-03) will address. The WRC-03 Advisory Committee was established by the Commission in January 2001 to assist it in the development of proposals for WRC-03. To that end, the WRC-03 Advisory Committee has forwarded the recommendations it has developed since the beginning of 2001 to the Commission for consideration. We have attached to this Public Notice the WRC-03 Advisory Committee's recommendations, which are in the form of recommended draft proposals to the WRC-03. We appreciate the substantial amount of work that the WRC-03 Advisory Committee has put into developing its recommendations. This Public Notice requests comments on all of 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 all of the proposals recommended by the WRC-03 Advisory Committee. We do, however, have some reservations about the proposals reflected in documents WAC/087 and WAC/088. We seek comment on the recommendations that appear in all of the WRC-03 Advisory Committee documents and on our tentative conclusions.

In addition, the National Telecommunications and Information Administration (NTIA) has submitted letters to the Commission containing draft proposals that have been developed by the Executive Branch Agencies. We also request comment on these draft proposals, which are attached hereto as well.

The FCC will consider the draft proposals and comments provided in its upcoming consultations with the U.S. Department of State and NTIA in the development of U.S. proposals to WRC-03. Once agreed by these agencies of the U.S. Government, proposals will be used by U.S. delegations at bilateral, regional and international meetings. The draft proposals attached to this Public Notice may evolve as we approach WRC-03 and during the course of interagency discussions. Therefore, they do not constitute the final national position on these issues.

The complete texts of these draft proposals are also available in the FCC's Information Reference Center, Room CY-A257, 445 12th Street, SW, Washington, DC 20554 and by accessing the FCC's WRC-03 world wide web site at <http://www.fcc.gov/wrc-03>. To comment on the proposals, please submit an original and one copy of your comments to the Office of the Secretary, Federal Communications Commission, 445 12th Street, SW, Washington, DC 20554 and provide a courtesy copy to Alex Roytblat,

FCC WRC-03 Director, Room 6-B505. Comments should refer to specific proposals by document number. The deadline for comments on the draft proposals and NTIA letters is **January 28, 2002**.

I. Informal Working Group 2: Mobile-Satellite Service including GPS

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Doc. WAC/079(19.12.01)

Agenda Item 1.6: to consider regulatory measures to protect feeder links (Earth-to-space) for the mobile satellite service which operate in the band 5150-5250 MHz, taking into account the latest ITU-R Recommendations (for example, Recommendations ITU-R S.1426, ITU-R S.1427 and ITU-R M.1454);

Background: The proliferation of transmitters in the Fixed and Mobile Services providing applications such as Radio Local Area Networks (RLANs) and other license exempt applications could cause interference to the feeder uplinks of non-GSO Mobile Satellite Service systems, operating in the Fixed Satellite Service. Regulatory measures must be considered to protect these links from interference.

The band 5150-5250 MHz is allocated on a primary basis to the FSS and its use is limited to non-GSO MSS feeder links by footnote S5.447A. This band is also allocated by footnote S5.447 to the mobile service (MS) on a co-primary basis in 27 countries in Regions 1 and 3 subject to S9.21. Administrations are currently considering the introduction of Fixed and Mobile Services in the band 5150-5250 MHz on a national and unlicensed, uncoordinated basis (see Recommendation ITU-R M.1454).

At WRC-2000, Resolution 1156 called for studies by the ITU-R leading to technical and operational recommendations to facilitate sharing between existing services and Fixed and Mobile Services, including RLANs in the bands 5150-5350 MHz and 5470-5725 MHz. It is anticipated that these studies will provide assurance that allocation to Fixed and Mobile Services, in these bands, can co-exist with incumbent non-GSO MSS feeder links and Aeronautical Radionavigation Service systems.

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

JRG 8A-9B developed Recommendation ITU-R M.1454 entitled "EIRP Density Limit and Operational Restrictions for RLANs or Other Wireless Access Transmitters in order to Ensure the Protection of Feeder Links of Non-Geostationary Systems in the Mobile Satellite Service in the Frequency Band 5150-5250 MHz." This Recommendation calls for implementers of wireless access systems to limit the EIRP density of such transmitters to 10mW in any 1 MHz, operate

these transmitters only indoors and ensure that the aggregate emissions of these transmitters do not exceed the power flux density limit given in Recommendation ITU-R S.1426.

Working Party 4A also considered the protection of MSS Feeder Links from wireless access system emissions and created two Recommendations in response to these studies. Recommendation ITU-R S.1426, entitled "Aggregate Power Flux Density Limits at the FSS Satellite Orbit for Radio Local Area Network (RLAN) Transmitters Operating in the 5150-5250 MHz Band Sharing Frequencies with the FSS (RR No. S5.447A)" imposes an aggregate power flux density limit on Fixed and Mobile Services equal to:

$$-124 - 20 \log_{10} (h_{\text{sat}} / 1414) \text{ dB(W/(m}^2 \cdot 1 \text{ MHz))}$$

where h_{sat} is the altitude of the spacecraft in kilometers. This limit is for the protection of FSS satellites using full earth coverage receive antenna beams.

Further, WP 4A created Recommendation ITU-R S.1427, entitled "Methodology and Criterion to Assess Interference from Radio Local Area Network (RLAN) Transmitters to Non-GSO MSS Feeder Links in the Band 5150-5250 MHz." This Recommendation specified that interference from RLAN transmitters should be assessed on the basis of an increase in ΔT_{sat} , the satellite receiver noise temperature, and, to ensure protection, this increase should be no greater than 3%. A Note to the Recommendation indicated that the interference absorbed by the satellite system should not lead to a reduction in capacity of more than 1%.

Unconstrained deployment of Fixed and Mobile Service applications could cause unacceptable levels of interference into the feeder uplinks of the non-GSO MSS. Appreciating this fact, WRC-2000 developed agenda item 1.6 for WRC-2003, which calls for the consideration of regulatory measures to protect the FSS (Earth-to-space) allocation in the band 5150-5250 MHz from RLAN interference.

Proposal:

**USA/ /1
ADD**

S5.447x In order to protect the non-GSO MSS feeder links (Earth-to-space) in 5150-5250 MHz from interference caused by devices in the fixed and mobile services, the following measures shall be taken:

- i) these devices shall be limited to a maximum average e.i.r.p. of 23 dBm and maximum average e.i.r.p. spectral density of 10 dBm in any 1 MHz;
- ii) these devices shall be limited to indoor applications only;
- iii) for signals with an occupied bandwidth less than or equal to 1 MHz, the e.i.r.p. spectral density shall not exceed $10 + 10\log_{10}(B)$ (dBm / B MHz), where B is the occupied bandwidth in MHz;

Reason: To provide reasonable regulatory measures for the protection of MSS feeder links (Earth-to-space) from interference from Mobile and Fixed Service transmitters while not unduly burdening the growth of those services.

**USA/ /2
ADD**

S5.447y Administrations should take into account the provisions of Recommendation ITU-R S.1426 for the protection of non-GSO MSS feeder links (Earth-to-space) in the 5150-5250 MHz band.

Reason: To provide reasonable regulatory measures for the protection of MSS feeder links (Earth-to-space) from interference from Mobile and Fixed Service transmitters while not unduly burdening the growth of those services.

**USA/ /3
MOD**

4 800-5 830 MHz

| Allocation to services | | |
|------------------------|---|----------|
| Region 1 | Region 2 | Region 3 |
| *** | | |
| 5 150-5 250 | AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE SERVICE (Earth-to-space) S5.447A S5.446 S5.447 S5.447B S5.447C <u>ADD S5.447x</u> <u>ADD S5.447y</u> | |
| *** | | |

Reason: Consequential

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Doc. WAC/080(19.12.01)

Agenda Item 1.15 (Resolution 605): “to review the results of studies concerning the radionavigation-satellite service in accordance with Resolutions **604 (WRC-2000)**, **605 (WRC-2000)** and **606 (WRC-2000)**”

Background information

WRC-2000 introduced new allocations in the band 1 164-1 215 MHz for use by the radionavigation-satellite service (RNSS) (space-to-space) and (space-to-Earth) with a provisional aggregate pfd limit of -115 dB (W/m²) in any 1 MHz band produced at the Earth’s surface by all space stations within all RNSS systems and for all angles of arrival. It also stated in **S5.328A** of the Radio Regulations that the provisions of Resolution **605 (WRC-2000)** apply. There was extensive discussion at WRC-2000 with regard to the need for a pfd limit and the value needed to protect aeronautical radionavigation service (ARNS) systems (including DME). Resolution **605** requested the ITU-R to study the technical, operational, and regulatory aspects of compatibility between RNSS and ARNS in the band 9 60-1 215 MHz, including an assessment of the need for an aggregate pfd limit. If such a need exists, the ITU-R was requested to revise, if necessary the provisional pfd limit given in **S5.328A** concerning the operation of RNSS (space-to-Earth) systems in the frequency band 1 164 – 1 215 MHz.

The ITU-R has determined that ARNS systems require protection from the aggregate of emissions from RNSS (space-to-Earth) systems and networks that collectively exceed [-XXX dB (W/m²)] in any 1 MHz produced at the Earth’s surface. There is, however, no reliable way for the Bureau to validate compliance by all RNSS systems with an aggregate pfd limit. Studies within the ITU-R reveal that there are a number of profound technical and regulatory reasons why establishment of the regulatory device of a permanent aggregate pfd limit on RNSS emissions in the 1 164-1 215 MHz band would fail to provide the protection to ARNS systems that is required and intended under **No. S5.328A** of the Radio Regulations, and would significantly and unduly constrain the development and implementation of RNSS systems in this band.

Addressing Resolution **605**, the U.S. has a strong need for both use of the RNSS spectrum and the continued operation of ARNS systems in the 1 164-1 215 MHz band. Furthermore, the U.S. is committed to protecting current and future ARNS systems operating in the same band as RNSS from harmful interference. This protection needs to be provided without unnecessarily delaying or hindering the implementation and provision of RNSS (space-to-Earth) services.

Based on its studies and studies within the ITU, the U.S. has identified a preferred regulatory approach for achieving the meaningful protection of the ARNS without unduly constraining RNSS development and operation. This approach is based on elements of Method B and Method C of the CPM report. It mandates the provision of aggregate interference protection at the level identified in ITU-R studies, but commits enforcement of the requirement to those administrations that actually operate and actually intend to operate RNSS systems. The approach manages the total amount of interference caused by these systems through the collaborative agreement on the part of administrations proposing and operating the RNSS systems. In this manner, there is no additional regulatory burden for the Bureau (which will not be tasked to validate compliance with the protection criterion); there will be a need for coordination among RNSS operators (both formal in an Article **S9** sense and informal thereafter pursuant to the provisions of the proposed new resolution and associated provisions in the Radio Regulations); and neither ARNS systems nor RNSS operators are faced with artificial or insufficient regulations that could leave them exposed to interference or forced to make unnecessary adjustments that inhibit the efficient use of the orbital/spectrum resource. The approach also takes account of the RRB concern about having multiple inconsistent regulations applicable to the same band.

Proposals:
USA/xx/1
MOD

890-1 350 MHz

| Allocation to services | | |
|-----------------------------------|--|----------|
| Region 1 | Region 2 | Region 3 |
| * * * | | |
| 960-1 215 <u>1 164</u> | AERONAUTICAL RADIONAVIGATION S5.328 | |
| <u>1 164-1 215</u> | <u>AERONAUTICAL RADIONAVIGATION S5.328</u> <u>RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) MOD S5.328A</u> | |
| * * * | | |

NOC S5.328

Reasons: This proposed modification to the Table of Frequency Allocations does not change in any way the frequency allocations made to the RNSS at WRC-2000. Instead, the proposed modification is necessary to reflect properly the allocation to RNSS that was made at WRC-2000. “Additional allocations” by footnote to Article **S5** are, pursuant to **No. S5.35** of the Radio Regulations, used for allocations to services in areas smaller than a Region or in a particular country. Since the RNSS allocation in the 1 164-1 215 MHz band made at WRC-2000 was a global allocation, it should be reflected directly in the Table.

