ANN BAVENDER*
ANNE GOODWIN CRUMP
VINCENT J. CURTIS, JR.
RICHARD J. ESTEVEZ
PAUL J. FELDMAN
RICHARD HILDRETH
FRANK R. JAZZO
ANDREW S. KERSTING
EUGENE M. LAWSON, JR.
SUSAN A. MARSHALL*
HARRY C. MARTIN
GEORGE PETRUTSAS
RAYMOND J. QUIANZON
LEONARD R. RAISH
JAMES P. RILEY
KATHLEEN VICTORY
HOWARD M. WEISS

* NOT ADMITTED IN VIRGINIA

FLETCHER, HEALD & HILDRETH, P.L.C.

ATTORNEYS AT LAW

11th FLOOR, 1300 NORTH 17th STREET

ARLINGTON, VIRGINIA 22209-3801

(703) 812-0400

TELECOPIER

(703) 812-0486

INTERNET

www.fhh-telcomlaw.com

FRANK U. FLETCHER
(1939-1985)
ROBERT L. HEALD
(1956-1983)
PAUL D.P. SPEARMAN
(1936-1962)
FRANK ROBERSON
(1936-1961)
RUSSELL ROWELL
(1948-1977)
EDWARD F. KENEHAN
(1960-1978)

CONSULTANT FOR INTERNATIONAL AND INTERGOVERNMENTAL AFFAIRS
SHELDON J. KRYS
U. S. AMBASSADOR (ret.)

OF COUNSEL
EDWARD A. CAINE*
MITCHELL LAZARUS*
EDWARD S. O'NEILL*
JOHN JOSEPH SMITH

WRITER'S DIRECT

703-812-0440
lazarus@fhh-telcomlaw.com

DOCKET FILE COPY ORIGINAL

RECEIVED

JUL 27 1999

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

July 27, 1999

BY HAND DELIVERY
Magalie Salas, Esq.
Federal Communications Commission
445 12th Street, SW, Room TW-B204
Washington, DC 20554

Re: Reply Comments of the Fixed Wireless Communications Coalition RM-9650

Dear Ms. Salas:

I enclose for filing with the Commission the original and nine copies of "Reply Comments of the Fixed Wireless Communications Coalition" in the above-captioned proceeding.

Kindly date-stamp and return the extra copy of this filing.

If there are any questions about this filing, please call me at the number above.

Respectfully submitted,

Mitchell Lazarus
Counsel for the
Fixed Wireless Communications Coalition

ML:cm
Enclosures

No. of Copies rec'd 0+9
List A B C D E

ORIGINAL

Before the
Federal Communications Commission
Washington DC 20554

In the Matter of	)	
	)	
Virtual Geosatellite, LLC	)	
	)	RM-9650
Petition for Rule Making to Make	)	
Available C-Band Spectrum for	)	
Non-Geostationary Fixed-Satellite	)	
Service Gateway Operations in the U.S.	)	

REPLY COMMENTS OF THE
FIXED WIRELESS COMMUNICATIONS COALITION

The Fixed Wireless Communication Coalition (FWCC)[1] hereby replies to the comments and oppositions filed in response to the Petition for Rule Making of Virtual Geosatellite, LLC filed on April 27, 1999, in the above-captioned docket.[2]

Virtual Geosatellite seeks to operate feeder links in C-band spectrum shared with the Fixed Service. The request is similar in principle to those being contested in ET Docket No. 98-206, which involves Ku-band NGSO band feeder links, and IB Docket No. 99-81, concerning 2 GHz MSS systems, including feeder link proposals. Although Virtual Geosatellite seeks to operate fixed, rather than mobile, satellite service, the sharing issues surrounding its feeder link

---

[1] The Fixed Wireless Communications Coalition is a coalition of equipment manufacturers and users interested in terrestrial fixed microwave communications. Its membership includes manufacturers of microwave equipment, licensees of terrestrial fixed microwave systems and their associations, and communications service providers and their associations. Its membership also includes railroads, public utilities, petroleum and pipeline entities, public safety agencies, the broadcast industry, and their respective associations, telecommunications carriers, landline and wireless, local, and interexchange carriers, and others. A list of members is attached as Appendix A.

