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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

March 26, 2003

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Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
236 Massachusetts Avenue N.E., Suite 110
Washington, DC 20002

Re: Notice of *Ex Parte* Presentation in IB Docket No. 02-10

Dear Ms. Dortch:

This letter provides notice that, on March 25, 2003, David Kagan and Robert Hanson (respectively, the Chief Executive Officer and Vice President/Regulatory Affairs of Maritime Telecommunications Network, Inc. ("MTN")), and Raul Rodriguez and the undersigned of Leventhal, Senter & Lerman P.L.L.C.(attorneys for MTN) met with John B. Muleta, Catherine W. Seidel, Thomas P. Stanley, D'Wana Ten-y, Shellie Blakeney, Scott Stone, and Michael Pollack of the Commission's Wireless Telecommunications Bureau. At the meeting, MTN made the presentation in Attachment 1 to this letter, and discussed the licensing and regulatory status of earth stations on board vessels ("ESV") within the C- and Ku-bands – matters under consideration within IB Docket No. 02-10. In addition, MTN discussed the ESV agenda item for the 2003 World Radiocommunication Conference, and presented a copy of the Inter-American Proposal for this item that was agreed to last month by the U.S. and eight other countries from our region.

Pursuant to Section 1.1206(b) of the Commission's Rules, 47 C.F.R. § 1.1206(b), the original and one copy of this letter, with the attachments, are submitted for inclusion in the file of the above-referenced proceeding.

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Ms. Marlene H. Dortch
March 26, 2003
Page -2-

Please direct any questions you may have to the undersigned.

Respectfully submitted,

Stephen D. Baruch
*Attorney for Maritime Telecommunications
Network, Inc.*

Attachments

cc (w/ attachments): John B. Muleta
Cathenne W. Seidel
Thomas Stanley
D'Wana Terry
Shellic Blakeney
Scott Stone
Michael Pollack

#180439



*MTN focuses on providing broadband satellite
services for in-motion installations*

(i. e. cruise vessels, oil/gas rigs, and military vessels)

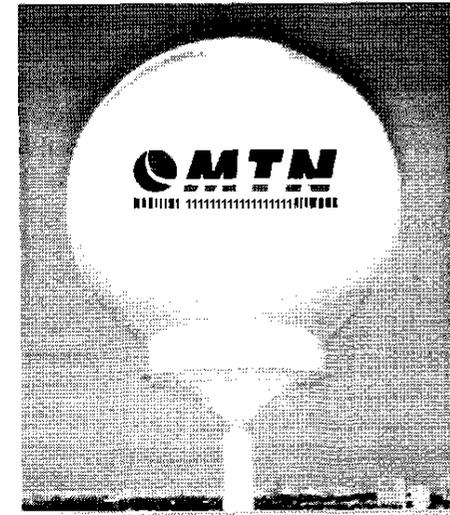
March 25, 2003

Mission Statement

“We are dedicated to providing our maritime customers with state-of-the-art global communications solutions. We are committed to delivering reliable, effective, innovative and economical services that drive improved profitability for our company and our customers.”

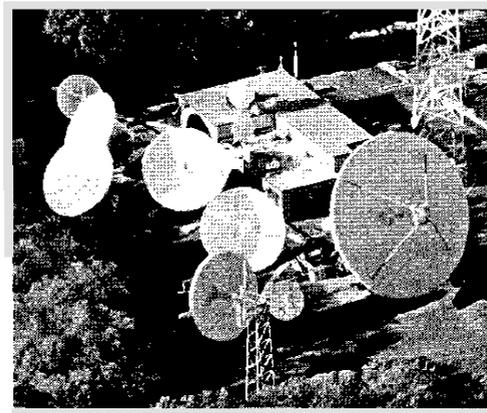
What We Do . . .