USA/xx/2
MOD

S5.328A *Additional allocation:* ~~the band 1 164-1 215 MHz is also allocated to the radionavigation-satellite service (space to Earth) (space to space) on a primary basis. The aggregate power flux density produced by all the space stations of all radionavigation satellite systems at the Earth’s surface shall not exceed the provisional value of 115 dB(W/m²) in any 1 MHz band for all angles of arrival. Stations in the radionavigation-satellite service in the band 1164-1215 MHz shall not cause harmful interference to, nor claim protection from, stations of the aeronautical radionavigation service. The operate in accordance with the provisions of Resolution **RNSS (WRC-03) 605 (WRC-2000)** apply. Use of the band 1 164-1 215 MHz by the radionavigation-satellite service (space-to-Earth) is subject to the application of the provisions of **Nos. S9.12, S9.12A, and S9.13**. The provisions of **Nos. S21.18** also apply.~~

Reasons:

1. The suppression of the first sentence of **No. S5.328A** is a consequence of the modification proposed in USA/xx/1 above. The suppression of the second and modification of the third sentence reflect the incorporation into new Resolution **RNSS (WRC-03)** (see proposal USA/xx/4 below) and associated Radio Regulations (see proposal USA/xx/3 below) of the mechanisms for ensuring the protection of ARNS against harmful interference from RNSS (space-to-Earth) systems.

2. By making non-geostationary RNSS (space-to-Earth) systems subject to Article **S9** coordination obligations with respect to each other and with geostationary RNSS (space-to-Earth) systems (**Nos. S9.12 and S9.12A**), and by making geostationary RNSS (space-to-Earth) systems coordinate with non-geostationary RNSS (space-to-Earth) systems under **No. S9.13**, the Radio Regulations will provide an early start on discussions between administrations operating or planning to operate RNSS (space-to-Earth) systems. This will help ensure that the objective of assuring compliance with the aggregate protection criterion for ARNS in new Resolution **RNSS (WRC-03)** (see proposal USA/xx/4) is met. GSO RNSS systems are already obliged to coordinate with each other under **No. S9.7**.

Discussions between RNSS administrations, both during formal coordination and after, are critical to the success of the regulatory determination to commit to administrations the obligation to ensure that the aggregate protection criterion of the ARNS is satisfied. Thus, the new provision in **No. S21.18** (see proposal USA/xx/3) is specifically referenced here.

USA/xx/3
ADD

Section VI – Protection of aeronautical radionavigation service systems from aggregate emissions of space stations of radionavigation-satellite service systems in the 1 164-1 215 MHz band

S21.18 § 7 Administrations operating or planning to operate radionavigation-satellite service systems or networks in the 1 164-1 215 MHz frequency band, for which complete coordination or notification information, as appropriate, was received by the Bureau after 2 June 2000, shall, in accordance with *resolves* 2 of Resolution **RNSS (WRC-03)**, take all necessary steps to ensure that the actual aggregate interference into aeronautical radionavigation service systems caused by RNSS systems or networks operating co-frequency in these frequency bands does not exceed the aggregate power levels shown in *resolves* 1 Resolution **RNSS (WRC-03)**.

Reasons: Article **S21** of the Radio Regulations addresses sharing between terrestrial and space services in frequency bands above 1 GHz. Placement of this provision in a new Section **VI** of Article **S21** brings into the Radio Regulations the critical elements from new Resolution **RNSS (WRC-03)** (see proposal USA/xx/3 below) that make mandatory the collective obligation of administrations operating RNSS systems at 1 164-1 215 MHz to ensure that the aggregate protection criterion from *resolves* 1 of Resolution **RNSS** is not exceeded, as well as the requirement to reduce emissions if administrations operating ARNS systems identify excess emission levels.

RESOLUTION RNSS (WRC-2003)

Protection of aeronautical radionavigation service systems from the aggregate power flux-density produced by radionavigation-satellite service networks and systems in the 1 164-1 215 MHz frequency band

The World Radiocommunication Conference (Caracas, 2003),

considering

- a) that the band 1 164-1 215 MHz is allocated on a primary basis to the aeronautical radionavigation service (ARNS) in all Regions;
- b) that the band 1 164-1 215 MHz is also allocated on a primary basis to the radionavigation-satellite service (RNSS), subject to the condition in **No. S5.328A** that operation of RNSS systems shall be in accordance with this Resolution;
- c) that protection of the ARNS from harmful interference can be achieved if the value of the aggregate power flux-density produced by all the space stations of all RNSS (space-to-Earth) systems in the band referred to in *considering* a) does not exceed the level of $[-XXX \text{ dB(W/m}^2\text{)}]$ in any 1 MHz band for all angles of arrival;
- d) that WRC-2000 adopted Resolution **605 (WRC-2000)** to provide for implementation of a provisional aggregate power flux-density limit during the period between WRC-2000 and WRC-2003, and requested ITU-R studies on the need for an aggregate pfd limit, and revision, if necessary, of the provisional pfd limit given in **No. S5.328A**;
- e) that only a limited number of RNSS systems are expected to be deployed in the 1 164-1 215 MHz band, and only a few of these systems at most would have overlapping frequencies;
- f) that ARNS systems can be protected without placing undue constraints on the development and operation of RNSS systems in this band;
- g) that to achieve the objectives in *considering* f), administrations operating RNSS systems will need to agree cooperatively to achieve the level of protection for ARNS systems that is stated in *considering* c);
- h) that it may be appropriate for representatives of administrations operating ARNS systems to be involved in determinations made pursuant to *considering* g);

resolves

1 that, in order to protect ARNS systems, administrations shall ensure, without validation by the Bureau pursuant either to **No. S11.31** or **S9.35** of the Radio Regulations, that the aggregate pfd level produced by all space stations of all radionavigation-satellite service systems at the Earth's surface does not exceed the level, $[-XXX \text{ dB(W/m}^2\text{)}]$ in any 1 MHz band for all angles of arrival;

2 that administrations operating or planning to operate in the 1 164-1 215 MHz frequency band RNSS systems or networks for which complete coordination or notification information, as appropriate, was received by BR after 2 June 2000, in collaboration, shall take all necessary steps, including by means of appropriate modifications to their systems or networks, to ensure that the aggregate interference into ARNS systems caused by such RNSS systems or networks operating co-frequency in these frequency bands does not exceed the level of the aggregate protection criterion given in *resolves* 1 above;

3 that administrations, in carrying out their obligations under *resolves* 1 and 2 above, shall take into account only those RNSS systems with frequency assignments in the band 1 164-1 215 MHz that have met all of the milestones listed in the Annex to this Resolution;

4 that administrations shall communicate to the Bureau the results of any aggregate sharing determinations made in application of *resolves* 2 above, without regard to whether such determinations result in any modifications to the published characteristics of their respective systems or networks;

5 that stations in the RNSS shall not claim protection from stations in the ARNS;

6 that administrations operating ARNS systems in the 1 164-1 215 MHz band should participate, as appropriate, in discussions and determinations relating to the resolves above,

invites the ITU-R

to continue to develop, as a matter of urgency a suitable methodology for calculating the aggregate power flux-density produced by all RNSS systems operating or planning to operate co-frequency in the 1 164-1 215 MHz frequency band into ARNS systems, which may be used by administrations to determine whether the systems are in compliance with the aggregate power levels given in *resolves* 1 above.

ANNEX
Milestone Criteria for Application of Resolution RNSS

1. Submission of appropriate ITU Advance Publication, and Coordination or Notification documentation.
2. Entry into satellite manufacturing or procurement agreement:
The RNSS system or network operator should possess clear evidence of a binding agreement for the manufacture or procurement of its satellites. The agreement should identify the contract milestones leading to the completion of manufacture or procurement of satellites required for the service provision. The Notifying Administration is responsible for authenticating the evidence of agreement and providing such evidence to other interested administrations in furtherance of its obligations under this Resolution.
3. Entry into satellite launch agreement:
The RNSS system or network operator should possess clear evidence of a binding agreement to launch its satellites. The agreement should identify the launch date, launch site, and launch service provider. The Notifying Administration is responsible for authenticating the evidence of agreement and providing such evidence to other interested administrations in furtherance of its obligations under this Resolution.

Reasons: This resolution, along with incorporating provisions in Articles **S5** (see proposals USA/xx/1 and 2 above) and **S21** (see proposal USA/xx/3 above), provides the mechanism by which administrations operating or planning to operate RNSS systems, all of which also operate co-frequency ARNS systems, will undertake the responsibility for ensuring the protection of ARNS systems. *The value $-XXX\text{ dB (W/m}^2\text{/MHz)}$ remains to be determined within the ITU-R.* The resolution recognizes that there is a need for discussions between and among administrations operating RNSS systems to ensure compliance with the obligation to protect ARNS systems, and that such discussions may involve administrations operating ARNS systems. Resolution **RNSS** thus provides a basis for managing the total aggregate interference caused to ARNS systems by real RNSS systems.

USA/xx/5
SUP

RESOLUTION ~~605~~ (WRC-2000)

**Use of the frequency band ~~1 164-1 215 MHz~~ by systems of the
~~radionavigation-satellite service (space-to-Earth)~~**

Reasons: Consequential to proposals USA/xx/2, /3, and /4 above.

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Doc. WAC/081(19.12.01)

Agenda Item 1.15 (Resolution 606): *“to review the results of studies concerning the radionavigation-satellite service in accordance with Resolutions 604 (WRC-2000), 605 (WRC-2000) and 606 (WRC-2000)”*

Background information

WRC-2000 agreed to additional allocations to the Radionavigation Satellite Service (RNSS) (space-to-Earth) in the 1 260-1 300 MHz band making the entire 1 215-1 300 MHz band available for the use of this service in the band 1 215-1 300 MHz. This band was also allocated to the RNSS (space-to-space). The band 1 240-1 300 MHz is also allocated on a co-primary basis to radiolocation and radionavigation services for use of long-range primary radar systems. Studies were conducted pursuant to the provisions of this Resolution. Among other things, Resolution 606 called for studies on “the need for a power flux-density limit concerning the operation RNSS (space-to-Earth) systems in the frequency band 1 215–1 300 MHz in order to ensure that the radionavigation-satellite service (space-to-Earth) will not cause harmful interference to the radionavigation and radiolocation services.” Also in Resolution 606, WRC-2000 resolved that no additional constraints are to be placed on RNSS systems operating in the 1 215-1 260 MHz band.

The GPS, an RNSS system which operates on 1 227.6 MHz (24 MHz bandwidth), has been in operation in the band 1 215–1 260 MHz since 1978. It provides positioning and navigation services from space. Currently, this signal is used for high precision GPS in high productivity applications, such as machine guidance in survey, construction, agriculture, and mining. With an expanding capability to receive an additional civilian GPS signal, other civilian and commercial sectors have yet to be developed. The existing signal will continue to be a low power signal in the 1 215-1 300 MHz band. This signal has been transmitted at its current power level for over 12 years and has not caused any harmful interference to other users of the band. This has been accomplished without the need for power flux-density limits in the Radio Regulations (see also Recommendation ITU-R M.1088). There are large numbers of Global Positioning System (GPS) receivers operating in the band 1 215-1 260 MHz.

It is noted that the GLONASS RNSS system has also operated successfully in the 1 215-1 260 MHz band for many years without causing harmful interference to other co-frequency systems. This is accomplished on the basis given in Recommendation ITU-R M.1317 and includes a signal of up to -133 dB W/m²/MHz. Operational experience with current GPS and GLONASS system characteristics in the 1 215-1 260 MHz band, has not led to any reports of harmful interference being caused to existing radar systems.

