

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)
)
Procedures to Govern the Use of Satellite) IB Docket No. 02-10
Earth Stations on Board Vessels in Bands)
Shared with Terrestrial Fixed Services)

To: The Commission

Reply Comments of the Fixed Wireless Communications Coalition

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The Fixed Wireless Communications Coalition (“FWCC”), by its undersigned counsel, hereby submits its Reply Comments in response to the Comments filed by various parties on May 10, 2002, in response to the Commission’s Notice of Inquiry in the above-captioned proceeding released on February 4, 2002.¹ In particular, the FWCC hereby replies to the Comments filed by Maritime Telecommunications Network, Inc. (“MTN”); Maritime Communications Services, Inc. (“MCS”); Boeing Space and Communications (“Boeing”); International Council of Cruise Lines (“ICCL”); Satellite Industry Association (“SIA”); Hughes Network Systems, Inc. (“Hughes”); Inmarsat Ventures PLC (“Inmarsat”);

¹ *Procedures to Govern the Use of Satellite Earth Stations on Board Vessels*, IB Docket No. 02-10, Notice of Inquiry, FCC 02-18 (released Feb. 4, 2002)(“NOI”). See also Order Extending Comment Period, DA 02-806 (released April 9, 2002) (extending comment and reply dates to May 10, 2002 and June 10, 2002, respectively). The FWCC is a coalition that includes trade associations whose members operate stations in the Fixed Service; manufacturers of Fixed Service equipment; frequency coordinators, and others with an interest in regulatory issues affecting terrestrial communications links that use Fixed Service frequencies. Many FWCC members operate Fixed Service links in port cities and coastal locations using the band 5925-6425 MHz (“6 GHz Band”) shared with the Fixed Satellite Service. See our May 10 Comments for details.

and Intelsat Global Services Corporation (“Intelsat”); all of which are hereinafter collectively referred to as the “ESV Proponents.”

I. SUMMARY

In its Comments filed in this proceeding on May 10, 2002, the FWCC urged the Commission to abandon any further authorization of earth station vessel (“ESV”) operations in the band 5925-6425 MHz (the “6 GHz Band”) for in-motion vessel activity within 300 km of U.S. shores, and to require that all ESV operations be conducted in dual-band mode, using C-band frequencies on the high seas and Ku-band frequencies close to U.S. shores. If the Commission nonetheless finds it necessary to continue authorizing close-to-shore in-motion ESV operations in the 6 GHz Band, the FWCC recommended that it do so subject to several conditions and restrictions that were suggested in the Notice of Inquiry and endorsed by the FWCC.

Nothing in the Comments of the ESV Proponents justifies a departure from the course of action recommended by the FWCC in its Comments. If anything, the Comments of the ESV Proponents underscore the need for the Commission to adopt the approach outlined by the FWCC.

II. DISCUSSION

A. The Risk of Interference to Critical FS Communications Far Outweighs Any Benefits of ESV Operations in the 6 GHz Band.

The ESV Proponents universally acknowledge the risk of harmful interference to terrestrial Fixed Service (“FS”) communications from nearby ESV stations transmitting in

the 6 GHz Band.² As the FWCC explained in its Comments, these FS links are used to support critical infrastructure services and facilities, including gas, electric and water utilities; rail transportation; police, fire and emergency response agencies; and Commercial Mobile Radio Service (“CMRS”) interconnection.³ Untold millions of American citizens depend on these critical services and facilities every day.

In contrast to this widespread dependence by the American public on the critical infrastructure industries that deploy 6 GHz FS links in support of their operations, the ESV Proponents point to a mere handful of people who stand to benefit from ESV operations in the 6 GHz band. According to MTN and ICCL, at any given moment there are only about 200,000 passengers and crew on board ESV-equipped cruise line vessels.⁴ Not only is the number of ESV beneficiaries not very compelling (compared to the millions of persons who rely ultimately on the integrity of interference-free FS links), but the claimed benefits of ESV technology are tenuous, as well. According to ICCL, the principal benefit of ESV technology is that it “saves cruise line operators money,”⁵ and MTN admits that it prefers the 6 GHz FS/FSS band because the Mobile Satellite Service (“MSS”) bands are not available “at a price point economical enough to make [MSS] a viable option for ESV operators.”⁶

² See, e.g., MTN Comments at 8; SIA Comments at 3; Boeing Comments at 2-3.

