Donald Abelson
Chief of the International Bureau
Federal Communications Commission
445 12th Street SW
Washington, D.C. 20554

Dear Mr. Abelson:

The National Telecommunications and Information Administration on behalf of the Executive Branch Agencies, has approved the release of four additional Draft Executive Branch (NTIA) proposals considering federal agency inputs toward the development of U.S. Proposals for WRC-03. The following is a summary of the proposals:

Proposal for Agenda Item 1.2: The RCS drafted this proposal, which is directed towards the operational use of digital modulation techniques for broadcasting in the HF bands.

Proposal for Agenda Item 1.7.1: This agenda item is concerned with the amateur and amateur-satellite services issues and the possible revision of Article **S25.** The FCC Advisory Committee drafted a proposal that revises Article **S25**. The RCS has reviewed and reformatted the Advisory Committee proposal.

Proposal for Agenda Item 1.12: This proposal was drafted by the RCS and is concerned with Resolution **723 (Rev. WRC-2000)** *resolves 4,* which recommends that WRC-03 consider a review of existing allocations to space science services near 15 GHz and 26 GHz, with a view to accommodating wideband space-to-Earth space research applications.

Proposal for Agenda Item 1.14: This proposal was drafted by the RCS and is concerned with maritime distress and rescue requirements.

These proposals are forwarded your consideration and review by the WRC-03 Advisory Committee. Jim Vorhies from my staff will contact Alexander Roytblat and reconcile any differences.

Sincerely,

(Original Signed February 15, 2002)
William T. Hatch
Associate Administrator
Office of Spectrum Management

Enclosures

United States of America
DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.2: to review and take action, as required, on No. **S5.134** and related Resolutions **517 (Rev.WRC-97)** and **537 (WRC-97)** and Recommendations **515 (Rev.WRC-97)**, **517 (HFBC-87)**, **519 (WARC-92)** and Appendix **S11**, in the light of the studies and actions set out therein, having particular regard to the advancement of new modulation techniques, including digital techniques, capable of providing an optimum balance between sound quality, bandwidth and circuit reliability in the use of the HF bands allocated to the broadcasting service.

Background Information: This agenda item is directed towards the operational use of digital modulation techniques for broadcasting in the HF bands. There has been sufficient progress in ITU-R SG 6, so that the digital modulation techniques to be considered under this agenda item are limited to just the digital modulation techniques recommended in Recommendation ITU-R **BS.1514**. WRC-2003 will therefore be fully competent to set any necessary conditions for introducing these digitally modulated emissions to the HF bands allocated to broadcasting.

The collection of all the articles, resolutions and recommendations listed in the agenda item text are the ones that will need to be reviewed for suppression or modification in the light of the progress that has been made in the intervening years for digital modulation use in the HF broadcasting bands. To complete the overall need, some additions will have to be made. The suppressions, modifications and additions that are incorporated in the U.S. proposal form an integrated package that deals in an efficient manner with all the aspects of the consequent needs connected with this non-allocation agenda item. By and large, the specific wording of these suggested changes are those that were developed within the ITU-R's Study Group 6 at its WP6E meetings during 2001.

Recommendation ITU-R **BS.1514,** mentioned above, is a system recommendation, wherein the acceptable digital modulation techniques are recorded. The development and testing of this modulation, including its various "modes" associated with different levels of robustness and audio quality, has brought the techniques close to consumer product status. It is expected that by the end of 2003, or not long thereafter, there will be on the market receivers that include a HF digital capability. In addition, modern HF transmitters can accept these digital signal inputs. It is because of this progress that this agenda item and this proposal exist -- and, without diminishing broadcaster and listener access to traditional amplitude modulation, simply permits digital modulation in the mix of acceptable and available listening.

Furthermore, since the introduction of digital modulation for operational use is two years or so from 2002, the proposed modifications to existing articles, resolutions and recommendations treat all HF broadcasting bands on an equal footing. There is no longer any compelling reason to separate the conditions of use of the "WARC-92" bands from the other HF broadcasting bands. The solution proposed is to modify Article footnote **S5.134** so that any ITU-R approved amplitude modulation or digital modulation can be broadcast in the "WARC-92" bands after 1 April 2007. Before that time, the proposal is not to permit broadcasting in these bands, other than on a non-harmful interference basis (as is the current situation using **S4.4**).

Three resolutions and recommendations are proposed to be suppressed since they are no longer relevant. They are noted at the end of the proposal, with appropriate reasons.