As RNSS system characteristics are expected to evolve and new systems are planned, analyses are being conducted to determine the impact of a more powerful RNSS space-to-Earth signal on radar systems in the 1 215-1 300 MHz band.

Some administrations have planned RNSS systems that have a future requirement to produce a pfd level higher than -133 dB (W/m²/MHz) in the 1 215-1 260 MHz band.

Users of radars in the band will be protected in accordance with the provision of **No. S5.329**.

Proposals:

USA/xx/1
NOC

890-1 350 MHz

| Allocation to services | | |
|------------------------|--|----------|
| Region 1 | Region 2 | Region 3 |
| *** | | |
| 1 215-1 240 | EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 S5.329A SPACE RESEARCH (active) S5.330 S5.331 S5.332 | |
| 1 240-1 260 | EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 S5.329A SPACE RESEARCH (active) Amateur S5.330 S5.331 S5.332 S5.334 S5.335 | |
| 1 260-1 300 | EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 S5.329A SPACE RESEARCH (active) Amateur S5.282 S5.330 S5.331 S5.334 S5.335 S5.335A | |
| *** | | |

Reasons: There is no need for a power flux-density limit to be imposed in 1 215-1 300 MHz band. Some administrations have successfully operated RNSS and radar systems in the 1 215-1 260 MHz band for more than 12 years with no reported harmful interference. Although there will be future requirements to improve upon the existing signal with modest increases in the spectral power density at the Earth's surface, it is expected that such improvements to the RNSS signal will not cause harmful interference to

the radiolocation and radionavigation services in the same band which will be protected in accordance with the provisions of **No. S5.329**.

USA/xx/2
MOD

S5.329 Use of the radionavigation-satellite service in the band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under No. **S5.331**. ~~See also Resolution 606 (WRC 2000).~~

Reasons: Consequential to the determination that there is no need for a power flux-density limit to be imposed in the 1 215-1 300 MHz band.

USA/xx/3
SUP

~~RESOLUTION 606 (WRC 2000)~~

~~**Use of the frequency band 1 215-1 300 MHz by systems
of the radionavigation-satellite service (space-to-Earth)**~~

Reasons: Consequential to the determination that there is no need for a power flux-density limit to be imposed in the 1 215-1 300 MHz band.

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Doc. WAC/082(19.12.01)

Agenda Item 1.31: *"to consider the additional allocations to the mobile-satellite service in the 1-3 GHz band, in accordance with Resolutions 226 (WRC-2000) and 227 (WRC-2000)"*

BACKGROUND: WRC-2000 considered proposals for an allocation to the mobile-satellite service (MSS) (space-to-Earth) in Regions 1 and 3 in the frequency band 1 518-1 525 MHz. This band is adjacent to the 1 525-1 559 MHz band in use by GSO MSS operators.

WRC-2000 considered in Resolution **226** that the proposed allocation to the MSS (space-to-Earth) at 1 518-1 525 MHz due to their potentially widespread emissions upon the Earth from either geostationary or non-geostationary systems, could have an impact on the mobile service, including aeronautical mobile and aeronautical mobile telemetry, in all three Regions. Resolution **226** also states there is a need to review the pfd values in Appendix **S5** in order to ensure that they are adequate to protect new point-to-multipoint systems operating in the fixed service in the band, as well as, a need to study sharing between the MSS and aeronautical mobile telemetry in all the Regions in the band. Sharing studies have been performed, and a number of these studies lead to the conclusion that sharing between MSS and flight aeronautical mobile telemetry is not possible.

Recommendation ITU-R M.1459 gives the values needed for protection of the aeronautical mobile service for telemetry systems in the 1 452-1 525 MHz band from geostationary satellites operating in the MSS. The validity of M.1459 has been affirmed in several sharing studies presented to and debated within ITU Working Parties 8B and 8D. The required separation distances between co-frequency telemetry and MSS operations prescribed by the levels in M.1459 are large, making the feasibility of use of the 1 518-1 525 MHz band by MSS questionable. This is true for co-frequency, co-coverage sharing and for co-frequency, non-co-coverage sharing, even when the mitigation techniques suggested in Recommendation M.1459 are considered.

There has been no MSS implemented in the 1 492-1 525 MHz band due to the incompatibility between aeronautical telemetry and MSS systems.

Proposals:

USA/ /1

MOD

1 492-1 525 MHz

| Allocation to Services | | |
|---|--|--|
| Region 1 | Region 2 | Region 3 |
| <p>1 452 - 1492</p> <p>FIXED MOBILE except aeronautical mobile BROADCASTING S5.345 S5.347 BROADCASTING- SATELLITE S5.345 S5.347</p> <p>S5.341 S5.342</p> | <p>1 452 - 1 492</p> <p>FIXED MOBILE S5.343 BROADCASTING S5.345 S5.347 BROADCASTING SATELLITE S5.345 S5.347</p> <p>S5.341 <u>MOD S5.344</u></p> | |
| <p>1 492 - 1 525</p> <p>FIXED MOBILE except aeronautical mobile</p> <p>S5.341 S5.342</p> | <p>1 492 - 1 525</p> <p>FIXED MOBILE S5.343 MOBILE SATELLITE -(space to Earth) S5.348A</p> <p>S5.341 S5.344 S5.348</p> | <p>1 492 - 1 525</p> <p>FIXED MOBILE</p> <p>S5.341 S5.348A</p> |

Reason: There has been no MSS implemented in the 1 492-1 525 MHz band due to the incompatibility between aeronautical telemetry and MSS systems.

USA/ /2
NOC

1 492-1 525 MHz

| Allocation to Services | | |
|--|-----------------|--|
| Region 1 | Region 2 | Region 3 |
| 1 492 - 1 525 FIXED MOBILE except aeronautical mobile S5.341 S5.342 | * * * | 1 492 - 1 525 FIXED MOBILE S5.341 S5.348A ^[NOTE] |

Note: The U.S. proposes that there be no change to the Allocations to Services in Regions 1 and 3 in the band 1 492 - 1 525 MHz. The proposed deletion of No. S5.348A in USA/ /1 above is a consequence of the proposed deletion of the Mobile-Satellite Service (space-to-Earth) allocation in Region 2, and is shown here for sake of consistency.

Reason: U.S. studies have shown that sharing between MSS and Aeronautical Telemetry in 1 492 - 1 525 MHz, even when the service area is in an adjacent ITU Region, is not feasible.

USA/ /3
MOD

S5.344 Alternative Allocation: in the United States, the band 1452-~~1492~~ 1525-MHz is allocated to the fixed and mobile services on a primary basis (see also No. **S5.343**).

Reason: Consequential to the suppression of the mobile-satellite service from the Table of Frequency Allocations in the band 1492-1525 MHz in Region 2.

USA/ /4
SUP

~~**S5.348**~~

Reason: Consequential to the deletion of the Mobile-Satellite Service from the Table of Frequency Allocations at 1492 - 1525 MHz in Region 2.

USA/ /5
 SUP

S5.348A

Reason: Consequential to the deletion of the Mobile-Satellite Service from the Table of Frequency Allocations at 1492 - 1525 MHz in Region 2.

USA/ /6
 MOD

Appendix S5
ANNEX 1

TABLE S5-2

| Frequency band (MHz) | Terrestrial service to be protected | Coordination threshold values | | | | |
|----------------------|-------------------------------------|---|---------------------|---|---------------------|---------------------------|
| | | GSO space stations | | Non-GSO space stations | | |
| | | pfd (per space station) calculation factors (NOTE 2) | | pfd (per space station) calculation factors (NOTE 2) | | % FDP (in 1 MHz) (NOTE 1) |
| | | <i>P</i> | <i>r</i> dB/degrees | <i>P</i> | <i>r</i> dB/degrees | |
| 1492-1525 | Analogue FS telephony (NOTE 5) | -146 dB(W/m ²) in 4 kHz and -128 dB(W/m ²) in 1 MHz | 0.5 | -146 dB(W/m ²) in 4 kHz and -128 dB(W/m ²) in 1 MHz | 0.5 | |
| | All other cases (NOTE 4) | -128 dB(W/m ²) in 1 MHz | 0.5 | -128 dB(W/m ²) in 1 MHz | 0.5 | 25 |

NOTE 4— Exceptions for the band 1 492-1 525 MHz are as follows:

- ~~4.1 For the land mobile service on the territory of Japan (No. S5.348A): -150 dB(W/m²) in 4 kHz at all angles of arrival is applicable to all satellite space-to-Earth emissions.~~
- ~~4.2 For the aeronautical mobile service for telemetry (No. S5.343), the requirement for coordination is determined by frequency overlap (No. S5.348).~~

NOC NOTE 5

Reason: Consequential changes due to the deletion of MSS from the band 1 492- 1 525 MHz.

II. Informal Working Group 3: Fixed-Satellite Service/Broadcasting-Satellite Service

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Doc. WAC/083(19.12.01)

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

Background Information: Aeronautical Mobile-Satellite Service (AMSS) systems in the 14 - 14.5 GHz band are proposed to meet the growing demand for two-way broadband communication, including data transmission, for commercial aircraft passengers and crew. In Resolution 216, WRC-2000 resolved that WRC-03 should examine the possibility of broadening the secondary allocation to the mobile-satellite service (Earth-to-space), except aeronautical mobile-satellite, in the 14-14.5 GHz band to include aeronautical use, should the ITU-R studies demonstrate that such a secondary service can be operated without causing interference to the primary services. It further invited the ITU-R to complete, in time for WRC-03, the technical and operational studies on the feasibility of the sharing of the band 14-14.5 GHz between the fixed-satellite (Earth-to-space), radionavigation, fixed and mobile services, except aeronautical mobile, and the aeronautical mobile-satellite service, with the latter service on a secondary basis.

The ITU-R studies have concluded that appropriately designed AMSS systems can operate on a secondary basis in the band 14-14.5 GHz without causing harmful interference to services having primary allocations in the band. Additional studies have shown the feasibility of AMSS sharing with services employing secondary allocations. The ITU-R has also developed [Draft New] Recommendation ITU-R M.[AMSS] to provide administrations a common technical basis for implementing AMSS systems.

On the basis of the conclusions of the studies under Resolution 216, the secondary MSS allocation in the 14-14.5 GHz band can now be extended to include aeronautical use. No other regulatory changes are required and Resolution 216 may be suppressed. To encourage the timely development of AMSS in this band, it will also be proposed that the change of allocation be provisionally applied from the end of WRC-03.

PROPOSALS:

USA/ / 1

MOD

14-14.5 GHz

| Allocation to services | | |
|--|---|--|
| Region 1 | Region 2 | Region 3 |
| 14-14.25 | FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 RADIONAVIGATION S5.504 Mobile-satellite (Earth-to-space) except aeronautical mobile satellite Space research S5.505 | |
| 14.25-14.3 | FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 RADIONAVIGATION S5.504 Mobile-satellite (Earth-to-space) except aeronautical mobile satellite Space research S5.505 S5.508 S5.509 | |
| 14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to- space) except aeronautical mobile satellite Radionavigation-satellite | 14.3-14.4 FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 Mobile-satellite (Earth-to-space) except aeronautical mobile satellite Radionavigation-satellite | 14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile satellite Radionavigation-satellite |
| 14.4-14.47 | FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile satellite Space research (space-to-Earth) | |
| 14.47-14.5 | FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile satellite Radio astronomy S5.149 | |

Reasons:

On the basis of ITU-R studies, appropriately designed and controlled AMSS systems can operate on a secondary basis in the band 14-14.5 GHz without causing harmful interference to the primary services in the band. Studies have also shown the feasibility of AMSS sharing with systems employing secondary allocations in this frequency band.

NOTE: A separate proposal will be needed to give immediate effect to this secondary allocation upon the conclusion of the conference. This is normally achieved by a resolution developed at the conference calling for provisional application of specific conference actions (such as Resolution 54 (WRC-97)) together with a reference in Article S59, Entry into Force and Provisional Application of Radio Regulations (such as S59.6).