³ FWCC Comments at 1-2.

⁴ MTN Comments at 6-7; ICCL Comments at 1.

⁵ ICCL Comments at 2.

⁶ MTN Comments at 9; see *a/so* MTN Comments at 5, where MTN complains that the MSS lacks the bandwidth and “affordable cost structure” to be attractive to MTN. Of the several services listed by MTN at page 5 of its comments, only two (Internet access and

The Commission must balance the limited benefits of continued ESV use of the 6 GHz Band against the risk of harmful interference to critical FS links that support important public safety and critical infrastructure missions – a risk that all the ESV Proponents admit exists. That balance must tip in favor of protecting critical terrestrial FS communications from interference from co-frequency ESV operations.

B. The Claim of “Reliance” by the ESV Proponents is Not a Valid Justification for Continued Authorization.

Some of the ESV Proponents argue that restricting ESV access to the 6 GHz Band would unfairly deprive ESV users of services they “have come to expect”⁷ and upon which they “have come to rely.”⁸ In addition, MTN claims that a decision by the Commission to “prohibit or restrict ESV access to C-band would vitiate MTN’s business and render more than \$25 million in capital investments obsolete.”⁹

The Commission must reject these arguments. MTN embarked on its ESV business fully aware that the use of the 6 GHz Band for in-motion stations was not allowed under the international and domestic frequency allocation tables except on a secondary, temporary basis subject to waiver. MTN made its investments, built its business, and sold its services to its customers based on temporary authorizations that were expressly subject to cancellation at any time. In other words, MTN and its customers were on notice from the

occasional live television broadcasts) require *bona fide* wideband capacity; all the others are basically data or voice communications that can be accommodated (at admittedly slower speeds) on systems with narrower bandwidth.

⁷ ICCL Comments at 1; SIA Comments at 1.

⁸ MTN Comments at 4, 6 and 9.

⁹ *Id.* at 10.

outset that ESV operations in the 6 GHz band were a non-conforming use under the Table of Allocations; they voluntarily assumed the risk that permanent licensing of ESVs in that band might never happen. Under the circumstances, they are not entitled to claim any expectation of the continued availability of ESV service using the 6 GHz Band.

C. Contrary to Its Claims of Compliance, MTN Has Not Followed the FCC’s Regulatory Regime for ESVs

MTN claims that it has operated ESVs “in a manner consistent with domestic regulatory regimes, and with principles of sound spectrum management, without causing interference to the co-primary FS;” that it has been a “model spectrum citizen;” that it has “diligently operated pursuant to [relevant] obligations;” and that it has “coordinated ESV operations” in compliance with the Commission’s 1996 order in *Crescomm Transmission Services, Inc*, 11 FCC Rcd 10944 (IB and OET 1966).¹⁰

None of this is true. In particular, the situation referenced at footnote 6 of MTN’s Comments is a good example of MTN’s non-compliance with the FCC’s requirements. That situation involved suspected ESV interference into an FS link near Juneau, Alaska. The FWCC had asked MTN to provide vessel names, routes, and locations in the vicinity, as well as transmit frequencies, bandwidths, and other operating details for all vessels equipped with MTN’s ESV stations in the area.¹¹ Instead of providing the requested information so that the FWCC could perform its own evaluation of the possible cause of the interference, MTN engaged in stonewalling tactics and submitted a report from a consultant

¹⁰ *Id.* at 2, 7, 23.

¹¹ Letter from Mitchell Lazarus, FWCC’s counsel, to Eliot J. Greenwald, MTN’s counsel,

asserting that MTN's ESVs were not the cause of the interference – a conclusion based on the assumption that the victim FS station had suffered interference only for a one-month period.¹² Although it tried in vain in its report to pin the blame for the interference on some unspecified terrestrial FS transmitter or transmitters, MTN's consultant was forced to admit that the ESVs could have been the source of the interference and, most importantly, that the calculated interference level from its ESVs operating in the area was –113.9 dBW/4kHz, a level that exceeded the short-term FS interference criterion by 17.1 dB and the long-term FS interference criterion by 40.1 dB.¹³ This admission was highly significant because it proved that MTN could not possibly have complied with the terms of the Commission's *Crescomm* order (which forbade ESVs from transmitting within 100 km of land unless prior coordination had been accomplished, and required the ESV operator to “successfully coordinate” its proposed operations (both dockside and in-motion) with all existing FS stations along a particular route).¹⁴ In short, the Alaska situation demonstrates

dated May 1, 2001, referencing File Nos. SES-LIC-19980911-01272, et al.