[2] The Petition appeared on public notice in Report No. 2334 (released June 11, 1999). The following timely comments and oppositions were filed: Opposition of Pathnet Inc.; Comments and Conditional Opposition of PanAmSat; Opposition of American Petroleum Institute; and Comments of Comsat Corporation.

proposals are no different from those raised by MSS applicants. Similarly, although Virtual Geosatellite apparently plans to use virtual geostationary (VGSO) elliptical orbits that keep its space stations more stable in the sky than other NGSOs, it is still likely to present greater coordination difficulties than conventional GSO earth stations.

A. The Commission Should Not Designate Fixed Service Spectrum for Virtual Geosatellite Feeder Links.

The FWCC agrees with the commenters that oppose Virtual Geosatellite's proposal on the ground that it threatens widespread, harmful operation to critical Fixed Service facilities.[3] The Fixed Services are an unsung but vital part of the Nation's infrastructure. They provide communications essential to the energy, transportation, and telecommunications industries, among others, and play a key role in public safety and other governmental operations.

Recent history justifies the Fixed Services' concern about the Virtual Geosatellite proposal. A sequence of apparently independent policy decisions in several bands has seriously curtailed Fixed Service operators' access to spectrum for forced relocation and to accommodate needed growth.[4] These actions and proposals have left the Fixed Service with insufficient

---

[3] Opposition of Pathnet Inc.; Opposition of American Petroleum Institute. Other opponents are C-band GSO FSS providers.

[4] First came a reallocation of 2 GHz band frequencies from the Fixed Service to mobile satellite services. Redevelopment of the Spectrum to Encourage Innovation in New Telecommunications Technology, ET Docket No. 92-2, First Report and Order, 7 FCC Rcd 6886 (1992), Second Report and Order, 8 FCC Rcd 6495 (1993), Third Report and Order, 8 FCC Rcd 6589 (1993). (The same proceeding also allocated 2 GHz frequencies to PCS.) Then, despite having identified the 6 GHz band as a primary relocation site for 2 GHz users, Second Report and Order, *supra*, 8 FCC Rcd at 6506, ¶ 28, the Commission proposed designating the upper 6 GHz band (6700-7075 MHz) for mobile satellite feeder links. Amendment of Parts 2, 25 and 97 of the Commission's Rules with Regard to Mobile Satellite Service Above 1 GHz, 13 FCC Rcd 17107 (1998); Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band, IB Docket No. 99-81, Notice of Proposed Rulemaking, FCC 99-50 (released

spectrum for the reasonable expansion it needs to meet the requirements of the industries and governmental agencies that rely on it for essential services. The Commission should not worsen the problem by cutting further into critical spectrum.

B. If the Commission Permits Virtual Satellite to Use C-Band Feeder Links, It Must Promulgate Sharing and Coordination Rules that Adequately Protect Fixed Service Operation and Expansion.

In the alternative, any move toward designating Fixed Service C-band spectrum for VGSO feeder links must be accompanied by rules that permit equitable sharing in practice, as well as in principle.

1. The Commission must constrain the deployment and design of feeder link earth stations.

Certain limitations are needed on feeder link earth stations that use Fixed Service spectrum to promote equitable band sharing:

- ***Limit total numbers of feeder link earth stations***. A single earth station can require a Fixed Service applicant to coordinate anywhere within 100 to 150 miles,