Proposals:

USA/ /1
MOD

RESOLUTION 517 (REV.WRC-03)~~(REV.WRC-97)~~

Introduction of digitally modulated and single-sideband emissions~~double-sideband to single-sideband or other spectrum-efficient modulation techniques~~ in the high-frequency bands between 5 900 KHz and 26 100 KHz allocated to the broadcasting service

The World Radiocommunication Conference (Caracas, ~~1997~~2003),

considering

a) that digital techniques are being introduced into many existing ~~services the high-frequency (HF) bands allocated to the broadcasting service between 5 900 kHz and 26 100 kHz are severely congested~~;

b) that digital and single-sideband (SSB) techniques allow more ~~efficient~~ effective utilization of the frequency spectrum than double-sideband (DSB) techniques;

c) that digital and SSB techniques enable reception quality to be improved;

~~*d)* that Recommendation **515 (Rev.WRC-97)** encourages the accelerated design and manufacture of SSB transmitters and receivers;~~

~~*e*~~*d)* Appendix S11 concerning the Digital and SSB system specifications in the HF broadcasting services;

~~*f)* that rapid developments are taking place in digital sound broadcasting technologies;~~

e) that ITU-R in its Recommendation ITU-R **BS.1514** has recommended system characteristics for digital sound broadcasts in the broadcast bands below 30 MHz~~;~~

~~*g*~~*f)* that digital modulation ~~or other spectrum-efficient modulation~~ techniques are expected to provide the means to achieve the optimum balance between sound quality, circuit reliability and bandwidth;

~~*h*~~*g)* that digitally modulated emissions can, in general, provide more efficient coverage than amplitude-modulated transmissions by using fewer simultaneous frequencies and less power;

~~*i)* that the lifetime of a transmitter is at least twenty years;~~

~~*j*~~*h)* that it is economically ~~un~~attractive, using current technology, to convert modern ~~existing~~ conventional DSB broadcasting systems to ~~SSB~~ -digital operation in accordance with *considering d)* above;

~~*k*~~*j)* that some DSB transmitters have been used with digital modulation techniques without transmitter modifications;

~~*l)* that the lifetime of a receiver is of the order of ten years;~~

~~m)~~*k*) that ITU-R is carrying out ~~urgent~~ further studies on the development of broadcasting using digitally modulated~~ion~~ emissions in the bands allocated to the broadcasting service below 30 MHz~~;~~,

~~*n)* that other spectrum-efficient modulation techniques may be developed in the future,~~

resolves

1 that the early introduction of digitally modulated emissions as ~~procedure in the Annex to this Resolution shall be used for the purpose of ensuring an orderly transition from DSB to SSB or other spectrum-efficient modulation techniques~~ recommended by ITU-R in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service is to be encouraged;

2 that digitally modulated and SSB emissions shall comply with the characteristics specified in Appendix S11;

3 that whenever an administration replaces a DSB emission by an emission using digital or SSB modulation techniques, it shall ensure that the level of interference is not greater than that caused by the original DSB emission, and shall use RF Protection values specified in Recommendations DAB (WRC-03) and 517 (Rev. WRC-03);

~~2~~4 that the ~~final date for the cessation~~ continued use of DSB ~~emissions specified in the Annex to this Resolution~~ shall be periodically reviewed by a competent future world radiocommunication conference~~s~~ in the light of the latest available complete statistics on the capability of administrations to introduce digital systems ~~worldwide distribution of SSB and other spectrum-efficient modulation technique transmitters and receivers, as called for in Resolution **537 (WRC-97)**~~,

instructs the Director of the Radiocommunication Bureau

to compile and maintain the statistics referred to in *resolves* ~~2~~4, to make these statistics available to administrations and to submit summaries thereof to a competent future world radiocommunication conference~~s~~,

invites ITU-R

to continue its studies on digital techniques in HF broadcasting ~~as a matter of urgency~~ with a view to assist in the development of this technology for future use,

invites administrations

1 to assist the Director of the Radiocommunication Bureau by providing the relevant statistical data and to participate in ITU-R studies on matters relating to the development and introduction of digitally modulated emissions ~~transmissions~~ in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service~~.~~;

2 to bring to the notice of transmitter and receiver manufacturers the most recent results of relevant ITU-R studies on spectrum-efficient modulation techniques suitable for use at HF as well as the information referred to in considerings *d)* and *e)*.

Reasons: The changes to this resolution reflect the introduction of digital and SSB emissions and the consequent need to protect DSB emissions from digital and single sideband emissions, and vice versa. The introduction of digital emissions does not substitute for single sideband emission use. The resolution has been modified so that both are considered on an equal regulatory footing. Several modifications made in the *considerings* are a consequence of digital modulation development for HF broadcasting since WRC-97.

USA/ /2

SUP

ANNEX TO RESOLUTION 517 (REV.WRC-97)

Reasons: Due to the modifications to Resolution **517** related to the introduction of digital and SSB emissions and deletion of the requirement of the transition procedures, this annex is no longer needed. This annex deals with a previous idea that all DSB would cease after 2015. The complete package with regard to this agenda item considers that this concept of cessation of one of the approved modulation methods should be considered by a future competent conference; that it is unrealistic to consider ceasing a particular type of modulation without any concern for the listener and broadcaster market 12 years after WRC-03.