¹² FWCC had specified in its counsel's letter a one-month period for which it sought the relevant information on MTN's ESV operations near Juneau, but FWCC never claimed that the interference events were limited to that single month.

¹³ Letter from Eliot J. Greenwald to Mitchell Lazarus, File Nos. SES-LIC-19980911-01272, et al., dated August 8, 2001 and attached report from Pinnacle Telecom Group (at page 4). It is noteworthy that the referenced short-term and long-term interference criteria (131 and 154 dBW/4kHz) are analog protection criteria, whereas virtually all FS receivers in the 6 GHz band are digital receivers using 64 or 128 QAM. See FWCC's Petition for Expedited Action in File No. 0100-EX-RR-1999, filed May 10, 2000, and attached Engineering Statement of M. Philip Salas dated April 10, 2000. Although the ESV community has accepted these analog criteria as appropriate for use in ESV-FS coordinations, the FS licensees and manufacturers have protested their use as inadequate to protect digital FS systems from harmful interference from ESVs. *Id.* at 5-6.

¹⁴ *Crescomm*, *supra*, at 10949.

clearly that MTN had not “successfully coordinated” its en route operations in the vicinity of Juneau, and that it was operating ESVs in that area in violation of the requirements of the *Crescomm* order. Thus, the facts do not support MTN’s claim that it is a “model spectrum citizen” that complies with all relevant regulatory requirements.¹⁵

D. The Commission Should Require Dual Band ESV Operations.

The FWCC urged the Commission to require ESV use of Ku-band frequencies within 300 km of coastal areas, and to limit ESV use of the 6 GHz Band to the high seas, out of interference range of coastal FS receivers.¹⁶ Both Hughes and Intelsat support the use of Ku-Band frequencies for close-to-shore ESV traffic,¹⁷ but MTN and Inmarsat oppose dual-band operation as “more expensive” and too “costly.”¹⁸

The additional expense for dual-band operation is not a valid justification for rejecting it. Indeed, the objection rings hollow coming from MTN because, as the FWCC noted in its Comments, MTN is already providing dual-band equipment to its customers and is touting is dual-band capability on its website.¹⁹ Furthermore, any incremental expense in providing dual-band equipment will likely be more than offset by the cost savings resulting from not

¹⁵ In addition to admitting that it was not in compliance with the *Crescomm* order’s prior coordination requirement regarding its Alaska ESV operations, MTN has aided and abetted the violation of ITU requirements by operating ESV stations on board vessels of foreign registry, without any license for such stations having been granted by the nation under whose jurisdiction the vessel is registered, as required by Article 18 of the ITU’s Radio Regulations. See Order on Reconsideration and Memorandum Opinion and Order, DA 01-1283, released June 5, 2001, at n. 57.

¹⁶ FWCC Comments at 6-7.

¹⁷ Intelsat Comments at 2; Hughes Comments at 2-3.

¹⁸ MTN Comments at 12-13; Inmarsat Comments at 4-5.

¹⁹ FWCC Comments at 7.

having to conduct prior coordination of 6 GHz frequencies to protect FS receivers. And finally, from a public policy perspective, the additional expense of dual-band equipment is a small price to pay for protecting the critical infrastructure systems and public safety services that are supported by 6 GHz FS links and upon which millions of Americans rely.

E. The Duration of Any ESV Authorizations in the 6 GHz Band Must be Short.

MTN and SIA urge the Commission to grant “long term” licenses for ESV operations.²⁰ This approach would ignore the importance of the 6 GHz Band for future growth of FS links and for the relocation of displaced FS stations vacating the 1.9 and 2.1 GHz bands. As the FWCC pointed out in its Comments, short license terms for ESV authorizations will prevent ESV operators from “tying up” the band for long periods of time, thereby precluding its availability for future FS use, and will also provide an incentive for ESV operators to cooperate in resolving and preventing interference.²¹

F. The Claims of “No Prior Interference” Cannot be Credited.

Several of the ESV Proponents claim that no further protective measures for 6 GHz FS licensees are warranted because there have been “no instances” of interference to terrestrial FS operations in the past.²² There are several reasons why the Commission should reject these claims. First, all the ESV proponents admit that there is a *possibility* of interference.²³ Second, in cases where ESV transmissions have been suspected as the cause of interference, substantiation has been impossible because of the refusal of the

²⁰ MTN Comments at 21; SIA Comments at 3.