- **MTN focuses on the Cruise, Oil & Gas, Live Broadcast, and Military markets providing broadband satellite communications services for moving vessels or vehicles**
- **MTN is a full service turn-key provider offering:**
 - Engineering/System Design
 - Equipment Leasing
 - Equipment Installation
 - Equipment Maintenance & Repair
 - Space Segment Management
 - Private Terrestrial Networks
 - PSTN Termination
 - Internet Cafes (Wired & Wireless)
 - Prepaid Calling Cards
 - Live Broadcasting Services (Audio & Video)
 - Full Newspaper delivery anywhere in the world

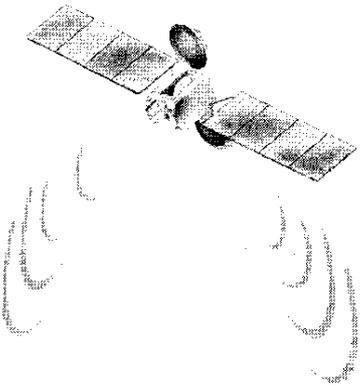


How We Do It . . .

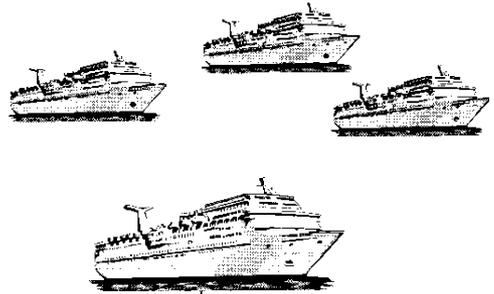
- Stabilized Antenna Platform on Ships (multiple configurations)
- Routers and Voice Gateways
- Satellite Data Modems
- Majority of Traffic is IP including VoIP
- State-of-the-art Telcport facilities are used to land circuits – network control through Holmdel, N.J. and Miramar, Fl.
- MTN utilizes commercial FSS satellites (both C-Band and Ku-Band) to provide service (including PanAmSat, Intelsat, New Skies, SES Americom)



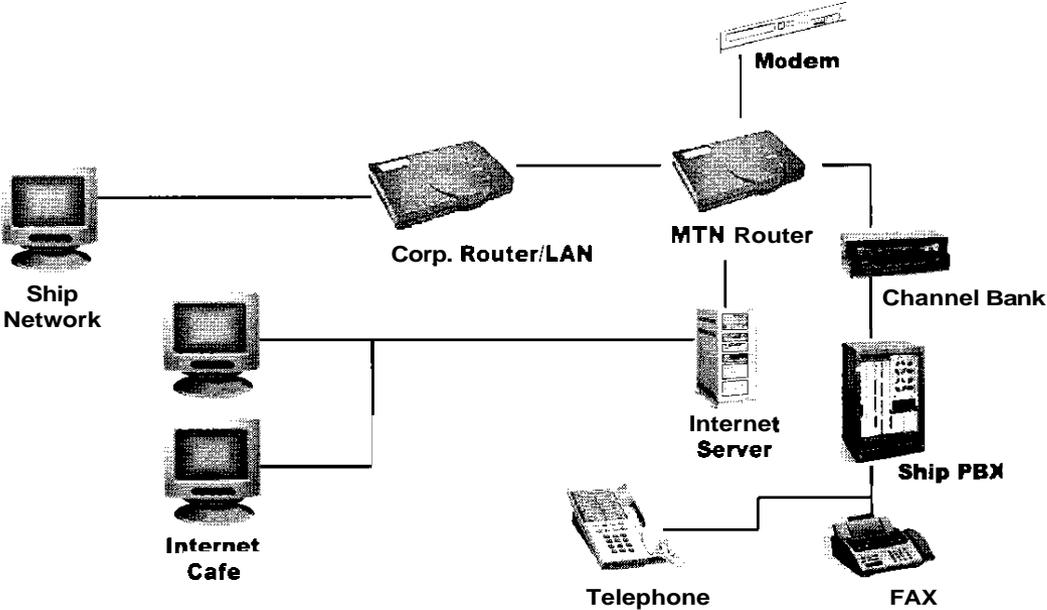
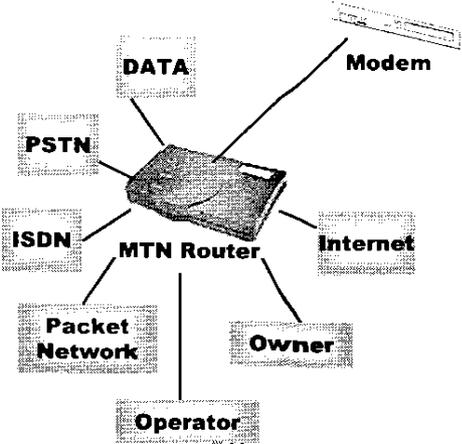
MTN ShipNet Diagram