---

March 25, 1999). The Commission also proposed a similarly severe reduction of spectrum available to the Fixed Service in the 18 GHz band. Redesignation of the 17.7-19.7 GHz Frequency Band , 13 FCC Rcd 19923 (1998). The ongoing Ku-band proceeding threatens to move NGSO gateway stations into the already-congested 11 GHz band, and to expand GSO FSS downlink operations from half that band to the full band. NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems, ET Docket No. 98-206, Notice of Proposed Rulemaking, FCC 98-310 (released Nov. 24, 1998) (*see* Appendix A, C.F.R. § 25.202(a)(1) (proposed) for proposal to expand GSO FSS operations). The "shared" 3.7-4.2 GHz band has become effectively unavailable to the Fixed Service due to the extremely difficult problems of coordinating new Fixed Service stations with existing licensed earth stations. In the 36-51 GHz band, satellite interests have filed petitions to overturn an equitable distribution of spectrum between satellite systems and wireless operations, including the Fixed Service. Petition for Reconsideration of Hughes Communications, Inc. (filed Feb. 16, 1999) (seeking reconsideration of Allocation and Designation of Spectrum, IB Docket No. 97-95, Report and Order, FCC 98-336 (released Dec. 23, 1998)); Petition for Reconsideration of GE American Communications, Inc. (filed Feb. 16, 1999) (same); Petition for Reconsideration/ Clarification of TRW, Inc. (filed Feb. 16, 1999) (same).

depending on terrain, latitude, and other factors. The Virtual Geosatellite request overlaps C-band feeder link spectrum requested by three of the 2 GHz MSS applicants in IB Docket No. 99-81: Inmarsat Horizons, Globalstar, and Constellation II. If each of these parties deployed several feeder link earth stations, they would close vast territories to Fixed Service use.

- ***Collocate the feeder link earth stations of various providers with C-band feeder links***. This step will limit the total areas that require coordination, and hence help to control the impact on the Fixed Service by multiple providers.

- ***Site feeder link earth stations away from population centers and intercity routes***. The demand for Fixed Service facilities is highest in the population centers and along the major routes connecting them. Locating Virtual Geosatellite and other NGSO feeder link earth stations away from high-concentration Fixed Service operations will promote efficient sharing.

- ***Require use of the largest feasible antennas for feeder link earth stations***. Larger antennas permit locating Fixed Service facilities over a larger part of the earth station's coordination area.

- ***Shield feeder link earth stations***. Shielding permits Fixed Service operation in closer proximity to earth stations.[5]

- ***Set standards for earth station spectrum efficiency***. Maximizing the use of shared spectrum requires each user to occupy as little of it as possible. The fixed services have been a technology leader in the efficient use of

---

[5] In the alternative, the Commission can require "virtual shielding" around feeder link earth stations. This means that Fixed Service users can always assume a specified degree of shielding for coordination purposes, whether or not it is actually in place. The NGSO provider must construct the shielding only if is needed to prevent actual interference. This allows the NGSO provider to minimize its expenses, while still giving Fixed Service operators reasonable flexibility in coordinating growth of their services. VGSO earth stations may require less shielding than other NGSO earth stations because their satellites operate over less of the sky.

ever-scarcer spectrum.[6] At the very least, feeder link operations should be required to reach the equivalent of 16-QAM, or 4 bits/second/Hertz.

2. The Commission must establish coordination procedures that give the Fixed Service equitable access to shared spectrum.

Existing coordination procedures severely disadvantage Fixed Service operators vis-à-vis earth stations, even in spectrum that in principle is allocated coequally. At least since 1967, the Commission has routinely licensed an earth station for its entire allocated band without any inquiry into the actual amount of traffic to be carried.[7] The application form for an earth station does not even ask for information that would let the Commission determine how much spectrum the applicant reasonably needs. Earth stations routinely license hundreds of megahertz for which they have no traffic, and by doing so, maintain preemption rights for that unused spectrum over tens of thousands of square miles.

If the Commission requires sharing between feeder link earth stations and Fixed Service facilities, it should adopt rules to improve the equity in coordination.

First, where there is significant overlap between NGSO designations and the Fixed Service, feeder link earth stations should be required to specify half of the overlap to be left available for Fixed Service growth.

