

**BEFORE THE**  
**Federal Communications Commission**  
**Washington, D.C. 20554**

In the Matter of )  
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Procedures to Govern the Use of Satellite )  
Earth Stations on Board Vessel in Bands ) IB Docket No. 02-10  
Shared With Terrestrial Fixed Service )  
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To: The Commission

**REPLY COMMENTS OF INTELSAT GLOBAL SERVICE CORPORATION**

**Introduction and Summary**

Intelsat Global Service Corporation ("Intelsat") submits the following reply comments in response to comments filed in the above-captioned proceeding.<sup>1</sup> After reviewing the comments received by the Commission in this proceeding, Intelsat herein responds to certain comments made by Maritime Telecommunications Network, Inc ("MTN"),<sup>2</sup> the Fixed Wireless Communications Coalition ("FWCC"),<sup>3</sup> Boeing Company ("Boeing"),<sup>4</sup> Hughes Network Systems Inc. ("Hughes"),<sup>5</sup> the International Council of

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<sup>1</sup> *Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in Bands Shared With Terrestrial Fixed Service*, FCC 02-18 (rel. Feb. 4, 2002) and summarized at 67 Fed. Reg. 13300 (Mar. 22, 2002) (Notice of Inquiry).

<sup>2</sup> Comments of Maritime Telecommunications Network, Inc. on the Notice of Inquiry (filed May 10, 2002) ("MTN Comments").

<sup>3</sup> Comments of Fixed Wireless Communications Coalition on the Notice of Inquiry (filed May 10, 2002) ("FWCC Comments").

<sup>4</sup> Comments of the Boeing Company on the Notice of Inquiry (filed May 10, 2002) ("Boeing Comments").

Cruise Lines (“ICCL”),<sup>6</sup> Inmarsat Ventures plc (“Inmarsat”),<sup>7</sup> and Maritime Services, Inc. (“Harris MCS”),<sup>8</sup> that relate to Intelsat's original comments.<sup>9</sup> Intelsat is in general agreement with the comments provided by the Satellite Industry Association (“SIA”),<sup>10</sup> Boeing, Hughes, MTN, ICCL and Inmarsat. These reply comments are grouped by the subject addressed:

### **Proposal to Deny Operations**

Intelsat disagrees with the proposal made by the FWCC that the Commission “bar earth stations on vessels (“ESVs”) from operating while in motion in the 6 GHz band at locations close to U.S. coasts”.<sup>11</sup> As many commenters have indicated,<sup>12</sup> usage of the 5925-6425 MHz band (“6 GHz band”) is the only cost effective solution for providing broadband, bi-directional communications with ships at sea. To deny access to earth stations on vessels (ESV) to the 6 GHz band would severely constrain provision of this valuable service. As indicated in the submissions of ICCL,<sup>13</sup> MCS<sup>14</sup> and MTN,<sup>15</sup> the service offers many benefits to passengers, ship’s crew, and government agencies.

Intelsat would furthermore like to emphasize the efforts of ESV service providers over

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<sup>5</sup> Comments of Hughes Network Systems, Inc. on the Notice of Inquiry (filed May 10, 2002) (“Hughes Comments”).

<sup>6</sup> Comments of the International Council of Cruise Lines on the Notice of Inquiry (filed May 10, 2002) (“ICCL Comments”).

<sup>7</sup> Comments of Inmarsat Ventures plc on the Notice of Inquiry (filed May 10, 2002) (“Inmarsat Comments”).

<sup>8</sup> Comments of Maritime Communications Services Inc., a subsidiary of Harris Corporation on the Notice of Inquiry (filed May 10, 2002) (“Harris MCS Comments”).

<sup>9</sup> Comments of Intelsat Global Service Corporation on the Notice of Inquiry (filed May 10, 2002) (“Intelsat Comments”).

<sup>10</sup> Comments of the Satellite Industry Association on the Notice of Inquiry (filed May 10, 2002) (“SIA Comments”).

<sup>11</sup> FWCC Comments at 2.

<sup>12</sup> *See generally* Harris MCS Comments at 3; Inmarsat Comments at 1; ICCL Comments at 1; SIA Comments at 2.

<sup>13</sup> ICCL Comments at 1.

<sup>14</sup> Harris MCS Comments at 2-3.

<sup>15</sup> MTN Comments at 4 -7.

the past 10 years in bringing innovative broadband services to the maritime market, in essence “wiring” ships at sea to extend the internet’s reach for crews, passengers and maritime corporations. This allows them to benefit from key applications such as e-mail, e-commerce services, and corporate LAN applications to enhance ship operations.