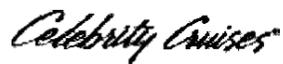
MTN Remote Shipboard Terminals (ports and navigable waters throughout the world)



MTN Network Operating Center (Miramar, Florida)



MTN's Solid Customer Base



What is Our Value Added . . .

- Our Customers use MTN Services for:
 - Immigration/Customs (Electronic Processing)
 - Inventory management
 - General Shipboard Administration
 - Communications with HQ
 - Ship Location Tracking
 - Credit Card Verification/ ATM Processing
 - Extensive calling during safety/distress given the volume of calls/e-mails the MTN system can handle versus Inmarsat
 - Passenger and Crew Calling
 - Passenger and Crew Entertainment
 - Via Internet Cafes (wired and WiFi wireless)
 - Daily newspapers (digitally transmitted and printable in complete format)
 - Live video/radio broadcasts



Vital MTN Statistics

- Ships/Rigs Installed – 108
- Ships with Internet Cafes – 50
- Number of Passengers ~ 150,000 (at any given time)
- Number of Crew Members – 66,000
- Average Cost of an Installation - \$285,000
- Annual Revenues approximately \$35 million
- MTN Employees = 80 + 50 onboard managers
- Stand alone privately owned U.S. Corporation

International Regulatory Status

- Final preparations for WRC-03 are now underway.
- Europe, Asia and Americas all agree that ESVs should operate within the FSS in C-band and Ku-band:
 - Common proposals from CEPT, APT, and CITEL contain similar approaches;
 - CITEL proposal was developed within the U.S., and was supported by industry and government users.
- Technical coordination guidelines and methodologies for ESVs have been developed in the ITU-R, and are captured in a series of new ITU Recommendations.

International Regulatory Status

- WRC-03 is expected to confirm the regulatory approach developed within the ITU-R.
- The U.S. has, since before WRC-97, assumed the lead role in the development of a stable and mutually satisfactory regulatory environment for ESVs in FSS bands shared on a co-primary basis with the fixed service.

Domestic Regulatory Requirement

The FCC should adopt, prior to the start of WRC-03, an NPRM on ESVs that complements and helps advance the U.S. ESV proposals at WRC-03.

The FCC's failure to adopt an NPRM on ESVs well in advance of WRC-03 could substantially undermine the ability of the US to achieve its goals on Agenda Item 1.26.

Inter-American proposals for agenda item 1.26

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 under national provisions (No. 4.4 of the Radio Regulations).

Several actions have taken place in ITU-R Study Groups to develop Recommendations or CPM text related to this agenda item. These include the development of:

- a. Working Party 4A Recommendation on the Characteristics of ESVs, including those to be used for sharing studies at 6 GHz and 14 GHz;
- h. a JWP 4-9S Draft New Recommendation identifying the 5 925-6425 MHz and 14-14.5 GHz bands as suitable for ESV operations (Earth-to-space);
- c. several Draft New Recommendations in Joint Working Party 4-9S on methods to be used for achieving agreement with fixed stations when ESVs are in motion near the shore, including determination of a distance beyond which no agreement is necessary;
- d. draft CPM text which includes example footnotes to the Table of Frequency Allocations at 5 925-6 425 MHz and 14-14.5 GHz and two examples of a revised Resolution 82. The first example footnote would make compliance with the modified Resolution 82 mandatory, the second example would require “all practical steps” to comply with the Resolution. Similarly, the first of the two modified example Resolution 82 would make the contact procedures mandatory, the second example Resolution 82 does not.