²¹ FWCC Comments at 2, 12-13.

²² For example, see MCS Comments at 2, 3; MTN Comments at 2, 3, 10, 11.

ESV operator to provide information that could have corroborated the causal connection.²⁴

And third, because of the mobile, intermittent, and transient nature of ESV transmissions, it is likely that interference events have occurred which were not reported. This is because interference, per se, cannot be “seen” on an operating FS link; the symptom of the interference is loss of traffic. In order to identify an interfering ESV transmitter as the cause of the outage, it is necessary for the FS operator to shut down the system, stopping all communications for an extended period of time, a course that obviously entails great risk and disruption to vital infrastructure functions such as pipeline flow, railroad traffic, police, fire and emergency support communications, delivery of electric, gas and water utility services, and cellular telephone backhaul service.²⁵ The extensive, time-consuming troubleshooting process involved in these instances is described in the example set forth in footnote 5 of the FWCC’s Comments.

In summary, there is no basis for concluding that ESV interference to FS operations has not occurred in the past.

G. Conditions are Necessary to Protect FS From Interference

The FWCC recommended in its Comments that the Commission impose six conditions on any future authorization of in-motion ESV operations in the 6 GHz Band at locations within

²³ See note 2, *supra*.

²⁴ See discussion at Section C, *supra*, describing MTN’s failure to supply ship names, traffic routes and transmission times for its Alaska operations. FWCC has recently asked MTN to supply similar information regarding the interference incident near Norfolk, VA described at note 5 of FWCC’s Comments. It remains to be seen whether MTN will comply with FWCC’s request.

²⁵ See Engineering Statement of M. Philip Salas dated April 10, 2000, attached to

300 km of U.S. shores.²⁶ These conditions are necessary to prevent ESV interference from occurring in the first instance and, in the event it does occur, to identify the interfering ESV station and cause it to cease transmissions promptly:

Antenna specifications, including a minimum antenna elevation angle coordinated to a specific satellite, minimum antenna diameter and maximum half-power antenna beamwidth, and antenna tracking accuracy;

Specification of minimum amount of spectrum needed to perform the applicable service, and limits on the maximum ESV transmitter power;

Maintenance by the ESV gateway operator of a web-accessible list of all ESV stations connected to its network, including a list of all frequencies cleared for use by each ESV station, and the name and country of registry of the vessel on which the ESV station is installed;

Prior coordination tied to a specific satellite (or satellites) and limited to the specific bandwidth required;

Installation on each ESV station of an automatic means of terminating transmissions whenever the vessel ventures outside its predetermined geographic operating area (i.e., its “coordination” area) or in the event the station operates at variance from the requisite technical parameters (e.g., power limits, assigned frequency); and

Prohibition against the licensee of any FSS gateway earth station communicating with any ESV station unless the ESV station is either (a) authorized by the FCC (in the case of a vessel under U.S. jurisdiction); or (b), in the case of a vessel under the jurisdiction of a foreign country, the subject of a bilateral agreement between the U.S. and the country of registry.

MTN concedes that it should be required to provide a list of all stations connected to its network(including “real-time location tracking”) to “responsible public safety authorities, the Commission, and authorized representatives of the licensees in shared bands upon

FWCC’s Petition for Expedited Action, File no 0100-EX-RR-1999, Filed May 10, 2000.

request.”²⁷ In the FWCC’s view, this is the minimum information necessary for prompt identification of ESV stations as potential interference sources and for effecting prompt cessation of interfering ESV transmissions. It is important that there be a single repository of this information, given that there are now (and presumably will be in the future) more than one ESV gateway operator in business.²⁸

Another condition very important to the FWCC is the requirement for installation on each ESV of an automatic means of terminating transmissions whenever the vessel travels outside its predetermined “coordination area” or otherwise operates at variance from the parameters on which the coordination was based. It appears from the comments of the ESV Proponents that the ability of the ESV gateway operator to monitor all such parameters adequately and to control the ESV station is in question. According to Intelsat, “gateway earth station operators generally have limited control over the operation of an interfering ESV.”²⁹ And, although MTN claims it can monitor and remotely control ESV operations, MTN’s recitation of the ESV parameters it monitors does not include vessel speed and location, both of which are critical factors in the interference equation.