USA/ / 2

SUP

RESOLUTION 216 (Rev.WRC-2000)

Possible broadening of the secondary allocation to the mobile-satellite service (Earth-to-space) in the band 14-14.5 GHz to cover aeronautical applications

Reasons:

Work is complete.

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Doc. WAC/084(19.12.01)

Agenda Item 1.29: “to consider the results of studies related to Resolutions 136 (WRC-2000) and 78 (WRC-2000) dealing with sharing between non-GSO and GSO systems”

Background information

WRC-2000 adopted a combination of single-entry validation, operational and, for 3 and 10 meter antennas in the 10.7-12.75 GHz band, single-entry additional operational epfd_{\downarrow} limits contained in Article **S22**, along with the aggregate epfd_{\downarrow} limits in Resolution **78 (WRC-2000)**, which apply to non-GSO FSS systems to protect GSO networks in the bands 10.7-12.75 GHz, 17.8-18.6 GHz, and 19.7-20.2 GHz. The operational epfd_{\downarrow} limits were adopted to protect *operational* GSO FSS networks from interference levels that may result in loss of synchronization, or loss of capacity, or severe degradation in performance.

Compliance with the operational epfd_{\downarrow} and additional operational epfd_{\downarrow} limits is not subject to verification by the ITU-BR but by individual administrations. In the case of operational epfd_{\downarrow} limits, verification would be made by measurement conducted by administrations and/or their GSO system operators. A commitment by the administration (and their non-GSO operator) that the system filed will meet the additional operational epfd_{\downarrow} limits is part of the Appendix **S4** coordination data. A non-GSO system causing interference must reduce its epfd_{\downarrow} power levels towards the affected GSO earth station to meet the single-entry operational epfd_{\downarrow} limits unless otherwise agreed by the concerned administrations.

The ITU-R has identified the need for specific procedures that correct in the most expeditious manner any cases where the operational epfd_{\downarrow} (see Tables **S22-4A** through **S22-4C**) or additional operational epfd_{\downarrow} limits (see Table **S22-4A1**) are exceeded, by the inclusion of appropriate procedures in the Radio Regulations. Resolution **78 (WRC-2000)**, *Development of procedures in case the operational or additional operational limits in Article S22 are exceeded*, invites the ITU-R to undertake the appropriate regulatory studies to develop procedures in cases where the operational epfd_{\downarrow} limits in the bands 10.7-12.75 GHz, 17.8-18.6 GHz, and 19.7-20.2 GHz or the single-entry additional operational epfd_{\downarrow} limits for 3 and 10 meter antennas in the 10.7-12.75 GHz band are exceeded at an operational GSO earth station.

The U.S. recognizes the need to correct in an expeditious manner any cases where the single-entry operational or additional operational limits in Section II of Article **S22** are exceeded. It has determined that the preferred way to satisfy this need is to include in Section II of Article **S22** a regulatory provision that incorporates a WRC resolution that contains procedures that facilitate the rapid identification of which non-GSO system in a multiple-non-GSO system environment is responsible for an exceedance of the operational and/or additional operational epfd_{\downarrow} limits. The procedures proposed include relatively tight time periods for the taking of certain actions – in recognition of the fact that if an exceedance is observed, the interference being received is unacceptable *per se* under **No. S22.5I** of the Radio Regulations. As the procedures are of extremely limited applicability (they only apply to exceedances of the operational and/or additional operational epfd_{\downarrow} limits in **No. S22.5I** and its associated tables by non-GSO systems that are subject to the limits), it is most appropriate that they be included in a resolution that is referenced in **No. S22.5I** directly.

Proposals:

USA/xx/1

MOD

S22.5I 6) An administration operating a non-geostationary-satellite system in the fixed-satellite service which is in compliance with the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** shall be considered as having fulfilled its obligations under No. **S22.2** with respect to any geostationary-satellite network, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite system and the geostationary-satellite network, provided that the epfd_{\downarrow} radiated by the non-geostationary-satellite system in the fixed-satellite service into any operating geostationary fixed-satellite service earth station does not exceed the operational and additional operational limits given in Tables **S22-4A**, **S22-4A1**, **S22-4B** and **S22-4C**, when the diameter of the earth station antenna is equal to the values given in Table **S22-4A**, **S22-4A1** or **S22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the geostationary fixed-satellite service satellite. Except as otherwise agreed between concerned administrations, an administration operating a non-geostationary-satellite system in the fixed-satellite service that is subject to the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** and which radiates epfd_{\downarrow} into any operating geostationary fixed-satellite service earth station at levels in excess of the operational or additional operational limits given in Tables **S22-4A**, **S22-4A1**, **S22-4B** and **S22-4C**, when the diameter of the earth station antenna is equal to the values given in Table **S22-4A**, **S22-4A1** or **S22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the geostationary fixed-satellite service satellite, shall be considered to be in violation of its obligations under No. **S22.2**. The provisions of Resolution XXX (WRC-03) shall apply in the event of noncompliance with the single-entry operational and additional operational limits in Section II of Article S22 by a non-geostationary satellite system in the fixed-satellite service that is subject to the limits in Nos. S22.5C, S22.5D and S22.5F.

Reasons: A violation of the operational and/or additional operational epfd_{\downarrow} limits by a non-GSO FSS system subject to the limits is *per se* a violation of No. **S22.2** of the Radio Regulations. As multiple non-GSO FSS systems may be in operation at any one time, any one of which could be responsible for the violation, it is imperative that reasonable and expeditious procedures be available to administrations of victim GSO networks to enable them swiftly to identify the interfering non-GSO system and initiate effective corrective measures. The inclusion in No. **S22.5I** of a reference to a new WRC-03 resolution (see proposal USA/xx/2 below) that contains these procedures is a critical element of this approach.

USA/xx/2

ADD

RESOLUTION XXX (WRC-2003)

**Procedures in case the operational or additional
operational limits in Article S22 are exceeded**

The World Radiocommunication Conference (Caracas, 2003),

considering

- a) that WRC-2000 adopted in Article **S22** single-entry operational limits (see Tables **S22-4A** through **S22-4C**) and single-entry additional operational epfd_{\downarrow} limits (see Table **S22-4A1**) applicable to non-geostationary (non-GSO) fixed-satellite service (FSS) systems (space-to-Earth) in certain parts of the frequency range 10.7-20.2 GHz to protect geostationary systems operating in the same frequency bands;
- b) that, taking into account Nos. **S22.5H** and **S22.5I**, wherever the limits referred to in *considering a*) are exceeded by a non-GSO FSS system to which the limits apply, this constitutes a violation of No. **S22.2**;
- c) that WRC-2000 identified the need for specific procedures that correct in the most expeditious manner any cases where the limits in *considering a*) are exceeded, by the inclusion of appropriate procedures in the Radio Regulations;
- d) that the ITU-R has developed Recommendations ITU-R S.1527 and [S.4BL23] to assist administrations in identifying the source of interference in excess of the operational epfd_{\downarrow} limits and measuring levels of epfd_{\downarrow} levels to verify compliance with the operational limits, respectively;
- e) that no procedures currently exist in the Radio Regulations to expeditiously address the unique regulatory situation of **S22.5I**;

resolves

that the procedures contained in the Annex be applied in the event of noncompliance with the single-entry operational and additional operational limits in Section II of Article **S22** by a non-geostationary satellite system in the fixed-satellite service that is subject to the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F**.

ANNEX

Procedures to be applied in the event of non-compliance with single-entry operational and additional operational limits in Section II of Article S22

- 1** It is essential that Member States exercise the utmost goodwill and mutual assistance in the application of these procedures for the expeditious elimination of equivalent power flux density (epfd_↓) interference from non-geostationary satellite systems in the fixed-satellite service at levels above the operational epfd_↓ limits given in Tables **S22-4A**, **S22-4B** and **S22-4C** and/or the additional operational epfd_↓ limits given in Table **S22-4A1** (“excess epfd_↓ interference”).
- 2** In securing the expeditious elimination of excess epfd_↓ interference, due consideration should be given to all factors involved, including the relevant technical and operational factors.
- 3** Administrations should cooperate in the detection and elimination of excess epfd_↓ interference.
- 4** Where practicable, and subject to agreement between the administrations concerned, the case of excess epfd_↓ interference may be dealt with directly between their operating organizations.
- 5** When a case of excess epfd_↓ interference to a frequency assignment in a geostationary satellite network is detected at an operating earth station associated with the geostationary satellite network and such excess epfd_↓ interference cannot be accepted by the affected administration, the affected administration should first attempt to identify the source of the excess epfd_↓ interference. For purposes of these procedures, the term “affected administration” shall mean the administration on whose territory the receiving earth station associated with the geostationary satellite network is located or its designee.
- 6** If an affected administration referred to in No. 5 has difficulty in determining the source or characteristics of the excess epfd_↓ interference:
 - a) It may send a request for cooperation to any administration which has submitted to the Bureau complete advance publication, coordination, or notification information, as appropriate, for non-GSO FSS systems with overlapping frequency assignments that have been brought into use in the frequency bands subject to the limits referred to in No. 1, providing all relevant details in a Report of Excess epfd_↓ Interference utilizing the form [to be developed] provided in the Attachment to these procedures. A copy of any such request, including the Report of Excess epfd_↓ Interference, should be sent to Bureau.
 - b) Upon receipt of such a request for cooperation under No. 6 a), each administration should, as soon as possible but within 15 days, acknowledge receipt and send to the requesting administration(s), with a copy to the Bureau, information that may be used to identify the source of the excess epfd_↓ interference and/or to eliminate one or more

non-GSO FSS systems referred to in No. 6 a) as the source of the excess epfd_{\downarrow} interference.

- c) If an administration fails to respond within 15 days of receipt to a request for cooperation under No. 6a), an affected administration may request the assistance of the Bureau, in which case Bureau should forthwith request the non-responding administration, to provide the information referred to in No. 6b) within 15 days of an affected administration's request for the assistance of the Bureau.
- d) If an administration fails to respond to the Bureau within the time period established in No. 6c) above, the Bureau should:
- If the procedure of Article S11 has not been completed for the frequency assignments of the non-geostationary satellite system in the fixed-satellite service in question, publish a remark in the IFIC within one month to the effect that the responsible administration did not respond to a request for cooperation regarding an unresolved complaint of excess epfd_{\downarrow} interference; or
 - If the procedure of Article S11 has been completed for the frequency assignments of the non-geostationary satellite system in the fixed-satellite service in question, enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the non-GSO FSS system in question to the effect that the responsible administration did not respond to a request for cooperation regarding an unresolved complaint of excess epfd_{\downarrow} interference.

7 Upon receipt of the information identified in No. 6a), the Bureau should promptly communicate to all administrations contacted under No. 6a) the identity of any non-geostationary fixed-satellite service systems that, on the basis of determining compliance with the epfd_{\downarrow} validation limits in Tables S22-1A through S22-1D, the Bureau has concluded to have a maximum epfd_{\downarrow} lower than the limits referred to in No. 1, for all pointing directions towards the geostationary-satellite orbit and therefore would not be responsible for causing epfd_{\downarrow} interference in excess of the limits referred to in No. 1.

8 Once the source(s) of the excess epfd_{\downarrow} interference have been identified, an affected administration may send a letter, by fax or other mutually agreed electronic means, to the administration(s) concerned and request immediate corrective action. It should give all useful information, including a Report of Excess epfd_{\downarrow} Interference, to enable the responding administration(s) to take such steps as may be necessary to reduce the interference to the epfd_{\downarrow} levels required in Table **S22-4A**, **S22-4A1**, **S22-4B** or **S22-4C**, as appropriate, or to higher levels as may otherwise be or have been agreed between concerned administrations pursuant to **No. S22.5I**. A copy of any such request for immediate corrective action, including the Report of Excess epfd_{\downarrow} Interference, should be sent to Bureau.