As administrations may assign frequencies for ESVs pursuant to No. 4.4 of the Radio Regulations and ESV systems are mobile, it is appropriate to inform administrations operating systems in accordance with the Radio Regulations of the operation of ESVs and to allow them to take steps to prevent the possibility of harmful interference from ESV systems to their systems.

In accordance with the 1982 United Nations Convention on the Law of the Sea (UNCLOS, 1982), the point to measure distances, identified in IAP/5/159, Resolution 82 is the “low water mark” defined as the baseline from which the territorial sea is measured.

The proposed footnote and revisions of Resolution 82 provide for advance notice of the operation of ESV systems. A proposed Recommendation provides guidance on operational procedures to use with administrations whose systems might be affected by such ESV use. The bilateral procedure in the proposed revision of Resolution 82 will allow administrations to reach agreement on the use of ESVs so that other systems operating in accordance with the Radio Regulations are protected. Additionally, the proposed definition of ESVs is intended to clarify the status of ESVs operating within networks in the fixed-satellite service (FSS), and a proposed new footnote is intended to ensure the protection of adjacent satellites when ESVs are operating within FSS networks.

Proposal:

ARTICLE I

Terms and definitions

Section IV – RADIO stations and systems

IAP/5/155

ADD

Support: Argentina, Brazil, Canada, Colombia, Costa Rica, El Salvador, Honduras, Mexico, United States

[Antigua and Barbuda], [Commonwealth of Bahamas], [Barbados], [Belize], [Bolivia], [Chile], [Commonwealth of Dominica], [Ecuador], [Grenada], [Guatemala], [Guyana], [Haiti], [Jamaica], [Nicaragua], [Panama], [Paraguay], [Peru], [Dominican Republic], [Saint Lucia], [Saint Vincent and the Grenadines], [Saint Kitts and Nevis], [Suriname], [Trinidad and Tobago], [Uruguay], [Venezuela]

1.68 his *earth station on board a vessel:* an earth station located on board a vessel operating in certain bands of the fixed-satellite service, as distinct from a ship earth station (see **1.78**), and intended to be used while in motion or during halts at unspecified points.

Reasons: Adding this definition will ensure that the class of station and the category of allocation of both earth and space stations will be matched to each other.

ARTICLE 5

Frequency allocations

IAP/5/156

MOD

Support: Argentina, Brazil, Canada, Colombia, Costa Rica, El Salvador, Honduras, Mexico, United States

[Antigua and Barbuda], [Commonwealth of Bahamas], [Barbados], [Belize], [Bolivia], [Chile], [Commonwealth of Dominica], [Ecuador], [Grenada], [Guatemala], [Guyana], [Haiti], [Jamaica], [Nicaragua], [Panama], [Paraguay], [Peru], [Dominican Republic], [Saint Lucia], [Saint Vincent and the Grenadines], [Saint Kitts and Nevis], [Suriname], [Trinidad and Tobago], [Uruguay], [Venezuela]

Region 1	Region 2	Region 3

**IAP/5/157
MOD**

Support: Argentina, Brazil, Canada, Colombia, Costa Rica, El Salvador, Honduras, Mexico, United States

Region 1	Region 2	Region 3
14-14.25	FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 RADIONAVIGATION 5.S04 Mobile-satellite (Earth-to-space) except aeronautic31 m satellite Space research 5.505 ADD 5.ESV	
14.25-14.3	FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 RADIONAVIGATION 5.S04 Mobile-satellite (Earth-to-space) except aeronautical mobile-Satellite Space research 5.505 5.508 5.509 ADD 5.ESV	
14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A