### **STAs no Longer an Acceptable Means of Licensing ESV**

The FWCC indicates that ESV can not be licensed as a non-conforming exception to the FCC Table of Allocations since ESV are neither temporary, developmental or experimental stations.<sup>16</sup> Intelsat understands by this comment that ESV operators have “outgrown” a regulatory regime intended for initial deployment of services. Lacking the a priori establishment of a specific regulatory regime, ESV operators have made their initial provision of service based on waivers and STA, while completely carrying the burden of protecting other services in the band. After more that a decade of operation, it would be appropriate for the Commission to provide a more stable regulatory regime for ESV that is consistent with the maturity of the service and that allows the service to continue to develop.

The simplest method to rectify the situation would be to amend definitions in both domestic and international regulations so as to encompass ESV as a class of operations under the FSS. In this regard, the World Radiocommunication Conference Advisory Committee (WAC) has adopted a proposal for the 2003 World Radiocommunication Conference (WRC-2003) Agenda Item 1.26 that is consistent with this approach.<sup>17</sup> Such a change would allow ESV to continue to thrive, allow for the protection of existing services and require minimal changes to either domestic or international regulations.

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<sup>16</sup> FWCC Comments at 5- 6.

<sup>17</sup> WRC-2003 Advisory Committee (“WAC”), Document WAC 112 approved on 4 June 2002.

## **The FWCC Interference Example**

The FWCC contradicts itself in its submission by both stating that it is next to impossible to identify the ESV as the culprit in interference events, while proposing an example of an interference event that is in all likelihood linked to ESV operations.<sup>18</sup> Unless additional data exists that was not provided with the submission, it is unclear how it could be reasonably concluded that the source of interference was from ESV, given that the only pertinent data are the frequency and geographic location of the site. By any reasonable engineering standard, any such interference investigation would require a significantly more detailed analysis before proposing that any particular transmitter might have been the cause, if indeed the problem was due to interference. Through careful investigation, many similar cases of interference have been solved revealing unusual sources such as self-interference, faulty vehicle ignition system, arc welding, and microwave ovens as the culprit. Based on this experience, Intelsat does not support the opinion expressed by the FWCC that ESV are the likely culprit based solely on geographical data alone.

In addition, Intelsat would propose as a general concept that proper record-keeping by ESV gateway stations of ship positions with the corresponding time, frequency, and satellite should be sufficient in demonstrating to regulators and the interference victim whether or not an ESV may have caused a harmful interference event. However, such record-keeping should be neither burdensome to those managing ESV operations nor place in the public domain information that could potentially put at risk the safety of the ship along with its passengers and crew.

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<sup>18</sup> FWCC Comments at 4.

## **Dual Band Operations**

The FWCC proposes that ESV be limited to transmitting in the 14 GHz band when approaching coastal areas. Intelsat, among others,<sup>19</sup> strongly disagrees with the FWCC proposal, as such a limitation would have major repercussions on the ability of ESV operators to offer a viable service. It remains Intelsat's view that ESV should be allowed to operate in the 14 GHz band but should not be forced to do so for reasons of significantly increased costs, as well as capacity and service availability.

The cost impact from compulsory dual-band operations would result in part from increased space segment charges and ship earth station costs. As space segment represents a major portion of the operation cost of ESV, a restriction to operate in the 14 GHz would require the leasing of space segment in both the 6 GHz as well as the 14 GHz bands. As stated in our original comments, such a decision would dramatically increase the cost and viability of the service. A further cost impact of dual-band operations is to equip ships so that they can operate in both bands. Dual band operation might require the installation of two separate antennas, which is an expensive proposition and one that may not be possible on the superstructure of many ships. A single antenna capable of dual-band operations will also be more costly and more complex to maintain.

An additional complexity of compulsory ESV operations at 14 GHz within the coordination distance is that it pre-supposes that 1) 14 GHz capacity exists to the outer edges of the coordination distance and 2) despite the high demand for 14 GHz band, such capacity would be available for lease. This may not always be the case and as a result, the FWCC proposal of 14 GHz operation within the coordination distance and the selection of a large coordination distance are incompatible options in most cases.

A final concern with compulsory operation of ESV in the 14 GHz band is that the impact of rain is more severe in this band. Therefore, the availability and performance of the 14 GHz band will not be as high as the 6 GHz band, given that ESV tend to deploy in tropical areas where high rain rates occur, that maritime areas are in satellite edge of coverage and that ESV are limited in sensitivity and transmitted power density.

For these reasons, Intelsat would submit to the Commission that compulsory dual band operations of ESV's would render the service cost-ineffective. The Commission should allow ESV operators the option of using the 14 GHz band close to shore.