USA/ /3
MOD

APPENDIX S11

System specifications for Double-Sideband (DSB), ~~and~~ Single-Sideband (SSB) and Digitally Modulated Emissions ~~System Specifications~~ in the HF Broadcasting Service

Reasons: Updating the appendix title to reflect the proposed use.

USA/ /4

NOC

Double-sideband system (DSB)

Reasons: The current text is adequate as written.

PART B - Single-sideband system (SSB)

1 System parameters

USA/ /5
MOD

1.1 Channel spacing

In a mixed DSB, SSB and Digital environment ~~During the transition period~~ (see Resolution **517 (Rev. WRC-03 ~~HFBC-87~~)**), the channel spacing shall be 10 kHz. In the interest of spectrum conservation, ~~during the transition period,~~ it is also permissible to interleave SSB emissions midway between two adjacent DSB channels, i.e., with 5 kHz separation between carrier frequencies, provided that the interleaved emission is not to the same geographical area as either of the emissions between which it is interleaved.

In an all inclusive SSB environment, ~~After the end of the transition period~~ the channel spacing and carrier frequency separation shall be 5 kHz.

Reasons: Updating this text to reflect digital and SSB use and deleting text concerning the transition period. No change in the carrier reduction levels.

USA/ /6

MOD

2.6 Carrier reduction (relative to peak envelope power)

In a mixed DSB, SSB and Digital environment ~~During the transition period~~ the carrier reduction shall be 6 dB to allow SSB emissions to be received by conventional DSB receivers with envelope detection without significant deterioration of the reception quality.

In an all inclusive SSB environment ~~At the end of the transition period~~, the carrier reduction shall be 12 dB.

Reasons: Updating this text to reflect digital and SSB use and deleting text concerning the transition period. No change in the carrier reduction levels.

USA/ /7

ADD

PART C - Digital system

1 System parameters

1.1 Channel spacing

The initial spacing for digitally modulated emissions use shall be 10 kHz. However, interleaved channels with a separation of 5 kHz may be used in accordance with the appropriate protection criteria appearing in Recommendation **DAB (WRC-03)**, provided that the interleaved emission is not to the same geographical area as either of the emissions between which it is interleaved.

[1.2 Channel utilisation

Channels using digitally modulated emissions may be commingled with analogue emissions in the same HFBC band provided the protection to the analogue emissions is at least as great as that which currently is in force with analogue-to-analogue protection. To accomplish this may require that the digital spectral power density (and total power) be lower by several dB than is currently used for the same emission circuit using either DSB or SSB emissions.

2 Emission characteristics

2.1 Bandwidth and centre frequency

A full digitally modulated emission will have a 10 kHz bandwidth with its centre frequency at any of the 5 kHz possibilities within the HFBC bands.

There are "simulcast" modes, which are a combination of analogue and digital emissions of the same programme in the same channel, that may use a digital emission of 5 kHz or 10 kHz bandwidth, next to either a 5 kHz or 10 kHz analogue emission. In all cases of this type, the 5 kHz interleaved raster used in HFBC shall be adhered to in placing the emission within the HFBC bands.

2.2 Frequency tolerance

To be entered after WP6E determines the values at either its March 2002 or September 2002 meeting.

2.3 Audio frequency band

Digital source coding within a 10 kHz bandwidth, taking account of the need for various levels of error avoidance, detection and correction coding emission mitigation, can range from the equivalent of monophonic FM (approximately 15 kHz) to low level speech codec performance of the order of 3 kHz. The choice of audio quality is connected to the needs of the broadcaster/listener, and includes such characteristics to consider as the propagation channel conditions expected. There is no single specification, only the upper and lower bounds noted in this paragraph.

2.4 Modulation

Quadrature amplitude modulation (QAM) with Orthogonal frequency division multiplexing (OFDM) shall be used. 64 QAM is feasible under many propagation conditions; factors of ½, ¼ and perhaps 1/8 of this are specified for use when needed.

Reasons: Part C is added to address the requirements of digital systems. Specific channelization values, audio frequency bandwidths and "modes" of digital modulation conform to ITU-R system Recommendation **BS.1514**.

USA/ /8
ADD

DRAFT RECOMMENDATION DAB (WRC-03)

RF protection ratios associated with digitally modulated emissions in the HF bands allocated exclusively to the broadcasting service

The World Radiocommunication Conference (Caracas, 2003),

considering

a) that this Conference has resolved to encourage the introduction of digitally modulated emissions in the high frequency broadcast bands allocated exclusively to the broadcasting service;

b) that the current use of the spectrum is based on the use of double-sideband (DSB) emissions;

c) that RF co-channel and adjacent channel protection ratios are among the fundamental parameters when determining compatibility;

d) that this Conference has adopted Resolution **517 (Rev. WRC-03)** relating to the introduction of digitally modulated emissions in the HF bands allocated exclusively to the broadcasting service;

e) that Part C of Appendix **S11** contains digital system specifications that refer to this Recommendation for matters dealing with appropriate protection ratios,

recommends

1 that in the application of Article **S12**, the protection ratios specified in the Annex to this Recommendation be used for all those cases where digitally modulated emissions operate in the same bands as double-sideband analogue emissions.