<p>5.506 MOBILE except aeronautical Mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radionavigation-satellite ADD 5.ESV</p>	<p>5.506 Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radionavigation-satellite ADD 5.ESV</p>	<p>5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radionavigation-satellite ADD 5.ESV</p>
<p>14.4-14.47</p>	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research (space-to-Earth) ADD 5.ESV</p>	
<p>14.47- 14.5</p>	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radio astronomy 5.149 ADD 5.ESV</p>	

Reasons: Footnote 5.ESV is added to provide guidance to administrations wishing to allow the use of earth stations on board vessels in the bands 5 925-6425 MHz and 14-14.5 GHz while providing protection to existing users of the bands.

IAP/5/158
ADD

Support: Argentina, Brazil, Canada, Colombia, Costa Rica, El Salvador, Honduras, Mexico, United States

[Antigua and Barbuda], [Commonwealth of Bahamas], [Barbados], [Belize], [Bolivia], [Chile], [Commonwealth of Dominica], [Ecuador], [Grenada], [Guatemala], [Guyana], [Haiti], [Jamaica], [Nicaragua], [Panama], [Paraguay], [Peru], [Dominican Republic], [Saint Lucia], [Saint Vincent and the Grenadines], [Saint Kitts and Nevis], [Suriname], [Trinidad and Tobago], [Uruguay], [Venezuela]

5.ESV Administrations operating earth-stations on board vessels in the bands 5 925-6 425 MHz and 14-14.5 GHz shall take all practicable steps to comply with Resolution **82 (WRC-03)**. Such use shall not cause harmful interference to, claim protection from, or otherwise impose constraints on the operation or development of other radio services operating in the hand 5 925-6 425 MHz and 14-14.5 GHz.

Reasons: To provide guidance to administrations wishing to allow the use of earth stations on board vessels in the bands 5 925-6 425 MHz and 14-14.5 GHz and provide protection to existing users of the bands.

IAP/5/159
MOD

Support: Argentina, Brazil, Canada, Colombia, Costa Rica, El Salvador, Honduras, Mexico, United States

[Antigua and Barbuda], [Commonwealth of Bahamas], [Barbados], [Belize], [Bolivia], [Chile], [Commonwealth of Dominica], [Ecuador], [Grenada], [Guatemala], [Guyana], [Haiti], [Jamaica], [Nicaragua], [Panama], [Paraguay], [Peru], [Dominican Republic], [Saint Lucia], [Saint Vincent and the Grenadines], [Saint Kitts and Nevis], [Suriname], [Trinidad and Tobago], [Uruguay], [Venezuela]

RESOLUTION 82 (WRC-2003)

**Provisions relating to earth stations located on board vessels
which operate with fixed-satellite service networks in the
bands ~~3 700 4 200~~ 5 925-6 425 MHz and ~~5 925 6 425 MHz~~ 14.0-14.5GHz**

The World Radiocommunication Conference (~~Istanbul, 2000~~ Geneva, 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 ESVs are

currently operating 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 this 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;~~

~~f) that the number of vessels equipped with ESVs may be such that the procedures could as to place a heavy processing burden on some administrations, especially those in developing countries;~~

~~g) that in order to ensure the protection and future growth of other services, ESVs shall should operate with requisite technical and operational constraints;~~

~~h) that, based on appropriate assumptions, a minimum distance can be calculated has been identified beyond which an ESV will not have the potential to cause unacceptable interference to other services in these bands 5 925 -6 425 MHz and 14 - 14.5 GHz.~~

noting

a) that ESVs may be assigned frequencies to operate in FSS networks in the bands 3 700-4 200 MHz, 5 925-6 425 MHz, 10.7-12.75 GHz, and 14-14.5 GHz & pursuant to No. 44 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 that existing regulatory procedures provide for~~ ESVs operating at specified fixed points,

recognizing

a) ~~that progress has been made within ITU R in determining the technical and operational provisions under which ESVs could operate; that the reference to the distances in resolves 2 is solely for the purpose of facilitating avoidance of radio interference and does not confer any territorial rights on Administrations.~~