9 Upon receipt of such a request for immediate corrective action under No. 8, an administration should acknowledge receipt to the requesting administration within 15 days, with a copy to the Bureau. Such acknowledgement would not constitute acceptance of responsibility.

10 Within 15 days after receipt of a request for immediate corrective action pursuant to No. 8 above, the administration receiving the request should either:

- a) Provide the requesting administration and the Bureau with information indicating that no non-geostationary fixed-satellite service system for which it is responsible could have caused the excess $epfd_{\downarrow}$ interference experienced by the receiving earth station associated with the geostationary satellite network; or
- b) Acknowledge responsibility for causing the excess $epfd_{\downarrow}$ interference and immediately reduce emissions of the interfering system into the affected receiving earth station associated with the geostationary satellite network to the $epfd_{\downarrow}$ levels specified in Table **S22-4A**, **S22-4A1**, **S22-4B** or **S22-4C**, as appropriate, or to the $epfd_{\downarrow}$ levels otherwise agreed between concerned administrations pursuant to **No. S22.5I**, whichever is higher. Full particulars of the action taken by the administration responsible for causing the excess $epfd_{\downarrow}$ interference should be provided to the requesting administration.

In either case, the Bureau should be informed of the action taken.

11 If an administration fails to act in accordance with No. 10 above, an affected administration may request the assistance of the Bureau, in which case the Bureau should forthwith request the non-responding administration to act in accordance with No. 10 within 15 days of the affected administration's request for the assistance of the Bureau.

12 If the administration fails to respond to the Bureau within the time period established in No. 11 above, the Bureau should:

- If the procedure of Article S11 has not been completed for the frequency assignments of the non-geostationary satellite system in the fixed-satellite service in question, publish a remark in the IFIC within one month to the effect that the responsible administration did not respond to a request for immediate corrective action regarding an unresolved complaint of excess $epfd_{\downarrow}$ interference; or
- If the procedure of Article S11 has been completed for the frequency assignments of the non-geostationary satellite system in the fixed-satellite service in question, enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the non-GSO FSS system in question to the effect that the responsible administration did not respond to a request for immediate corrective action regarding an unresolved complaint of excess $epfd_{\downarrow}$ interference.

13 If an administration acknowledges responsibility for causing the excess $epfd_{\downarrow}$ interference pursuant to No. 10b) above, but fails to reduce immediately emissions of the interfering system as required:

- a) It should have an additional 10 days to take the necessary action to correct the excess $epfd_{\downarrow}$ interference situation pursuant to No. **S15.21** of the Radio Regulations.
- b) If, after the 10-day period, the administration responsible for the interference has still not reduced emissions of the interfering system as required, the Bureau should:
 - If the procedure of Article S11 has not been completed for the frequency assignments of the non-geostationary satellite system in the fixed-satellite service in question, publish a remark in the IFIC within one month to the effect that the responsible

administration is in contravention of its obligations under No. S22.2 and No. S22.5I;
or

- If the procedure of Article S11 has been completed for the frequency assignments of the non-geostationary satellite system in the fixed-satellite service in question, enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the non-GSO FSS system in question to the effect that the use of the affected frequency assignments by the interfering system is in contravention of its obligations under No. S22.2 and No. S22.5I of the Radio Regulations. Notice of the entry of the remark should be included in the IFIC.

14 The Bureau should retain any entry in the Remarks column of the Master Register made pursuant to No. 6*d*), No. 12 or No. 13*b*) above, which should remain in place until such time as the non-responding administration responds and/or corrects the excess $epfd_{\downarrow}$ interference, as appropriate.

ATTACHMENT

Report of Excess efd_↓ Interference Form

[To Be Developed]

Reasons: The development of procedures to help secure prompt identification of violators of the operational and/or additional operational efd_↓ limits was found by WRC-2000 to be necessary to effect the proper balance that WRC-2000 achieved between GSO and non-GSO systems in Section II of Article **S22** of the Radio Regulations. The U.S. believes that it is most appropriate to include the procedures, which apply only to certain exceedances of the levels in **No. S22.5I** of the Radio Regulations, in a resolution called out in **No. S22.5I**. The procedures themselves have been developed within the ITU-R, and provide administrations operating non-GSO FSS systems with the proper incentive to cooperate to expeditiously resolve exceedances of the operational and/or additional operational efd_↓ limits without imposing undue administrative or regulatory burdens.

USA/xx/3

SUP

~~RESOLUTION 78 (WRC-2000)~~

~~**Development of procedures in case the operational or additional
operational limits in Article S22 are exceeded**~~

Reasons: Consequential to the modification of **No. S22.5I** and the adoption of Resolution **XXX (WRC-03)** (see proposals USA/xx/1 and USA/xx/2 above).

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Doc. WAC/085(19.12.01)

Agenda Item 1.37: *“to consider the regulatory and technical provisions for satellite networks using highly elliptical orbits (HEOs);”*

Background information

The ITU-R has been considering the sharing aspects of HEO satellite systems (occasionally referred to as “quasi-geostationary” systems) in a number of contexts over the last several years.

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

To date, several categories of orbits that are encompassed within the term “highly elliptical” have been identified within the ITU-R. All highly-elliptical orbits, however, are non-geostationary orbits, and all HEO systems are non-geostationary systems. In this regard, recent studies in certain frequency bands between 10 and 30 GHz resulted in a series of new regulations in Articles **S21** and **S22** that were adopted at the 1997 and 2000 WRCs, including pfd limits on non-GSO FSS systems to protect terrestrial systems and epfd limits on non-GSO FSS systems to protect GSO FSS and BSS networks. The pfd and epfd limits and associated provisions that were imposed on non-GSO FSS systems in the applicable segments of the 10-30 GHz band apply to non-GSO FSS systems in highly elliptical orbits.

The following proposals under Agenda Item 1.37 are intended to avoid any potential confusion regarding the applicability of newly-adopted regulations in Articles **S21** and **S22** to all non-GSO systems, including those employing highly-elliptical orbits.

It is expected that there will be additional proposals under this agenda item to address HEO use of other frequency bands.

Proposals:
USA/xx/1
NOC

TABLE S21-4 (continued)

| Frequency band | Service* | Limit in dB(W/m ²) for angle of arrival (δ) above the horizontal plane | | | Reference bandwidth |
|---|---|---|---|---|---------------------|
| | | 0°-5° | 5°-25° | 25°-90° | |
| * * * | | | | | |
| 10.7-11.7 GHz | Fixed-satellite (space-to-Earth), non-geostationary-satellite orbit | -126 | $-126 + 0.5(\delta - 5)$ | -116 | 1 MHz |
| 11.7-12.5 GHz (Region 1) 12.5-12.75 GHz (Region 1 countries listed in Nos. S5.494 and S5.496) 11.7-12.7 GHz (Region 2) 11.7-12.75 GHz (Region 3) | Fixed-satellite (space-to-Earth), non-geostationary-satellite orbit | -124 | $-124 + 0.5(\delta - 5)$ | -114 | 1 MHz |
| * * * | | | | | |
| 17.7-19.3 GHz ^{7, 8} | Fixed-satellite (space-to-Earth) Meteorological-satellite (space-to-Earth) | -115 ^{12bis} or $-115 - X$ ¹² | $-115 + 0.5(\delta - 5)$ ^{12bis} or $-115 - X + ((10 + X)/20)(\delta - 5)$ ¹² | -105 ^{12bis} or -105 ¹² | 1 MHz |
| * * * | | | | | |

Reasons: The current limits and associated provisions in Section V of Article S21 that were finalized at WRC-2000 for all non-GSO FSS systems in certain bands between 10 and 30 GHz apply in full to non-GSO FSS systems in highly-elliptical orbits. No additional regulatory provisions are needed for HEO systems in these bands.

USA/xx/2
NOC

ARTICLE S22

Space services¹

Section II – Control of interference to geostationary-satellite systems

Reasons: The current limits and associated provisions in Section II of Article S22 that were finalized at WRC-2000 for all non-GSO FSS systems in certain bands between 10 and 30 GHz apply in full to non-GSO FSS systems in highly-elliptical orbits and are necessary for the protection of co-frequency GSO FSS and BSS systems. No additional regulatory provisions are needed for HEO systems in these bands, and no lessening of the protection required by GSO systems in the same bands should be considered.

USA/xx/3
NOC

RESOLUTION 76 (WRC-2000)

Protection of geostationary fixed-satellite service and geostationary broadcasting-satellite service networks from the maximum aggregate equivalent power flux-density produced by multiple non-geostationary fixed-satellite service systems in frequency bands where equivalent power flux-density limits have been adopted

Reasons: The current provisions in Resolution 76 (WRC-2000) for protection of GSO FSS and BSS networks from the maximum aggregate epfd produced by multiple non-GSO FSS systems in certain bands between 10 and 30 GHz apply in full to non-GSO FSS systems in highly-elliptical orbits and are necessary for the protection of co-frequency GSO FSS and BSS systems. No additional regulatory provisions are needed for HEO systems in these bands, and no lessening of the protection required by GSO systems in the same bands should be considered.

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Doc. WAC/086(19.12.01)

Agenda Item 1.39: "to examine the spectrum requirements in the fixed-satellite service bands below 17 GHz for telemetry, tracking and telecommand of fixed-satellite service networks operating with service links in the frequency bands above 17 GHz"

Background information:

WRC-03 agenda item 1.39 identifies the need to examine the spectrum requirements in the FSS service bands below 17 GHz for Telemetry, Tracking & Command (TT&C) of FSS networks operating in the frequency bands above 17 GHz.

Some fixed-satellite service (FSS) systems utilize the existing Space Operation Service allocations (all of which are below 3 GHz) for TT&C while others use part of the FSS band allocations to perform this function (FSS (space-to-Earth) for space telemetry and tracking carriers, FSS (Earth-to-space) for telecommand). Propagation conditions and spectrum availability are of primary consideration when implementing TT&C subsystems, which must meet high reliability criteria. Transmissions above 17 GHz experience higher free-space and rain attenuation losses than those below 17 GHz. Under the ITU regulatory structure, FSS systems may use any FSS allocation to perform TT&C functions.

Working Parties 4A and 4B have performed various studies in response to agenda item 1.39. WP 4B is investigating the reliability and availability requirements of TT&C systems operating with service links in frequency bands above 17 GHz. WP 4A has compiled technical and operational characteristics of TT&C subsystems, considered the TT&C spectrum requirements of systems operating above 17 GHz and evaluated the potential coordination implications.

The results of studies in WP 4A show that it may be difficult to implement TT&C in-band for service links above 17 GHz since these operations are required to be reliable and the performance of TT&C links above 17 GHz is limited by a number of factors. With respect to potential constraints on the bands below 17 GHz, the following factors facilitate the coordination of TT&C carriers and minimize constraints: TT&C carriers occupy a small portion of the satellite bandwidth and through appropriate frequency planning they are usually accommodated, and; TT&C earth stations usually employ large antennas which reduces interference susceptibility and the input power requirements. At its October 2001 meeting, WP 4A determined that currently, the bands below 17 GHz appear to offer the flexibility to accommodate these additional spectrum requirements for TT&C.

Considering the above, the studies to-date do not indicate that any new regulatory provisions or procedures would be required to meet the spectrum requirements for the operation of TT&C below 17 GHz for FSS systems with service links above 17 GHz.

Proposal:

USA/xx/1

ARTICLE S1

Terms and definitions

* * * * *

Section III – Radio services

* * * * *

NOC S1.23 *space operation service: A radiocommunication service concerned exclusively with the operation of spacecraft, in particular space tracking, space telemetry and space telecommand.*

These functions will normally be provided within the service in which the *space station* is operating.