#### **ESV to be Governed by VSAT Model**

Intelsat supports the approach made by MTN and Hughes<sup>20</sup> to make domestic use of a VSAT model in licensing the gateway station, while providing authorizations to a limited number of terminals. This approach offers simplicity, flexibility and the usage of an established regulatory regimen. The application of the VSAT model to ESV would resolve the problem of ESV on foreign vessels, as these stations would be licensed by their respective Administrations and receive an authorization to communicate with gateway stations licensed by the FCC. This would simplify the administrative processing of such stations by doing away with the need for time consuming bilateral discussions between the United States and the country registering the vessel.

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<sup>19</sup> Inmarsat Comments at 4-5; MTN Comments at 10; Harris MCS Comments at 4.

<sup>20</sup> MTN Comments at 16-18; Hughes Comments at 2.

## Technical Constraints on ESV

The FWCC proposes that a number of technical conditions be placed on ESV.<sup>21</sup> However, most of the parameters listed by the FWCC are used to establish the off-axis EIRP performance of the station in the direction of the victim. If an off-axis level is adopted, however, the individual parameters need not be specified. An ESV designer could then take advantage of alternate design configurations that still meet the necessary off-axis performance and thus still protect FS stations.<sup>22</sup> In establishing regulatory limits that ensure the protection of the FS, the FCC should allow a measure of flexibility in ESV design.

The FWCC further proposes that ships carry an automated method to detect their position, determine if they are in the authorized area and shut down the terminal if they operate outside the authorized area. The complexity of such a proposal (e.g., integrity and validity of authorized area database on each ship) would make it difficult to implement in a reliable way. As a result, it would be best if the shutdown of the system were ordered by the gateway and not by the ship. Hardware on the ship would thus be simpler and more reliable, requiring only that the transmitter be inhibited when the received signal is not detected. There would be a single database at the gateway station containing the list of those locations and frequencies where ships can transmit. Finally, the shutdown order from the hub should be done with human intervention so as to allow an assessment of the situation before ordering the link shut down.

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<sup>21</sup> FWCC Comments at 10.

<sup>22</sup> Boeing Comments at 3; Harris MCS Comments at 4.

## **Distance Issue**

Various maximum coordination distances have been proposed within the ITU-R that represent different assumptions on the sensitivity of FS receivers and the likely number of vessel crossings in the boresight of the FS station. The value of 300 km selected by the ITU-R and endorsed by the FWCC<sup>23</sup> represents a political compromise based on very pessimistic assumptions that in all likelihood do not necessarily apply to U.S. ports. As a result, Intelsat would reiterate its proposal, which has been supported by other interveners,<sup>24</sup> for a more reasonable coordination distance from U.S. ports that is based on reasonable technical facts and consistent with U.S. proposals to the ITU-R. Intelsat remains of the view that a coordination distance of 100 km would be adequate in protecting the FS without unduly constraining ESV operations.

## **Short Terms on Licenses**

Intelsat disagrees with the FWCC's position that there are benefits to issuing licenses with short terms to ESV stations.<sup>25</sup> The Commission has the right to intervene at any time in the period of the license in the event that a transmitter causes harmful interference. As such, the shorter license terms proposed by the FWCC would create an increased administrative burden for the Commission's staff and ESV operators without providing any additional protection to FS stations. Further, Intelsat believes that issuing a short-term license to ESV operators places an undue economic burden on the operator by increasing its investment risk and limiting its ability to obtain funds.

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<sup>23</sup> FWCC Comments at 11-12.

<sup>24</sup> Inmarsat Comments at 5-6; Boeing Comments at 2.

<sup>25</sup> FWCC Comments at 12-13.

## **Defer Decision**

Intelsat understands Harris MCS's concerns that a decision by the Commission may require review if it is made before WRC-2003.<sup>26</sup> However, Intelsat is of the opinion that many of the points that remain to be addressed within the ITU would not necessarily impact domestic rules on ESV operations. Given that U.S. ports are visited more frequently by ESV-equipped ships than any other Administration's, the United States has solid experience on which to establish an appropriate domestic policy on sharing between ESV and the FS. By setting clear policy in advance of WRC 2003, the United States would be well placed to use its regulatory model as an example for other Administrations to adopt.

## **Conclusion**

Intelsat remains supportive of the establishment of a permanent licensing process for earth stations onboard vessels that would promote the development of the service, while protecting existing and future fixed service operations.

Respectfully submitted,

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<sup>26</sup>Harris MCS Comments at 5.