Reasons: This resolution provides protection ratios associated with digital emissions in the same manner as that of Recommendation **517**, originally from HFBC-87, which deals with SSB and DSB only. It, along with its Annex, specifies the levels of protection required both to protect the amplitude modulation transmissions from digital modulation emissions, digital modulation emissions from other digital modulation emissions, and digital modulation emissions from amplitude modulation emissions.

USA/ /9
ADD

ANNEX TO RECOMMENDATION DAB (WRC-03)

RF protection ratio values

1. In accordance with Resolution **517 (Rev. WRC-03)** digital modulation may be used in any of the HF bands allocated exclusively to the broadcasting service. This accommodation has to be made with the appropriate amounts of protection given to both analogue and digital emissions. RF protection ratios are part of the overall regulation of these emissions. Their values appear in the table in this annex.

2. The table consists of RF protection ratios for co-channel and adjacent channel conditions. The independent variable in the table is the centre frequency separation in kHz of any pair of emissions, wanted vs. unwanted. The ratio data are in decibels.
3. The digital modulation governing these protection ratios is that which appears in summary in Part C of Appendix **S11**, as revised at this conference, and the analogue modulation is double-sideband modulation or single sideband modulation as summarized in Parts A and B, respectively, of the same Appendix.

Protection Ratio Table

Wanted signal	**Other signal**	**Centre frequency separation (kHz)**				
		0	5	10	15	20
DSB	**Digital** [1)]	6	3	-31	-42	-48
Digital	**DSB** [2)]	8	2	-31	-38	-40
Digital	**Digital** [2)]	17	12	-35	-39	-44
SSB	**Digital** [3)]	-	-	-	-	-
Digital	**SSB** [3)]	-	-	-	-	-

Notes:

1) Values relative to the DSB/DSB co-channel RF protection ratio

2) Values for a BER of 10^{-4}

3) *Values for SSB into digital and digital into SSB will be supplied from the TG6/7 meetings to be held in March 2002 and September 2002.*

Reasons: This annex provides the appropriate amounts of protection given to both analogue and digital emissions and supports the text of DRAFT RECOMMENDATION **DAB(WRC-03).**

USA/ /10
MOD

RECOMMENDATION 517 (~~HFBC-87~~REV.WRC-03)

~~Relative~~ RF protection ratio values for single-sideband (SSB) emissions in the HF bands allocated exclusively to the broadcasting service

The World ~~Administrative Radio~~ Radiocommunication Conference ~~for the Planning of the HF Bands Allocated to the Broadcasting Service~~ ([Geneva] 2003, ~~1987~~),

considering

a) that WRC-97 ~~the Conference has~~ adopted Article **S12** as the seasonal ~~a method for the~~ planning procedure for ~~of~~ the HF bands allocated exclusively to the broadcasting service;

b) that this ~~method~~ procedure is based principally on the use of double-sideband (DSB) emissions;

c) that the RF co-channel protection ratio is one of the fundamental planning parameters;

d) that ~~the~~ this Conference has adopted Resolution **517 (Rev. WRC-03)** relating to the ~~transition~~ introduction of digitally modulated and ~~from DSB to~~ SSB emissions in the HF bands allocated exclusively to the broadcasting service ~~and Recommendation **515** relating to the introduction of transmitters and receivers capable of both DSB and SSB modes of operation;~~

e) that the SSB system characteristics for HF broadcasting are contained in Appendix **S11**;

~~*f)* that, however, due to their provisional nature, the values of the relative RF protection ratio to be applied for all relevant combinations of wanted and unwanted DSB and SSB emissions have not been included in the Appendix mentioned in *considering e)*;~~

g) that ~~preliminary~~ studies have shown that SSB emissions may require a lower RF co-channel protection ratio for the same reception quality;

~~*h)* Resolution **514 (HFBC-87)*** relating to the procedure to be applied by the Radio Regulations Board and the Bureau in the revision of relevant parts of their Technical Standards used for HF broadcasting,~~

recommends

that, ~~subject to the procedure to be applied by the Radio Regulations Board and the Bureau in the revision of relevant parts of their Technical Standards used for HF broadcasting given in Resolution **514 (HFBC-87)***~~, the values of ~~relative~~ RF protection ratio given in the Annex to this Recommendation be used by the Bureau in its application of Article **S12** ~~Technical Standards~~ relating to SSB and DSB emissions in the HF bands allocated exclusively to the broadcasting service,

~~*invites the ITU-R*~~

~~to continue to study the values of relative RF protection ratio for the different cases and frequency separations covered in the Annex to this Recommendation,~~

~~*and recommends administrations*~~

~~to participate actively in these studies.~~

Reasons: This recommendation has been modified to reflect the introduction of digital emissions. No substantive changes were made in the protection ration values with SSB vs. DSB amplitude modulation.