* * * * *

Reasons: The current regulatory situation provides sufficient and appropriate flexibility to accommodate the spectrum requirements for the TT&C of systems with service links operating above 17 GHz. It is considered that no regulatory or procedural action is required under this agenda item.

USA/xx/2

NOC

ARTICLE S5

Frequency allocations

Reasons: The current regulatory situation provides sufficient and appropriate flexibility to accommodate the spectrum requirements for the TT&C of systems with service links operating above 17 GHz. It is considered that no regulatory or procedural action is required under this agenda item. This proposal does not preclude modifications to Article S5 under other agenda items.

III. Informal Working Group 4: Fixed Service/Fixed-Satellite Service Sharing

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Doc. WAC/087(19.12.01)

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

Background information

This proposal addresses WRC-2003 agenda item 1.25 concerning high-density applications in the Fixed Satellite Service (HDFSS). The fundamental task requested of WRC-2003 by WRC-2000 concerning agenda item 1.25 is the consideration of regulatory provisions and identification of specific fixed-satellite service (FSS) bands to facilitate high-density applications in the FSS (HDFSS). With that objective in mind, the following USA proposal to WRC-2003 has been developed to identify some specific FSS frequency bands that are particularly appropriate for HDFSS use through addition of a footnote in Article S5 of the Radio Regulations that also refers to a WRC-03 Resolution describing guidelines for administrations in implementing HDFSS.

The demand for broadband services is increasing. Leading market research groups project substantial growth in broadband multi-media satellite access. This growth is projected for both residential and business purposes. Provision of broadband services by satellites provides an attractive competitive alternative to terrestrial communication systems. Satellite systems typically require a much longer lead time than do terrestrial systems to develop and implement; therefore, some regulatory assurances that terminal deployment will be commercially viable are essential.

A High Density application in the Fixed Satellite Service (HDFSS) is one that operates on a system in the FSS, deploying a large number of small earth stations. Satellite systems can be of any orbital type, as GSO or non-GSO, and using any of the available technologies.

High-Density FSS applications are generally characterized as follows:

- flexible, rapid and ubiquitous deployment of earth stations (terminals);
- highly efficient frequency reuse;
- small terminal antenna size;
- low-cost terminals.

As a consequence of these general characteristics, it is not practicable to coordinate HDFSS earth stations on an individual site-by-site basis. Because of the large number and nature of terminals involved, regulations should not be imposed that would subject HDFSS earth stations to major cost and complexity implications.

Sharing between Fixed Service (FS) stations and non-ubiquitous FSS earth stations can be handled through case-by-case coordination procedures, which have already proved to work successfully. Where high-density deployments of FSS stations are involved, the most effective use of the spectrum within a given country can be achieved by deploying HDFSS and FS systems in separate spectrum. This enables both types of systems to provide the most efficient, least constrained, highest quality and lowest cost service to the greatest number of users.

Effective HDFSS earth station deployment is very difficult to achieve when site-by-site coordination between FS stations and HDFSS earth stations is required. Therefore, it is appropriate for administrations to authorize HDFSS earth stations under a set of guidelines whereby a large number of earth stations can be deployed without the need for individual earth station site coordination. This would not relieve an HDFSS network from the ITU requirements to coordinate with FS networks, where required, across international borders.

The U.S. does not support the removal or addition of any allocations in the existing International Table of Frequency Allocations under WRC-03 agenda item 1.25. Specifically, the U.S. does not support identification of any bands for HDFSS that are not currently allocated to the FSS, in the indicated direction, such as the bands 17.3-17.7 GHz (space-to-Earth), 21.4-22 GHz (space-to-Earth), and 47.2-50.2 GHz (space-to-Earth).

With respect to sharing within the FSS, identification of spectrum for HDFSS does not eliminate the need for coordination between satellite networks or require the imposition, in the ITU Radio Regulations, of additional regulatory constraints on the FSS, (i.e., the current rights of GSO and non-GSO FSS systems should be maintained).

Proposal:
USA/xx/nn

MOD

| ARTICLE S5 | | |
|---|--|--|
| GHz 18.4-20.2 | | |
| Allocation to Services | | |
| Region 1 | Region 2 | Region 3 |
| 18.4-18.6 | FIXED FIXED-SATELLITE (space-to-Earth) S5.484A MOBILE <u>ADD S5.[HDFSS]</u> | |
| 18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) S5.522B MOBILE except aeronautical mobile Space research (passive) S5.522A S5.522C <u>ADD S5.[HDFSS]</u> | 18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) S5.522B MOBILE except aeronautical mobile SPACE RESEARCH (passive) S5.522A <u>ADD S5.[HDFSS]</u> | 18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) S5.522B MOBILE except aeronautical mobile Space research (passive) S5.522A S5.522 <u>ADD S5.[HDFSS]</u> |
| 18.8-19.3 | FIXED FIXED-SATELLITE (space-to-Earth) S5.523A MOBILE <u>ADD S5.[HDFSS]</u> | |
| | | |
| 19.7-20.1 FIXED-SATELLITE (space-to-Earth) S5.484A Mobile-satellite (space-to-Earth) S5.524 <u>ADD S5.[HDFSS]</u> | 19.7-20.1 FIXED SATELLITE (space-to-Earth) S5.484A MOBILE-SATELLITE (space-to-Earth) S5.524 S5.525 S5.526 S5.527 S5.528 S5.529 <u>ADD S5.[HDFSS]</u> | 19.7-20.1 FIXED SATELLITE (space-to-Earth) S5.484A Mobile-satellite (space-to-Earth) S5.524 <u>ADD S5.[HDFSS]</u> |
| 20.1-20.2 | FIXED SATELLITE (space-to-Earth) S5.484A MOBILE SATELLITE (space-to-Earth) S5.524 S5.525 S5.526 S5.527 S5.528 <u>ADD S5.[HDFSS]</u> | |

| ARTICLE S5 | | |
|---|---|---|
| GHz 27.5–30.0 | | |
| Allocation to Services | | |
| Region 1 | Region 2 | Region 3 |
| 27.5–28.5 | FIXED S5.5SSS FIXED-SATELLITE (Earth-to-space) S5.484A S5.539 MOBILE S5.538 S5.540 <u>ADD S5.[HDFSS]</u> | |
| 28.5–29.1 | FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.523A S5.539 MOBILE Earth exploration-satellite (Earth-to-space) S5.541 S5.540 <u>ADD S5.[HDFSS]</u> | |
| 29.1–29.5 | FIXED FIXED-SATELLITE (Earth-to-space) S5.523C S5.523E S5.535A S5.539 S5.541A MOBILE Earth exploration-satellite (Earth-to-space) S5.541 S5.540 <u>ADD S5.[HDFSS]</u> | |
| 29.5–29.9 FIXED SATELLITE (Earth-to-space) S5.484A S5.539 Earth exploration-satellite (Earth-to-space) S5.541 Mobile-satellite (Earth-to-space) S5.540 S5.542 <u>ADD S5.[HDFSS]</u> | 29.5–29.9 FIXED-SATELLITE (Earth-to-space) S5.484A S5.539 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) S5.541 S5.525 S5.526 S5.527 S5.529 S5.540 S5.542 <u>ADD S5.[HDFSS]</u> | 29.5–29.9 FIXED-SATELLITE (Earth-to-space) S5.484A S5.539 Earth exploration-satellite (Earth-to-space) S5.541 Mobile-satellite (Earth-to-space) S5.540 S5.542 <u>ADD S5.[HDFSS]</u> |
| 29.9–30.0 | FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) S5.541 S5.543 S5.525 S5.526 S5.527 S5.538 S5.540 S5.542 <u>ADD S5.[HDFSS]</u> | |

| ARTICLE S5 | | |
|---|--|--|
| GHz 40.0–42.0 | | |
| Allocation to Services | | |
| Region 1 | Region 2 | Region 3 |
| 40-40.5 EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) <u>ADD S5.[HDFSS]</u> | | |
| 40.5–41 FIXED FIXED SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile <u>MOD S5.547 ADD S5.[HDFSS]</u> | 40.5–41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile Mobile-satellite (space-to-Earth) <u>MOD S5.547 ADD S5.[HDFSS]</u> | 40.5–41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile <u>MOD S5.547 ADD S5.[HDFSS]</u> |
| 41-42 FIXED FIXED SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile <u>MOD S5.547 S5.551G</u> <u>ADD S5.[HDFSS]</u> | 41-42 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile <u>MOD S5.547 S5.551G</u> <u>ADD S5.[HDFSS]</u> | 41-42 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.551F <u>MOD S5.547</u> S5.551G <u>ADD S5.[HDFSS]</u> |
| ARTICLE S5 | | |
| GHz 47.2–50.2 | | |
| Allocation to Services | | |
| 47.2-50.2 FIXED <u>NOC</u> FIXED-SATELLITE (Earth-to-space) S5.552 MOBILE S5.149 S5.340 S5.552A S5.555 <u>ADD S5.[HDFSS]</u> | | |

Reasons:

1. The U.S. proposes identification of the following existing FSS frequency bands for HDFSS on a global basis, for the following reasons:

- The bands 29.5-30.0 GHz and 19.7-20.2 GHz are allocated globally to the FSS in the Earth-to-space and space-to-Earth directions, respectively. There is no co-primary FS allocation in the ITU Table of Frequency Allocations in these bands.
- The bands 28.6-29.1 GHz and 18.8-19.3 GHz are allocated globally to the FSS in the Earth-to-space and space-to-Earth directions, respectively. Furthermore, these are the only bands considered for HDFSS where NGSO FSS systems are not subject to No. S22.2 and therefore represent the best opportunity for ubiquitously deployed NGSO FSS user terminals. In these two bands, some administrations in all Regions have planned for HDFSS and adopted regulatory provisions for terrestrial systems in order to facilitate HDFSS. Some HDFSS systems are already in development in these bands and there are other filings for HDFSS type systems.
- The bands 18.58-18.8 GHz (space-to-Earth), and 28.35-28.6 GHz and 29.25-29.5 GHz (both Earth-to-space), are also planned for use by many administrations for HDFSS applications.
- In the 37.5-50.2 GHz range, many administrations have submitted ITU filings for FSS systems in the bands 40.0-42.0 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) and propose to use these bands for global HDFSS. WRC-00 advised administrations that may be contemplating HDFSS use of the band 40.5-42 GHz to take into account constraints to HDFSS due to the potential deployment of high-density applications in the FSS. Further, Resolution **84 (WRC-2000)** urges administrations considering regulatory provisions relating to the band 40.0-40.5 GHz to take into account that there were a number of proposals to WRC-2000 to identify the band for HDFSS applications. As a consequence of actions at WRC-2000, the 40.5-42.0 GHz band could be identified for HDFSS use through new Radio Regulation S5.[HDFSS], but would also require a modification of existing Radio Regulation No. S5.547 (see proposal USA/xx/3 below).

2. The U.S. proposes specifically that WRC-03 not make additional FSS allocations in the 47.2-50.2 GHz band to accommodate possible HDFSS use. In this regard, as studies have shown that HDFSS uplinks and HDFSS downlinks cannot share the same spectrum, and there are interference concerns about FSS gateway uplinks and HDFSS downlinks, the U.S. proposes no change to the FSS allocation directions in the 47.2-50.2 GHz band. The FSS allocation in this band is to be retained for uplink use only.

USA/xx/2
ADD

S5.[HDFSS] The space-to-Earth FSS bands 18.58-18.8 GHz, 18.8-19.3 GHz, 19.7-20.2 GHz, and 40.0-42.0 GHz and the Earth-to-space FSS bands 28.35-28.6 GHz, 28.6-29.1 GHz, 29.25-29.5 GHz, 29.5-30.0 GHz and 48.2-50.2 GHz, are identified for use by high-density applications in the fixed satellite service (HDFSS) in accordance with **Resolution [HDFSS] (WRC-03)**. This identification does not preclude the use of these bands by other FSS applications or by other co-primary services allocated in these bands and does not establish priority in the Radio Regulations. Administrations should take this identification into account when considering regulatory provisions in relation to these bands.