---

[6] The Fixed Service introduced 16-QAM (at 4 bits/second/Hertz) in the early 1980s. It advanced to 64-QAM (6 bits/second/Hertz) a few years later, and today typically uses 128-QAM (7 bits/second/Hertz). Modulation technologies that permit up to 9 bits/second/Hertz are becoming available. Additionally, through the Telecommunications Industry Association (TIA) and the National Spectrum Managers Association (NSMA), the Fixed Service has developed comprehensive and effective methodologies for coordination of Fixed Service routes with maximum frequency re-use.

[7] *See* Communications Satellite Corp., 8 F.C.C.2d 1001, 1003 (1967).

Second, Fixed Service operators should have to coordinate only over the azimuths actually used by an earth station. If a provider's satellite geometry dictates that its feeder link earth stations will never point within *X* degrees of north, for example, then a Fixed Service station within that range of azimuths should not have to coordinate with the earth station, even if it otherwise lies within the coordination distance.[8]

Third, if an earth station accepts a higher-than-desired interference objective when coordinating, then a Fixed Service facility that subsequently coordinates should have the benefit of the same higher level. The present rules permit a new earth station to accept interference cases that exceed the desired objective by a significant amount — and then to bar new Fixed Service users that fail to meet the same objective that the earth station waived. The Commission should change this practice and restore symmetry between the two services.[9] For example:

- If an earth station accepts a higher level of interference because it does not plan to use the frequencies on which the interference is present, it must specify that a future incoming Fixed Service station need not coordinate on those frequencies.

- If an earth station accepts a higher level of interference because it is shielded by a local feature such as a building or a hill, it must accept a new Fixed Service station coordinated at the same higher level, if it is shielded by the same feature.

---

[8] The FWCC opposes the alternative of coordinating within the unused azimuths, on the assumption the coordination will clear. Frequency coordination is expensive and entails delays. Fixed Service users should not have to coordinate where interference cannot arise.

[9] These principles are set out in more detail in Request for Declaratory Ruling and Petition for Rule Making of The Fixed Wireless Communications Coalition, RM-9649 (filed May 5, 1999).

- If an earth station accepts a higher level of interference without explanation, then a future incoming Fixed Service station located in the same general area can coordinate at that same higher level.

These rules will permit maximally efficient use of the spectrum by both MSS providers and Fixed Service operators, while minimizing significant harmful interference to both.

CONCLUSION

Virtual Satellite should not be permitted to use shared C-band spectrum for feeder link frequencies. That would only further exacerbate congestion in these overcrowded bands. Especially in light of other spectrum losses to satellite services, Fixed Service users need these bands to deliver essential services in the energy, transportation, and telecommunications industries, among others, and in public safety and other governmental operations.

If the Commission decides to impose sharing in these bands, it must adopt Rules imposing reasonable but effective restrictions on feeder link earth station numbers, collocation, siting, antenna size, shielding, and spectrum efficiency. The Commission must also establish coordination procedures that will yield equitable sharing of geography and spectrum, as requested by the FWCC in RM-9649.

Respectfully submitted,

Leonard R. Raish
Mitchell Lazarus
FLETCHER, HEALD & HILDRETH, P.L.C.
1300 North 17th Street, 11th Floor
Arlington, VA 22209
703-812-0400
Counsel for the Fixed Wireless
Communications Coalition

July 27, 1999

Appendix A

MEMBERS OF FIXED
WIRELESS COMMUNICATIONS COALITION

USERS

Association of Public-Safety Communications Officials
American Mobile Telephone Association
UTC - The Telecommunications Association
National Association of Broadcasters
Independent Cable Telecommunications Association
American Petroleum Institute
International Wireless Cable Association
Personal Communications Industry Association
Norfolk-Southern Railroad
Union Pacific Railroad
Burlington-Northern Railroad
BellSouth
Bell Atlantic
SBC Communications, Inc.
People's Choice TV

MANUFACTURERS

Harris Corporation -- Microwave Division
Alcatel Network Systems Inc.
Digital Microwave Corporation
Sierra Digital Communications
California Microwave, Microwave Data Systems
Tadiran Microwave Networks