~~b) that further studies are needed;~~

resolves

1 that transmissions from ESVs within the distances identified in resolves 2 of this resolution be based upon the prior agreement of the concerned administrations; 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;~~

that the minimum distances from the baseline ("low water mark", as defined by the United Nations Convention on the Law of the Sea, 1982 (UNCLOS, 1982)) beyond which ESV stations will not have the potential to cause unacceptable interference to stations of other services of any administration and beyond which no agreement is necessary, are 300 km for the 5 925-6 425 MHz band and 125 km for the 14.0-14.5 GHz band. These distances are applicable to ESVs operating within the technical characteristics of Annex 2 of WRC Rec. ESV/FSS.

~~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;~~

encourages concerned administrations

~~to cooperate with administrations which that license ESVs while and seeking agreement under resolves 4, under the provisions of Recommendation FSS/ESV;~~

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 2000)~~

~~ANNEX 2 TO RESOLUTION 82 (WRC 2000)~~

IAP /5 /160
ADD

Support: Argentina, Brazil, Canada, Colombia. Costa Rica, El Salvador, Honduras, Mexico, United States

[Antigua and Barbuda], [Commonwealth of Bahamas], [Barbados], [Belize], [Bolivia], [Chile], [Commonwealth of Dominica], [Ecuador], [Grenada], [Guatemala], [Guyana], [Haiti], [Jamaica], [Nicaragua], [Panama], [Paraguay], [Peru], [Dominican Republic], [Saint Lucia], [Saint Vincent and the Grenadines], [Saint Kitts and Nevis], [Suriname], [Trinidad and Tobago], [Uruguay], [Venezuela]

RECOMMENDATION[FSS/ESV]

Operational Procedures for ESV Use

The World Administrative Radio Conference (Geneva, 2003)

considering

- a) That under the provisions of Resolution **82 (Rev. WRC-03)** transmissions from ESVs within the distances of its resolves 2 be based upon prior agreement of concerned administrations;
- b) that it is desirable to provide guidance on activities to achieve such prior agreement with concerned administrations;
- c) that such guidance should include the operational procedures for ESV use.

recommends

- 1. That operation of ESVs follow the procedures set forth in Annex 1, including the typical characteristics in Annex 2.

ANNEX 1

Operational procedures for ESV use

A. *Initiation of Contact*

When ships equipped with ESVs intend to operate in the band 5 925-6 425 MHz within 300 kilometers and in the band 14-14.5 GHz within 125 km of the baseline ("low water mark" as defined by UNCLOS, 1982) of other administrations having terrestrial stations operating in the same band as the ESV, the ESV licensing administration should contact, in advance of ESV operations within those distances, the concerned administration(s) to obtain agreements that will establish the technical bases for avoiding unacceptable interference to the terrestrial facilities of the concerned administration or administrations.

B. Recommended Actions of Licensing Administrations, ESVs operators and Concerned Administrations:

- Each Administration having terrestrial stations in these bands should have a point of contact for the ESV licensing Administration or the ESV operator to initiate discussions.
- Licensing Administration or the ESV operator should provide the following information:
 1. The technical and operational parameters including the range of its frequency operation;
 2. The proposed dates and ports to be visited and the routes of the ship(s) equipped with ESVs to reach those ports within the minimum distance from the baseline ("low water mark" as defined by UNCLOS, 1982) of the concerned Administration.
- Concerned Administrations that have terrestrial stations that could be affected by ESVs operations should do the following when contacted by the ESV licensing Administration or the ESV operator:
 1. Determine if they have terrestrial stations in the same frequency band as the ESV;
 2. Identify frequencies for ESV use that would avoid the potential for interference.