Reasons: The identification of appropriate frequency bands for high-density applications in the FSS, and the adoption of approved guidelines to facilitate the deployment of HDFSS earth terminals, can help administrations and HDFSS satellite system operators in such earth station deployment. This footnote will also inform administrations of those specific bands intended for deployment of HDFSS systems in all regions of the world.

USA/xx/3
MOD

S5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service (see Resolutions **75 (WRC-2000)** and **79 (WRC-2000)**). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because the band 40.5-42 GHz is identified for use by high-density applications in the fixed satellite service (see No. S5.[HDFSS] and Resolution [HDFSS] (WRC-03)), and thus is available for these applications, ~~Because of the potential deployment of high density applications in the fixed-satellite service in the bands 39.5 40 GHz and 40.5 42 GHz,~~ administrations should further take into account ~~potential-appropriate~~ constraints to high-density applications in the fixed service when considering regulatory provisions in relation to the latter type of applications in the same band, as appropriate [(see Resolution **84 (WRC-2000)**)].

Reasons: Consequential to the addition of No. **S5.[HDFSS]** to the 40.5-42.0 GHz band, and the non-identification of 39.5-40.0 GHz for HDFSS use. *NOTE: The square brackets reflect that the fate of Resolution 84 has not yet been determined.*

RESOLUTION [HDFSS] (WRC-03)

Implementation of High-Density Applications in the Fixed Satellite Service in Frequency Bands Identified for HDFSS

The World Radiocommunication Conference (Caracas, 2003),

considering

- a) that demand has been increasing steadily for broadband communications services throughout the world;
- b) that this demand for ubiquitous broadband communications services can be met in part through the use of high-density applications in the fixed-satellite service (HDFSS);
- c) that HDFSS is an advanced broadband communications applications concept that enables telecommunications services to be provided on a flexible, wide-scale basis through standardized, relatively low-cost earth terminal equipment;
- d) that HDFSS will provide users with access to a wide range of broadband telecommunications services supported by fixed telecommunications networks (including the Internet) and thus will complement other telecommunications systems;
- e) that HDFSS offers great potential for developing countries to establish their telecommunications infrastructure more rapidly;
- f) that HDFSS systems are characterized by flexible, rapid deployment, high frequency reuse, and ubiquitous deployment of large numbers of Earth stations employing small antennas;
- g) that HDFSS Earth stations should not be subject to major cost and complexity implications in consideration of the large number and nature of terminals involved;

noting

- a) that No. **S5.[HDFSS]** identifies the space-to-Earth FSS bands 18.58-18.8 GHz, 18.8-19.3 GHz, 19.7-20.2 GHz, and 40.0-42.0 GHz and the Earth-to-space FSS bands 28.35-28.6 GHz, 28.6-29.1 GHz, 29.25-29.5 GHz, 29.5-30.0 GHz and 48.2-50.2 GHz, for high-density applications in the fixed satellite service (HDFSS);
- b) that in some of the bands listed in *noting a)* above, the FSS allocations are co-primary with fixed and mobile service allocations;
- c) that a number of FSS systems with other types of earth stations and characteristics have already been brought into use or are planned to be brought into use in some of the frequency bands identified for HDFSS in No. **S5.[HDFSS]**;
- d) that HDFSS stations in these bands are expected to be deployed in large numbers over urban, suburban and rural areas of large geographical extent;
- e) that harmonized worldwide bands for HDFSS would facilitate the implementation of HDFSS and maximize the extent to which users in administrations around the world would be able to benefit from global access and economies of scale,

recognizing

- a) that as a consequence of their general characteristics, it is not practicable to coordinate HDFSS Earth stations on an individual site-by-site basis;
- b) that the single authorization of a large number of FSS earth stations associated with a given satellite system, without the need for individual site coordination, would greatly facilitate the ability of fixed-satellite services to reach large numbers of users within a geographic area;
- c) that such an authorization would minimize the administrative burden for administrations to individually authorize a large number of earth stations,

recognizing further

- a) that FSS networks and systems implementing HDFSS applications are subject to all applicable provisions of the Radio Regulations, such as coordination and notification pursuant to Articles **S9** and **S11** and limits in Articles **S21** and **S22**;
- b) that Article **S21** contains power flux density limits that protect FS receivers operating in the FSS space-to-Earth bands identified in No. **S5.[HDFSS]**, thereby insuring that transmissions from FSS satellites will not cause interference to FS receivers operating in these same bands;

resolves

to urge administrations implementing HDFSS in some or all of the corresponding frequency bands in No. **S5.[HDFSS]** to:

- a) use a single authorization for a large number of earth stations having similar characteristics and associated with a given satellite system;
- b) take into account the relevant international technical characteristics, as identified by ITU-R Recommendations (e.g., Recommendations ITU-R S.524-7 and [doc. 4/70]);
- c) take into account that continued assignment of spectrum to or deployment of terrestrial stations in bands identified for HDFSS within the same geographical area could impede the introduction or development of HDFSS and reduce or eliminate the benefits that such applications offer;
- d) ensure compatibility with other existing and planned FSS operations having different characteristics,

invites administrations

to give due consideration to the benefits of harmonized utilization of the spectrum for HDFSS on a global basis, taking into account the use and planned use of these bands by all services to which these bands are allocated.

Reasons: Many administrations are currently in the process of determining how to appropriately provide for HDFSS services in their countries. Some of these administrations are looking to the ITU for guidance on spectrum management issues concerning the FS and HDFSS and this Resolution provides that guidance.

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Doc. WAC/088(19.12.01)

Agenda Item 1.26: To consider the provisions, under which earth stations located on board vessels, could operate in fixed satellite networks, taking into account the ITU-R studies in response to Resolution 82.

Background - Information

Resolves 4 of Resolution 82 states that until WRC-03 takes further action, agreement between the administrations licensing Earth stations on board vessels (ESVs) and affected administrations should be reached on a bilateral or multilateral basis, in accordance with the guidelines in its Annexes 1 and 2. ESVs have been operating for over 10 years either under S4.4, or under national provisions.

ESVs have operated at ports, in territorial waters, and beyond a distance where no coordination would be required.

Several actions have taken place in ITU-R Study Groups to develop Recommendations related to this agenda item. These include:

- a. A Recommendation agreed in Working Party 4A on the Characteristics of ESVs, including those to be used for sharing studies at 6 GHz and 14 GHz.
- b. Several Recommendations in Joint Working Party 4-9S on methods to be used for achieving coordination with fixed stations when ESVs are in motion near the shore, including determination of a distance beyond which no coordination is necessary.

Proposal

- a. A footnote should be added to the Table of Frequency Allocations at 5925-6425 MHz and 14-14.5 GHz that references a revised Resolution 82. The footnote should read:

USA/ESV/1

MOD

| Region 1 | Region 2 | Region 3 |
|---------------|---|----------|
| 5 925 – 6 700 | FIXED FIXED-SATELLITE (Earth-to-space) ADD <u>S5.ESV</u> MOBILE S5.149 S5.440 S5.458 | |

USA/ESV/2

MOD

| Region 1 | Region 2 | Region 3 |
|---|---|---|
| 14-14.25 | FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 ADD <u>S5.ESV</u> RADIONAVIGATION S5.504 Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research S5.505 | |
| 14.25-14.3 | FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 ADD <u>S5.ESV</u> RADIONAVIGATION S5.504 Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research S5.505 S5.508 S5.509 | |
| 14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 ADD <u>S5.ESV</u> MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile- satellite Radionavigation-satellite | 14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 ADD <u>S5.ESV</u> Mobile-satellite (Earth-to-space) except aeronautical mobile- satellite Radionavigation-satellite | 14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 ADD <u>S5.ESV</u> MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile- satellite Radionavigation-satellite |
| 14.4-14.47 | FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 ADD <u>S5.ESV</u> MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research (space-to-Earth) | |

| | |
|------------|--|
| 14.47-14.5 | <p>FIXED</p> <p>FIXED-SATELLITE (Earth-to-space) S5.484A S5.506</p> <p>ADD <u>S5.ESV</u></p> <p>MOBILE except aeronautical mobile</p> <p>Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite</p> <p>Radio astronomy</p> <p>S5.149</p> |
|------------|--|

USA/ESV/3

ADD

S5.ESV Earth-stations on board vessels operating in the bands 5925-6425 MHz and 14-14.5 GHz shall do so in accordance with the provisions of Resolution 82 (Rev. 2003).

- b. Revise Resolution 82 (WRC-2000) as shown in the Attachment.

USA/ESV/4

MOD

RESOLUTION 82 (WRC-2003)

**Provisions relating to earth stations located on board vessels
which operate in fixed-satellite service networks in the
bands 5 925-6 425 MHz and 14.0-14.5 GHz**

The World Radiocommunication Conference (Caracas, 2003),

considering

- a) that there is a demand for global wideband satellite communication services on vessels;
- b) ~~that the technology exists that enables earth stations on board vessels (ESVs) to use fixed-satellite service (FSS) networks operating in the 3 700-4 200 MHz and 5 925-6 425 MHz bands;~~ that the technology exists that enables earth stations on board vessels (ESVs) to currently operate through fixed-satellite service (FSS) networks in the bands 3 700-4 200 MHz, 5 925-6 425 MHz, 10.7-12.75 GHz, and 14.0-14.5 GHz;
- c) that ESVs have the potential to cause unacceptable interference to other services in the ~~band~~ 5 925-6 425 MHz and 14.0-14.5 GHz (Earth-to-space) bands;
- d) that ESVs operating in these bands require considerably less than the full bandwidth in theis FSS allocation and only a portion of the visible geostationary arc;
- e) ~~that there are a limited number of geostationary FSS systems that have global coverage;~~
- fe) that the number of vessels equipped with ESVs may be such as to place a heavy coordination burden on some administrations, especially those in developing countries;
- gf) that in order to ensure the protection and future growth of other services, ESVs shall operate with requisite technical and operational constraints;
- hg) ~~that, based on appropriate assumptions, a minimum distance can be calculated~~ has been determined beyond which an ESV will not have the potential to cause unacceptable interference to other services in theis same band on the same frequency,

noting

- a) that ESVs may operate in fixed-satellite service networks in the bands ~~3 700-4 200 MHz, and 5 925-6 425 MHz, 10.7-12.75 GHz, and 14-14.5 GHz~~ under No. **S4.4** of the Radio Regulations and shall not claim protection from, nor cause harmful interference to, other services having allocations in these bands;
- b) that there is no need for new regulatory procedures for ESVs operating at specified fixed points,

recognizing

- a) ~~that progress has been made within ITU-R in determining the~~ ITU-R has determined the technical and operational provisions under which ESVs could operate;
- b) ~~that further studies are needed,~~

resolves

- 1 ~~that any transmissions from ESVs within an agreed distance, as identified in~~ resolves 2 of this resolution, shall be based upon the prior agreement of the concerned administration;~~to invite ITU-R to continue to study, as a matter of urgency, the regulatory, technical and operational constraints to be applied to ESV operations, having regard to the provisional guidelines for ESV use in Annex 1 and the provisional technical guidelines given in Annex 2 and, in particular, to determine the appropriate value for the minimum distance from ESV stations beyond which these stations are assumed not to have the potential to cause unacceptable interference to stations of other services of any administration and beyond which no coordination would be required;~~
- 2 ~~to invite ITU-R, as a matter of urgency:~~
- ~~— to develop Recommendations on methods for coordination between terrestrial services and ESVs;~~
 - ~~— to study the feasibility of mitigation techniques, such as various frequency arrangements or dual band systems, as a way to avoid the need for detailed coordination of ESVs without constraining existing services;~~
 - ~~— to study, as a complement to the 3 700-4 200 MHz and 5 925-6 425 MHz bands, the use of other FSS allocations for ESVs transmitting in the 6 GHz and 14 GHz bands;~~
- 3 ~~to invite WRC-03 to assess, in the light of these studies, the provisions under which ESVs could operate in FSS networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz, without causing unacceptable interference to radiocommunication services operating in accordance with the Radio Regulations;~~
- 4 ~~that, until a decision is adopted for ESVs by WRC-03, agreement between the administrations licensing ESVs and affected administrations should be reached on a bilateral or multilateral basis, in accordance with the guidelines in Annexes 1 and 2;~~
- 5 ~~that, until a decision is adopted for ESVs by WRC-03, administrations licensing ESVs that enter into bilateral or multilateral agreements under~~ *resolves 4* ~~above should ensure that, as part of the licensing process, ESVs operate in compliance with such agreements, taking into consideration the interests of concerned neighbouring countries,~~
- 2 ~~that the minimum distances from ESV stations beyond which these stations are assumed not to have the potential to cause unacceptable interference to stations of other services of any administration and beyond which no coordination is necessary are 300 km for the 5925-6425 MHz band and 125 km for the 14.0-14.5 GHz band;~~
- 3 ~~that ESVs shall follow the operational procedures in Annex 1 and the technical constraints in Annex 2.~~

encourages concerned administrations

to cooperate with administrations ~~which~~ that license ESVs ~~while~~ and seeking agreement under *resolves 4* ~~the provisions of Annex 1,~~

encourages ESV licensing administrations

to consider registering their ESV frequency assignments in the Master International Frequency Register, for information purposes only,