~~* This Resolution was abrogated by WRC-97.~~

USA/ /11

MOD

ANNEX TO RECOMMENDATION 517 (~~HFBC-87~~Rev.WRC-03)

~~Relative~~ RF protection ratio values

1 The values of ~~relative~~ RF protection ratio given in the table should be used whenever SSB emissions in conformity with the specification in Appendix **S11** are involved in the use of the HF bands allocated exclusively to the broadcasting service.

~~2 The values given refer to the case of co-channel DSB wanted and unwanted signals for the same reception quality.~~

~~3~~2 For the reception of DSB and SSB (6 dB carrier reduction relative to peak envelope power) wanted signals, a conventional DSB receiver with envelope detection designed for a channel spacing of 10 kHz is assumed.

~~4~~3 For the reception of an SSB wanted signal (12 dB carrier reduction relative to peak envelope power), the reference receiver as specified in Appendix **S11**, Part B, Section 3, is assumed.

~~5~~4 SSB signals with 6 dB carrier reduction relative to peak envelope power assume equivalent sideband power as specified in Appendix **S11**, Part B, § 1.2.

~~6~~5 The figures for case 2 in the following table relate to a situation where the centre frequency of the intermediate frequency pass-band of the DSB receiver is tuned to the carrier frequency of the wanted SSB signal. If this is not the case, the value for a difference of +5 kHz may increase to –1 dB.]

~~Relative~~ RF protection ratio values with reference to the co-channel RF protection ratio for DSB wanted and unwanted signals (dB)[1] for use in the HF bands allocated exclusively to the broadcasting service

	Wanted signal	Unwanted signal	Carrier frequency separation *f* unwanted – *f* wanted, Δ*f* (kHz)								
			–20	**–15**	**–10**	**–5**	**0**	**+5**	**+10**	**+15**	**+20**
1	DSB	SSB (6 dB carrier reduction relative to p.e.p.)	–51	–46	–32	+1	3	–2	–32	–46	–51
2	SSB (6 dB carrier reduction relative to p.e.p.)	DSB	–54	–49	–35	–3	0	–3	–35	–49	–54
3	SSB (6 dB carrier reduction relative to p.e.p.)	SSB (6 dB carrier reduction relative to p.e.p.)	–51	–46	–32	+1	0	–2	–32	–46	–51
4	SSB (12 dB carrier reduction relative to p.e.p.)	SSB (12 dB carrier reduction relative to p.e.p.)	–57	–57	–57	–45	0	–20	–47	–52	–57

[1] Frequency separation Δ*f* less than –20 kHz, as well as Δ*f* greater than 20 kHz, need not be considered.

Reasons: Minor text changes were made to update the annex from **HFBC-87**. No changes were made in the DSB vs. SSB table of protection ratios.

USA/ /12
MOD

S5.134 The ~~use of the~~ bands 5 900-5 950 kHz, 7 300-7 350 kHz, 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 13 570-13 600 kHz, 13 800-13 870 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz ~~by~~are allocated to the broadcasting service on a primary basis as from 1 April 2007.~~is limited to single sideband emissions with the characteristics specified in Appendix S11 or to any other spectrum efficient modulation techniques recommended by ITU-R. Access to these bands shall be subject to the decisions of a competent conference~~.

Reasons: The proposed modification provides a simple unambiguous regulatory environment for the use of the WARC-92 extension bands both before and after the envisaged implementation date of 1 April 2007. Before the 01/04/07 date, there is no change: in other words, the bands are not allocated to HFBC. After that date, broadcasters can choose any modulation means that has ITU-R approval, such as the digital modulation described in ITU-R Recommendation **BS.1514** and the SSB and DSB amplitude modulations noted in Article **S11**.

USA/ /13
SUP

RESOLUTION 537 (WRC-97)

Reasons: The survey mentioned in the resolution on transmitter and receiver statistics related to SSB has been completed, and submitted by the BR for WRC-2000, as requested from WRC-97. Therefore, there is no need to carry forward this resolution. The associated Recommendation **515 (Rev.WRC-97)** is also proposed for suppression as detailed below.

USA/ /14
SUP

RECOMMENDATION 515 (REV.WRC-97)

Reasons: With the adoption of this Recommendation **BS.1514** and the fact that IEC has been informed of this development, Recommendation **515 (Rev.WRC-97)** can be suppressed.

USA/ /15
SUP

RECOMMENDATION 519 (WARC-92)

Reasons: This Recommendation, from WARC-92, considers the possibility of advancing the date of cessation of DSB. In the light of broadcasting needs in HF, this is totally unrealistic. Thus, there is concern within many Administrations, expressed on many occasions at WRC-97, that the introduction of SSB into HF Broadcasting (and now digital modulation) should not restrict the ability of administrations to continue with their existing DSB transmissions for the foreseeable future and that at this point in time it is inappropriate to specify a cessation of DSB in favour of SSB in the year 2015. It is also evident from information presented at WRC-2000 by the Director that the interest in SSB within HF Broadcasting is virtually non-existent. This Recommendation should therefore be suppressed.