CERTIFICATE OF SERVICE

I, Crystal McElroy, a secretary for the law firm of Fletcher, Heald & Hildreth, P.L.C., hereby certify that true copies of the foregoing "Reply Comments" were sent this 27th day of July, 1999, via first-class mail, postage prepaid (except as noted) to the following:

Chairman William E. Kennard*
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Commissioner Harold Furchtgott-Roth*
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Commissioner Michael Powell*
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Commissioner Susan Ness*
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Commissioner Gloria Tristani*
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Donald Abelson, Chief*
International Bureau
Federal Communications Commission
445 12th Street, S.W., 6th Floor
Washington, D.C. 20554

Roderick Kelvin Porter, Deputy Chief*
International Bureau
Federal Communications Commission
445 12th Street, S.W., 6th Floor
Washington, D.C. 20554

Richard B. Engelman, Chief*
Planning & Negotiations Division
International Bureau
Federal Communications Commission
445 12th Street, S.W., Room 7A-760
Washington, D.C. 20554

Ronald Repasi, Chief*
Satellite Engineering Branch
International Bureau
Federal Communications Commission
445 12th Street, S.W., Room 6A-505
Washington, D.C. 20554

Thomas J. Sugrue, Chief*
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W., Room 3C252
Washington, D.C. 20554

D'Wana Terry, Chief*
Public Safety & Private Wireless Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW, 4th Floor
Washington, D.C. 20554

Herb Zeiler, Deputy Chief*
Public Safety & Private Wireless Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW, 4th Floor
Washington, D.C. 20554

John Cimko, Chief*
Policy Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W., Room 3C124
Washington, D.C. 20554

Dale Hatfield, Chief*
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., Room 7C-155
Washington, D.C. 20554

Rebecca Dorch, Deputy Chief*
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., 7th Floor
Washington, D.C. 20554

Bruce Franca, Deputy Chief*
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., 7th Floor
Washington, D.C. 20554

Julius Knapp, Chief*
Policy & Rules Division
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., 7th Floor
Washington, D.C. 20554

Karen Rackley, Chief*
Technical Rules Branch
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., 7th Floor
Washington, D.C. 20554

Geraldine Matise, Deputy Chief*
Policy & Rules Division
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., 7th Floor
Washington, D.C. 20554

Charles Iseman, Chief*
Spectrum Policy Branch
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., 7th Floor
Washington, D.C. 20554

Raul R. Rodriguez
Stephen D. Baruch
David S. Keir
Leventhal, Senter & Lerman P.L.L.C.
2000 K Street, N.W., Suite 600
Washington, D.C. 20006
Counsel for Virtual Geosatellite, LLC

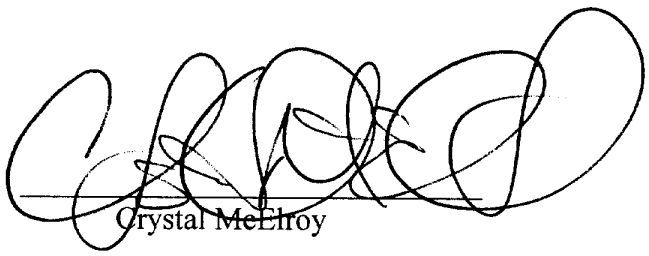
Cara Maggioni
Kurt Wimmer
Covington & Burling
1201 Pennsylvania Avenue, N.W.
Washington, D.C. 20044-7566
Counsel for Pathnet, Inc.

Henry Goldberg
Joseph A. Godles
W. Kenneth Ferree
Goldberg, Godles, Wiener & Wright
1229 Nineteenth Street, N.W.
Washington, D.C. 20036
Counsel for Panamsat Corporation

Wayne V. Black
Peter A. Saari
Keller and Heckman, LLP
1001 G Street, N.W., Suite 500 West
Washington, D.C. 20001
Counsel for American Petroleum Institute

Robert A. Mansbach
6560 Rock Spring Drive
Bethesda, MD 20817
Counsel for Comsat Corporation

International Transcription Service*
1231 20th Street, N.W.
Washington, D.C. 20037



Crystal McElroy

*Denotes hand delivery