~~*urges all administrations*~~

~~to participate actively in the above-mentioned studies by submitting contributions,~~

~~*instructs the Secretary-General*~~

~~to bring this resolution to the attention of the Secretary-General of the International Maritime Organization, and to invite IMO to participate in the work on this issue.~~

ANNEX 1 TO RESOLUTION 82 (WRC-2003~~0~~)

Provisional Guidelines Operational Procedures for ESV use

~~1 — The administration that issues the licence for the use of ESVs in these bands (licensing administration) shall ensure that such stations do not cause unacceptable interference to the services of other concerned administrations.~~

~~2 — Operators of ESVs shall comply with the technical guidelines listed in Annex 2 and/or those agreed by the licensing and concerned administrations.~~

~~3 — ESVs shall not claim protection from transmissions of other services operating in accordance with the Radio Regulations.~~

~~4 — Any transmissions from ESVs within an agreed distance, as identified in *resolves 1* of this resolution, shall be based upon the prior agreement of the concerned administration.~~

~~5 — Administrations which issue ESV licences shall ensure that ESV operators endeavour to provide the necessary assistance to the concerned administrations in order to facilitate the agreement.~~

~~6 — Administrations, in determining the distance referred to in item 4 above, are encouraged to exclude those parts of their territory, such as remote small islands, where other services in the band 5 925 6 425 MHz are neither operating nor planned.~~

~~7 — If an administration changes its actual or planned deployment of stations in other services, it may require revision of the agreement with the ESV licensing administration(s).~~

~~8 — The ESV system should include means of identification and automatic mechanisms to terminate transmissions whenever the station operates outside its authorized geographic (see item 4 above) or operational limits.~~

~~9 — ESVs should be equipped so as to enable the licensing administration under the provisions of Article **S18** to verify earth station performance and to terminate ESV transmissions immediately upon request by an administration whose services may be affected.~~

~~10 — When ESVs operating beyond the territorial waters but within a specified distance (as referred to in item 4 above) fail to comply with the terms required by the concerned administration pursuant to items 2 and 4, then that administration may:~~

~~— request the ESV to comply with such terms or cease operation immediately; or~~

~~— request the licensing administration to require such compliance or immediate cessation of the operation.~~

~~11 — Any licensing authority that licenses ESVs should maintain at all times a point of contact that may be contacted by a concerned administration.~~

A. Initiation of Contact

When ships equipped with ESVs intend to operate in the band 5925-6425 MHz within 300 kilometers and in the band 14-14.5 GHz within 125 km of the territory of other administrations having co-frequency terrestrial stations, authorities of the ESV licensing administration will contact in advance of operating within those distances the responsible authorities of the concerned administration to obtain agreements that will establish the technical basis for avoiding unacceptable interference to the terrestrial facilities of the concerned administration or administrations.

B. Recommended Actions of Concerned Administrations

Each Administration having terrestrial stations in these bands should have a point of contact for authorities of the ESV licensing Administration to initiate discussions. Concerned Administrations that have terrestrial facilities that could be affected by ships operating earth stations on board ships should do the following when contacted by the ESV licensing Administration or the ESV station operator aboard such a ship.

- 1) Determine if it has terrestrial systems in the same frequency band as the ESV.
- 2) Request the ESV licensing Administration to identify the range of its frequency operation.
- 3) Identify frequencies for ESV use where no coordination would be required.
- 4) Request the ESV licensing Administration to enter a frequency use arrangement.

C. ESV Operating Agreements

The authorities of the concerned Administration are encouraged to enter into an agreement with the authorities of the ESV licensing Administration that describes the conditions for operation of the ESV when operating near the coast or in ports of the concerned Administration. These agreements should be concluded prior to the operation of the ESV stations near the coast or in the ports of the concerned Administration. The agreement should consider using the 4/6 GHz band outside certain limits and not using the 4/6 GHz band inside certain limits in countries that have fixed service stations in the 6 GHz band and should include the possibility of switching to 14 GHz. The operating agreement may be revised at any time at the discretion of the concerned Administration, particularly whenever new terrestrial facilities are authorized that could potentially receive unacceptable interference.

D. Frequency Use Arrangements

National practices, as well as recommendations and guidelines of the ITU-R (such as, ITU-R. S. [ESV-A], [ESV-B], [ESV-C and [ESV-Characteristics]], may be used in reaching bilateral frequency usage arrangements. Typical characteristics for ESV operations are contained in Annex 2.

E. Protection From Transmissions of Other Services

ESVs shall not claim protection from the transmissions of other services operating in the 4 GHz and 11/12 GHz bands.

F. ESV Point of Contact

Each ESV operator shall provide a point of contact to the Administration and frequency coordinator of the country with which agreements have been reached for the purpose of reporting unacceptable interference. In the case that such interference has been identified to the satisfaction of the concerned Administration, at the

direction of the concerned Administration, ESV operators must have the ability to immediately terminate the transmission from the responsible ESV station.

G. Avoidance of Unacceptable Interference

The ESV licensing Administration shall ensure that such stations do not cause unacceptable interference to the services of other concerned Administrations. In the event that unacceptable interference does occur, the ESV operator must eliminate the source of any interference from its station immediately upon being advised of such interference. Additionally, the ESV operator must immediately terminate transmissions at the request of either the concerned Administration or the ESV licensing Administration if either Administration determines that the ESV is not being operated in compliance with the operating agreement.

Additionally, ESVs stations should have the following capabilities:

1. The ESV system should include a means of identification, and automatic mechanisms to terminate transmissions whenever the station operates outside its authorized geographic (see *resolves 2*) or operational limits.

2. The ESV system should be equipped so as to enable the ESV licensing Administration under the provisions of Article S.18 to verify earth station performance and to terminate ESV transmissions immediately upon request by a concerned Administration whose services may be affected.

ANNEX 2 TO RESOLUTION (WRC-2003)

Provisional technical guidelines applicable to ~~ESVs operating in the bands 3 700-4 200 MHz and 5 925-6 425 MHz~~

This Annex contains typical characteristics of ESV operations on board ships in both the 5 925-6 425 MHz and 14-14.5 GHz band.

5925-6425 MHz

| | |
|---|------------------------------|
| Minimum diameter of ESV antenna: | 2.4 m |
| Maximum half-power beamwidth of ESV antenna: | 1.5° |
| Minimum elevation angle of ESV antenna: | 10° |
| Maximum necessary bandwidth per vessel: | 2.346 MHz |
| Maximum necessary bandwidth in a single operating area: | 36 MHz (see Note) |
| Maximum ESV transmitter power spectral density at the input to the antenna: | <u>1317dB(W/MHz)</u> |
| Tracking accuracy of ESV antenna: | <u>±0.2° peak</u> |

14-14.5 GHz

| | |
|--|----------------------|
| <u>Minimum diameter of ESV antenna:</u> | <u>1.2 m</u> |
| <u>Maximum half-power beamwidth of ESV antenna:</u> | <u>1.2°</u> |
| <u>Minimum elevation angle of ESV antenna:</u> | <u>10°</u> |
| <u>Maximum necessary bandwidth per vessel:</u> | <u>2.346 MHz</u> |
| <u>Maximum ESV transmitter power spectral density at the input to the antenna:</u> | <u>8.5 dB(W/MHz)</u> |
| <u>Tracking accuracy of ESV antenna:</u> | <u>±0.2° peak</u> |

~~Note: The actual bandwidth required in an operating area will depend on the number of ESVs that would be present simultaneously in that area, and in many areas the required bandwidth will be less than 36 MHz. In addition, because ESVs are frequency agile, the necessary bandwidth per vessel (2.346 MHz) can be generally identified within the 4/6 GHz bands and does not have to be contiguous with bandwidth of other ESVs.~~

IV. Draft Proposals from the National Telecommunications and Information Administration (NTIA)

Doc. WAC/078(19.12.01)

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.29: to consider the results of studies related to Resolutions **138 (WRC-2000)** and **78 (WRC-2000)** dealing with sharing between non-GSO and GSO systems;

Background Information: WRC-2000 adopted a combination of single-entry validation, operational and, for 3 and 10 meter antennas in the 10.7-12.75 GHz band, single-entry additional operational epfd_{\downarrow} limits contained in Article **S22**, along with the aggregate epfd_{\downarrow} limits in Resolution **76 (WRC-2000)**, which apply to non-GSO FSS systems to protect GSO networks in the bands 10.7-12.75 GHz, 17.8-18.6 GHz, and 19.7-20.2 GHz. The operational epfd_{\downarrow} limits were adopted to protect *operational* GSO FSS networks from interference levels that may result in loss of synchronization, or loss of capacity, or severe degradation in performance. Resolution **78 (WRC-2000)**, *Development of procedures in case the operational or additional operational limits in Article S22 are exceeded*, invites the ITU-R to undertake the appropriate regulatory studies to develop procedures in cases where the operational or additional operational epfd_{\downarrow} limits are exceeded at an operational GSO earth station. Compliance with the operational epfd_{\downarrow} and additional operational epfd_{\downarrow} limits is not subject to verification by the ITU-BR but by individual administrations.

Article **S15** of the Radio Regulations contains interference procedures. The existing procedures in the Radio Regulations should be applied to the resolution of interference such as cases where non-GSO systems exceed the operational or additional operational epfd_{\downarrow} limits. ITU-R Recommendations could provide more structure for this particular case; however, there is no need to incorporate these recommendations by reference in the Radio Regulations.

Proposal:

USA/ /1
NOC

ARTICLE S15 **Interferences**

Reasons: The current Radio Regulations are adequate.

ARTICLE S22
Space Services

USA/ /2
NOC

Section II – Control of interference to geostationary-satellite systems

Reasons: The current Radio Regulations are adequate in cases where the operational or additional operational efd_↓ limits are exceeded.

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 4: in accordance with Resolution **95 (Rev.WRC-2000)**, to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation;

Background Information: A proposal for the suppression of Resolution **63**, this resolution is being suppressed because the work of TG1/2 related to this resolution has been completed.

Proposal:

USA/ /1
SUP

~~RESOLUTION 63~~

~~Relating to the protection of radiocommunication services against interference caused by radiation from industrial, scientific and medical (ISM) equipment~~

Reasons: TG1/2 completed its work related to Resolution **63**.

- FCC -