USA/ /16
MOD

ARTICLE S23.12

~~Double-sideband and single-side-band t-t~~Transmitting stations operating in the HF bands allocated exclusively to the Broadcasting Service shall meet the system specifications contained in Appendix **S11**.

Reasons: A consequential change that reflects the change in S11 that has added digital modulation to the acceptable modulation methods.

United States of America

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.7: to consider issues concerning the amateur and amateur-satellite services:

1.7.1 possible revision of Article **S25;**

Background Information: At WRC-95, one administration proposed to delete from Article **S25** the requirement that amateurs demonstrate Morse code capability to be licensed to operate on frequencies below 30 MHz. Instead, a review of Article **S25** was placed on the preliminary agenda for WRC-99. At WRC-97, this agenda item was moved to the preliminary agenda for WRC-01. At WRC-2000, the item was confirmed on the agenda for WRC-03.

Article **S25** contains 11 paragraphs, only one of which relates to the Morse code requirement. In 1996, the International Amateur Radio Union (IARU), an ITU Sector Member, initiated a review of the entire Article by publishing a discussion paper and soliciting comment. Several iterations of the paper and discussions at three regional conferences over a three-year period culminated in the adoption of a consensus view in 1998. This consensus view supports the following principles:

- Retention of the requirement that administrations shall verify the technical and operational qualifications of any person wishing to operate an amateur station. The specific qualifications are subject to change over time and more appropriately belong in an ITU-R Recommendation. Accordingly, Recommendation ITU-R M.1544 was developed in Working Party 8A.
- Protection of the non-commercial nature of the amateur and amateur-satellite services.
- Inclusion of specific provisions to recognize the disaster communications role of the amateur service and to facilitate global roaming by amateur stations.
- Relief from existing prohibition on transmitting international communications on behalf of third parties.
- Elimination of the provision forbidding radiocommunications between amateurs of different countries if the administration of one of the countries has notified that it objects to such communications.
- Elimination of redundant provisions that simply repeat regulations that apply generally to all radio services.

Proposal:

ARTICLE S25

Amateur services

Section I – Amateur service

USA/ /1
SUP

S25.1 § 1

Reasons: No longer required. An administration has the necessary authority to determine the points of communication of amateur stations it has licensed.

USA/ /2
ADD

S25.1 § 1 Administrations shall verify the technical and operational qualifications of any person wishing to operate an amateur station.

Reasons: To renumber and editorially simplify No. **S25.6**.

USA/ /3
MOD

S25.2 § 2 1) ~~When~~ T~~t~~ransmissions between amateur stations of different countries ~~are permitted, they~~ shall be ~~made in plain language and shall be limited to messages of a technical nature relating to tests and to remarks~~ limited to communications incidental to the purposes of the amateur service or of a personal character ~~for which, by reason of their unimportance, recourse to the public telecommunications service is not justified~~.

2) Except with the authority of the relevant administration granted to meet a particular operational need, transmissions between amateur stations shall not be encoded for the purpose of obscuring their meaning.

Reasons: To eliminate obsolete restrictions while retaining the non-commercial nature of the amateur service and to update the "plain language" requirement by replacing it with "not encoded for the purpose of obscuring their meaning."

USA/ /4
SUP

S25.3 2) It is absolutely forbidden for amateur stations to be used for transmitting international communications on behalf of third parties.

Reasons: No longer required. Privatized telecommunications services do not require protection from bypass. The cost of telecommunications services is now so low that the amateur service is not an attractive alternative except in rare cases of isolated stations. Other regulations are sufficient to protect the non-commercial nature of the service.

USA/ /5
ADD

S25.3 § 3 Administrations are urged to take the steps necessary to allow amateur stations to prepare for and meet communication needs in the event of a natural disaster.

Reasons: To recognize the disaster communications capability of the amateur service consistent with Recommendation ITU-R M.1042-1, which recommends that administrations encourage the development of amateur networks capable of providing communications in the event of natural disasters and that amateur organizations be allowed to exercise their networks periodically during normal non-disaster periods.

USA/ /6
SUP

S25.4 3)

Reasons: No longer required and to eliminate the administrative burden of the necessity of making special arrangements between countries.

USA/ /7
ADD

S25.4 § 4 An administration may, without issuing a licence, permit a person who has been granted a license to operate an amateur station by another administration, to operate an amateur station while that person is temporarily in its territory, subject to such conditions or restrictions it may impose.

Reasons: Article **S18** requires that all transmitting stations be licensed but provides for special arrangements in certain circumstances. None of these special arrangements applies to the amateur and amateur-satellite services. The proposed addition makes it clear that administrations are authorized and encouraged to permit visiting amateurs to operate without being required to issue them a licence while protecting the prerogatives of administrations.