²⁶ FWCC Comments at 10-11.

²⁷ MTN Comments at 23. MTN’s reason for not wanting Internet-accessible tracking of cruise ship locations is that, “in the post-September 11 environment,” such tracking will pose a “security threat” to the ships and their passengers. MTN appears unaware that this type of information is already available on the cruise lines’ websites (i.e., complete itinerary for each cruise, including port of call, arrival date, arrival and departure times, etc.) See, e.g., www.princess.com.

²⁸ Inmarsat, through a subsidiary called Invsat Ltd., operates ESV networks to provide “voice and broadband communications to ships and oil platforms.” Inmarsat Comments at 1.

²⁹ Intelsat Comments at 3.

Accordingly, a requirement for an “automatic shut-off” capability integrated into the ship-board ESV equipment is absolutely essential..

H. MTN’s Proposed ESV Licensing and Authorization Schemes are Problematic.

MTN proposes two alternative licensing models for ESVs: the “dockside out” model and the “VSAT licensing” model.³⁰ In each, the ESV licensee would be the gateway operator – not the ESV equipped ship. According to MTN, the gateway operator in the “dockside-out” model would be responsible for “assigning available frequencies” to ships and, in the “VSAT Licensing” model, could “add technically equivalent satellite earth stations...” up to a predetermined number of ships.³¹ But MTN’s approach runs afoul of domestic and international regulatory requirements. Under the ITU and FCC definitions, the ESV is a “station,” which is defined as: “One or more transmitters or receivers or a combination of transmitters and receivers, including the accessory equipment, necessary *at one location* for carrying on” a radiocommunication service.³² In light of the geographic limits of the FCC’s jurisdiction set forth in the Communications Act of 1934, the phrase “at one location” in the definition of “station” must be construed to be within the geographic scope of the Commission’s jurisdiction. In other words, although MTN’s “dockside-out” and “VSAT” models might conceivably encompass licensing a group of earth stations installed aboard U.S. registered ships (i.e., locations that are within the FCC’s jurisdiction), those

³⁰ MTN Comments at 14-18.

³¹ *Id.* at 15, 17.

³² See Section 2.1 of the Commission’s Rules and Regulations, 47 C.F.R. Sec. 2.1; and ITU Radio Regulation No. 1.61 (emphasis added).

models cannot encompass licensing a group of stations all or some of which are installed on ships of foreign registry (i.e., locations that are beyond the FCC's jurisdiction).

MTN offers a third alternative for authorizing ESVs, namely, "formal Commission authorization" without licensing. This would require a rulemaking proceeding to amend Section 2.106 of the Commission's rules (the Table of Allocations) by including a footnote allowing ESVs to operate in the FS/FSS bands.³³ There are two problems with this approach. First, it could only be accomplished following a corresponding modification to the Table of Allocations in Article 5 of the ITU Radio Regulations; and second, this approach would violate the requirement of ITU Radio Regulation No. 18.1 which states that "No transmitting station may be established or operated by a private person or by any enterprise without a license issued in an appropriate form and in conformity with the provisions of these Regulations by or on behalf of the government of the country to which the station in question is subject..."³⁴

III. Conclusion

In conclusion, the FWCC reiterates the position set forth in its Comments: the Commission abandon any further authorization of ESV operations in the 6 GHz Band for in-motion activity within 300 km of U.S. shores, and require that all further ESV operations be conducted in dual-band mode (C-Band on the high seas and Ku-Band close to U.S. shores). If the Commission nonetheless continues authorizing close-to-

³³ MTN Comments at 19.

³⁴ ITU Radio Regulations No. 18.1.

shore in-motion ESV operations in the 6 GHz Band, it should only do so with the conditions and restrictions recommended by the FWCC in its Comments.

Respectfully submitted,

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