C. ESV Operating Agreements

A concerned Administration is encouraged to enter into an agreement with 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 5 925 – 6 425 MHz band outside certain limits and not using this band inside certain limits in countries that have fixed service stations in the same band and should include the possibility of switching to 14 – 14.5 GHz band if there are no terrestrial services in the band. 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 applicable recommendations of the ITU-R, may be used in reaching bilateral or multilateral frequency usage arrangements. Typical characteristics for ESV operations are contained in Annex 2.

E. Protection from Transmissions of Other Services

ESVs are not protected from the transmissions of other services operating in the 4 GHz and 11/12 GHz bands.

F. ESV Point of Contact

Each ESV operator should provide a point of contact to the Administration with which agreements have been reached for the purpose of reporting unacceptable interference caused by an ESV.

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 occurs, 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 causing unacceptable interference or is otherwise not being operated in compliance with the operating agreement.

Additionally, ESVs stations should have the following operational capabilities:

1. The ESV system should include a means of identification and location, and automatic mechanisms to terminate transmissions whenever the station operates outside its authorized geographic area (see resolves 2 of Res. 82 (Rev. WRC-03)) or operational limits.
2. The ESV system should be equipped so as to enable the ESV licensing Administration under the provisions of Article 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

This annex contains typical characteristics of ESV earth stations on board vessels for the 5 925-6 425 MHz and 14-14.5 GHz bands.

5 925-6 425 MHz

Minimum diameter of ESV antenna:	2.4 m
Maximum necessary bandwidth per vessel:	2.4 MHz
Maximum ESV eirp spectral density toward the horizon:	17dB(W/MHz)
Tracking Accuracy of ESV antenna	0.2"

14-14.5 GHz

Minimum diameter of ESV antenna:	1.2 m
Maximum necessary bandwidth per vessel:	2.4 MHz
Maximum ESV eirp spectral density toward the horizon :	12.5 dB(W/MHz)
Tracking Accuracy of ESV antenna	0.2"

Off axis limits:

For earth stations on board vessels (see 1.68 bis) operating in the 5 925-6425 MHz band, at any angle ϕ specified below, off the main-lobe axis of an earth-station antenna, the maximum e.i.r.p. in any direction within 3" of the GSO shall not exceed the following values:

5925-6425 MHz

<i>Angle off-axis</i>	<i>Maximum e.i.r.p. per 4 kHz band</i>
$2.5'' \leq \varphi \leq 7^\circ$	$(32 - 25 \log \varphi) \text{ dB(W/4 kHz)}$
$7^\circ < \varphi \leq 0.2''$	11dB(W/4 kHz)
$9.2'' < \varphi \leq 48^\circ$	$(35 - 25 \log \varphi) \text{ dB(W/4 kHz)}$
$48^\circ < \varphi < 180^\circ$	- 7 dB(W/4 kHz)

For earth stations on broadcast vessels (see 1.68 bis) operating in the 14.0-14.5 GHz band, in any angle φ specified below, off the main-lobe axis of an earth-station antenna, the maximum e.i.r.p. in any direction within 3" of the GSO shall not exceed the following values:

14.0-14.5 GHz

<i>Angle off-axis</i>	<i>Maximum e.i.r.p. in any 40 kHz band</i>
$2'' \leq \varphi \leq 7^\circ$	$33 - 25 \log \varphi \text{ dBW}$
$7^\circ < \varphi \leq 9.2''$	12dBW
$9.2'' < \varphi \leq 48''$	$36 - 25 \log \varphi \text{ dBW}$
$\varphi > 48''$	- 6 dBW

Coordination agreements between fixed-satellite service networks under Article 9 may result in lower off-axis e.i.r.p. levels.

Reasons: Provide protection to existing radio services, provide administrations operating systems in existing radio services with guidance on how to reach agreement with operators of ESV systems and provide administrations with the means to operate ESVs in the hands identified. The parameters in annex 1 are consistent with the ITU-R Study Group 4 Recommendation on ESV characteristics. The limits in annex 2 to the off axis e.i.r.p. performance of ESVs operating in FSS networks are consistent with that of earth stations already operating in these networks in these bands, and to ensure efficient use of the GSO.