USA/ /8
SUP

S25.5 § 3 1)

Reasons: To eliminate the requirement to prove Morse code ability and to leave this matter to administrations.

USA/ /9
SUP

S25.6 2)

Reasons: To renumber and editorially simplify as No. **S25.1**.

USA/ /10
SUP

S25.7 § 4

Reasons: Redundant. See No. **S15.2**, which provides that "Transmitting stations shall radiate only as much power as is necessary to ensure a satisfactory service."

USA/ /11
SUP

S25.8 § 5 1)

Reasons: To simplify the Regulations by eliminating a redundant provision.

USA/ /12
SUP

S25.9 2)

Reasons: Redundant. See Nos. **S19.4 and S19.5**.

Section II – Amateur-satellite service

USA/ /13
MOD

S25.~~10~~5 § ~~6~~5 The provisions of Section I of this Article shall apply equally, as appropriate, to the amateur-satellite service.

Reasons: Consequential renumbering.

USA/ /14
MOD

S25.~~11~~6 § ~~7~~6 ~~Space stations in the amateur-satellite service operating in bands shared with other services shall be fitted with appropriate devices for controlling emissions in the event that harmful interference is reported in accordance with the procedure laid down in Article **S15**.~~ Administrations authorizing ~~such~~ space stations ~~shall inform the Bureau and~~ shall ensure that sufficient earth command stations are established before launch to ~~guarantee~~ ensure that any harmful interference ~~which might be reported can be terminated by the authorizing administration (See No. **S221.**)~~caused by emissions from a station in the amateur-satellite service can be immediately eliminated.

Reasons: Consequential renumbering and simplification of provision. The first sentence is redundant (see No. **S22.1**). Procedures for notification to the Bureau are given in Resolution **642 (WARC-79)**.

United States of America

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

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

Background Information: Resolution **723 (Rev. WRC-2000)** *resolves 4,* recommends that WRC-03 consider a review of existing allocations to space science services near 15 GHz and 26GHz, with a view to accommodating wideband space-to-Earth space research applications. This *resolves* is in response to a need for allocations to support planned high data rate space research missions requiring bandwidths up to 400 MHz. Satellites for these missions will carry telescopes and/or other passive instruments to measure phenomenon such as the Earth's magnetosphere and solar flares. These missions will be limited in number with an estimated three to five satellites per year worldwide, and will generally be in an equatorial orbit with some at geostationary altitudes and others at the L1 or L2 Sun/Earth equilibrium libration points that are approximately 1.9 M km from Earth.

An ITU-R study has shown the feasibility of using the band 25.5-27.0 GHz to satisfy the requirements described above.[1] The band is currently allocated to the fixed, mobile, inter-satellite and Earth exploration-satellite services on a primary basis. The use of the allocations is further constrained by RR footnotes: **S5.536** sets conditions on the use of the band by stations in the inter-satellite service (ISS); **S5.536A** limits the protection afforded EESS earth stations from the emissions of stations in the fixed and mobile services; and, **S5.536B** further limits the protection and status of EESS earth stations in a number of countries.

Proposal:

	25.5-27 GHz		
	Allocation to Services		
	Region 1	**Region 2**	**Region 3**
USA/ /1 MOD	**25.5-27**	EARTH EXPLORATION-SATELLITE (space-to Earth) ~~S5.536A~~ S5.536B FIXED INTER-SATELLITE S5.536 MOBILE SPACE RESEARCH (space-to-Earth) Standard frequency and time signal-satellite (Earth-to-space) **MOD** S5.536A	

Reasons: To add a primary space research service (space-to-Earth) allocation to the Table of Allocations and to show that the footnote **S5.536A** will apply to the space research service as well as the Earth exploration-satellite service.

[1] This proposal only addresses the 26 GHz element of Agenda Item 1.12c. A separate proposal will address the 15 GHz element of the agenda item.

USA/ /2
MOD

S5.536A Administrations installing Earth exploration-satellite service or space research service earth stations cannot claim protection from stations in the fixed and mobile services operated by neighbouring administrations. In addition, earth stations operating in the Earth exploration-satellite service should take into account Recommendation ITU-R SA.1278.

Reasons: This change amends RR footnote **S5.536A** to include SRS earth stations and to give them the same status as Earth exploration-satellite service earth stations.

Table S21-4

USA/ /3
MOD

Frequency band	Service*	Limit in dB(W/m2) for angle of arrival (δ) above the horizontal plane			Reference bandwidth
		0°-5°	5°-25°	25°-90°	
25.5-27.0 GHz	Space Research (space-to-Earth)	-115	-115 + (δ – 5)/2	-105	1 MHz

Reasons: These changes limit the emissions of the space research service in order to protect the fixed and mobile services from harmful interference.

APPENDIX S7, TABLE 8d

Parameters required for the determination of coordination distance for a receiving earth station

USA/ /4
MOD

Receiving space radiocommunication service designation			space research (4)	space research (5)
Frequency band (GHz)			25.5-27.0	25.5-27.0
Transmitting terrestrial service designations			Fixed, mobile	Fixed, mobile
Method to be used			§ 2.2	§ 2.1
Modulation at earth station (1)			N	N
Earth station interference parameters and criteria	p_0 (%)		0.1	0.1
	n		2	2
	p (%)		0.05	0.05
	N_L (dB)		0	0
	M_s (dB)		6	6
	W (dB)		0	0
Terrestrial station parameters	E (dBW) in B (2)	A	-	-
		N	42	42
	P_t (dBW) in B	A	-	-
		N	–3	–3
	G_x (dBi)		45	45
Reference bandwidth	B (Hz)		10^6	10^6
Permissible interference power	$P_r(p)$ (dBW) in B		–150	–150

USA/ /5
NOC

(Notes to Table 8d)

(1) A: analogue modulation; N: digital modulation.
(2) *E* is defined as the equivalent isotropically radiated power of the interfering terrestrial station in the reference bandwidth.
(3) Non-geostationary mobile-satellite service feeder links.
(4) Non-geostationary-satellite systems.
(5) Geostationary-satellite systems.
(6) Non-geostationary fixed-satellite systems.

Reasons: Provides the characteristics in Table 8d of Appendix **S7** of receiving earth stations in the space research service to be used in determining the coordination contour with respect to transmitting stations in the fixed and mobile services.

United States of America

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

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

Background Information: In an ongoing effort to reduce interference to HF distress and safety frequencies used in the GMDSS, WRC-2000 determined that after 31 December 2003, general calling should not be permitted on channels used for distress and safety traffic. The radio regulations now permit routine voice calling on the two GMDSS duplex distress and safety traffic channels in the 12 and 16 MHz band. WRC-2000 actions removed the calling function on these two channels. It also changed these duplex channels to simplex channels, allocating one of the simplex channels for routine calling via radiotelephone and the other as dedicated for distress and safety communications. These changes are scheduled to take effect 31 December 2003. This change will result in a financial and personnel impact to maritime SAR authorities that maintains listening watch in these bands, and receives occasional routine radiotelephone calls in addition to distress and safety calls. Removal of the ability of shore stations that have search and rescue responsibilities to receive and make routine calls on these frequencies will result in the receiving of distress and safety calls on a working channel not designated for distress and safety purposes. This has caused some confusion to mariners wishing to send distress and safety calls.

A second related issue involves a need for more effective methods for ships and coast stations to call ships using DSC for routine communications. ITU Radio Regulations effectively prohibit ships and coast stations from making routine calls to other ships using DSC, and other alternatives do not exist. Channels are available for ships making routine calls to coast stations, and these channels should continue to be used. But ships do not guard these routine calling channels, and so cannot accept routine calls from coast stations. Simplex HF DSC channels allowing routine calls from other ships do not exist, and experience has shown that the number of such calls would be small, and should not interfere with the distress and safety uses of this channel.

Proposal:

USA/ / 1
MOD

S52.221A Calling on the carrier frequencies 12 290 kHz and 16 420 kHz ~~shall cease as soon as possible and no later than 31 December 2003~~ is permitted only to and from rescue coordination centres (see No. S30.6.1). The alternative carrier frequencies 12359 kHz and 16 537 kHz may be used by ship stations and coast stations for calling on a simplex basis, provided that the peak envelope power does not exceed 1 kW.

Reasons: The addition in this footnote permits calling to and from stations that have search and rescue responsibilities, i.e., rescue coordination centres. Because of the very limited number of rescue coordination centres that are, or plan to be, operating in these bands, the additional traffic and potential

for interfering with distress and safety traffic is very low. Additionally, this allows a vessel in a distress situation to communicate on these channels rather than making a distress call on a working channel; hence, de facto changing the working channel into the distress and safety channel. Monitoring of these two frequencies at the US Coast Guard Communications Master Stations Atlantic have shown very little traffic on these channels.

APPENDIX S15
TABLE S15-1

Legend:

USA/ / 2
MOD

DSC These frequencies are used exclusively for distress and safety calls using digital selective calling in accordance with No. **S32.5** (see Nos. **S32.9**, **S33.11** and **S33.34**). Exceptionally, however these frequencies may also be used for ship-to-ship and shore-to-ship routine calling if no other means are available and if no traffic is present on the channel (see No. **S31.4**).

Reasons: This will facilitate communications to and from ships that are outside coverage of VHF radiotelephone frequencies, where no other means of DSC calling exist. This change includes the requirement to ensure no communications is present before making a routine call. It allows DSC-equipped radios to meet the recommendations of IMO that GMDSS equipment not be reserved for emergency use only, as described in IMO COMSAR Circ. 17.