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BEFORE THE

Federal Communications Commission

Federal Communications Commission
Office of the Secretary

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WASHINGTON, D.C. 20554

NOV 16 1990

Domestic Facilities Divi
Satellite Radio Branc

In the Matter of)

NORRIS SATELLITE COMMUNICATIONS, INC.)

RM-7511

For Amendment of Parts 2 and 25)
of the Commission's Rules to Establish)
a General Satellite Service in)
the Ka-band (30/20 GHz))

COMMENTS

GTE SPACENET CORPORATION

Troy D. Ellington
Vice President-Engineering
and Development

Mitchell F. Brecher

Terri B. Natoli
Industry Relations Manager
1700 Old Meadow Road
McLean, Virginia 22102
(703) 848-1400

BISHOP, COOK, PURCELL AND REYNOLDS
1400 L Street, N.W.
Washington, D.C. 20005-3502
(202) 371-5710

Its Attorney

November 13, 1990

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SUMMARY

GTE Spacenet Corporation opposes Norris Satellite Communications, Inc.'s petition for rulemaking to allocate frequencies in the Ka-band (30/20 GHz) to a general satellite service. GTE Spacenet also opposes Norris' request that its simultaneously-filed application for authorization to construct, launch and operate a satellite system at Ka-band be awarded a pioneer's preference.

The proposed reallocation of Ka-band to provide a general satellite service contemplates provision of fixed-satellite services (FSS), mobile satellite services (MSS) and direct broadcast satellite services (DBS) in the same frequency band over the same satellite. It would be an inefficient use of spectrum and orbital locations. Since the proposal would include DBS, satellites would have to be separated by nine degrees because of the higher power density operation and required nine degree spacing for DBS satellites. Further, because of the greater sensitivity to rain fade interference at Ka-band than at Ku-band or C-band, Ka-band satellites must operate from locations which provide higher elevation angles. As a result, fifty state coverage cannot be achieved from any Ka-band satellite. At most, only three commercial U.S. Ka-band satellites will be able to provide CONUS coverage under the general satellite service proposal.

The Commission has long recognized that FSS and DBS are operationally incompatible and has required their allocation to separate frequency bands. It should not deviate from that policy. Moreover, a general satellite service allocation would reduce available additional spectrum for FSS -- a service where demand is increasing, and would increase available spectrum for MSS and DBS -- services for which there is little current demand.

Although the Commission has allowed satellites to be used to provide multiple services, the Commission never has permitted dissimilar and incompatible services to be provided over the same satellite in the same frequency bands. Contrary to Norris' suggestion, creation of an inefficient general satellite service is not necessary to hasten the development of services at Ka-band. FSS expansion into Ka-band will occur as capacity in currently-used bands becomes scarce, new competitors seek market entry and compatible ground equipment becomes available.

Finally, Norris is not entitled to a pioneer's preference under the Commission's proposed (but not adopted) rule. In Docket No. 90-217, the Commission has proposed to reward innovators who propose spectrum reallocations to provide new services by not subjecting their applications to competing applications and by affording them a headstart to bring their service to the public. Norris' proposal does not contemplate a new service. It merely seeks to combine several existing services on one satellite. Norris is not even the pioneer in developing Ka-band for FSS.

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COMMENTS OF GTE SPACENET CORPORATION

GTE Spacenet Corporation ("GTE Spacenet"), by its attorneys, hereby submits its initial comments on the above-captioned petition for rulemaking filed by Norris Satellite Communications, Inc. ("Norris") and states as follows:

I. INTRODUCTION

On July 16, 1990, Norris filed with the Commission the instant petition and an application for authority to construct, launch and operate communications satellites in the Domestic Communications Fixed-Satellite Service. 1/ Norris proposes to construct two satellites to operate in the Ka-band and to launch one of these satellites at 90° W.L. Although its application is styled as a request for authority to operate satellites in the

1/ File Nos. 54-DSS-P/L-90 and 55-DSS-P-90.

Domestic Fixed-Satellite service, Norris proposes to use its satellites to provide a combination of fixed-satellite services (FSS), mobile satellite services (MSS) and direct broadcast satellite services (DBS). Currently, the Ka-band (30/20 GHz) proposed to be used by Norris is allocated in the Commission's Table of Frequency Allocations 2/ only to the fixed-satellite service on a primary basis. 3/ Thus, Norris' proposed use of that band to provide MSS and DBS services on a co-primary basis would violate the Table of Frequency Allocations. Normally, applications that are in patent violation of Commission rules cannot be granted absent waiver of those rules and thus may be denied outright. 4/ For that reason, Norris has proposed to reallocate frequencies in the 30/20 GHz band to a new service which it calls the General Satellite Service.

GTE Spacenet has no objection to Norris' contemplated use of Ka-band to provide FSS services provided that it does so in a manner consistent with the Commission's regulatory scheme for FSS. However, it does have public interest concerns regarding Norris' proposal to reallocate Ka-band to a general satellite service and to provide FSS, MSS and DBS in the same frequency band over the same satellite. Accordingly, GTE Spacenet has

2/ 47 C.F.R. § 2.106.

3/ Part of the Ka-band allocated to FSS also is allocated to MSS on a secondary basis.

4/ U.S. v. Storer Broadcasting, Co., 351 U.S. 192 (1956).

found it necessary to oppose Norris' application 5/ and its petition for rulemaking.

II. USE OF Ka-BAND TO PROVIDE A GENERAL SATELLITE SERVICE WOULD CONSTITUTE AN INEFFICIENT USE OF ORBITAL LOCATIONS AND SPECTRUM

In its petition, Norris asserts that its general satellite service proposal would promote spectrum efficiency, reduce costs and achieve economies of scale and scope. 6/ Contrary to that assertion, provision of FSS, MSS and DBS services in the same frequency bands over the same satellites would be an inefficient use of spectrum and orbital locations and would disserve the public interest.

As discussed more fully below, Norris' assertions in its rulemaking petition about spectrum and orbital efficiency are contradicted by its own application. Norris' application contains no analysis of potential intersatellite interference into or from adjacent satellites. Rather, Norris assumes that the closest satellite operating in Ka-band will be the National Aeronautics and Space Administration's (NASA) Advanced Communications Technology Satellite (ACTS) to be located at 100° W.L. -- ten degrees away from Norris' proposed orbital location at 90° W.L. Thus, Norris implicitly assumes that there will be no other commercial satellite utilization of Ka-band and that its

5/ See, GTE Spacenet Corporation's Petition to Deny Application of Norris Satellite Communications, Inc., File Nos. 54-DSS-P/L-90 and 55-DSS-P-90 also filed today.

6/ Norris petition at 2.

proposed reallocation will enable only one commercial entity to operate a satellite in the general satellite service. Given the spacing requirements of DBS, that appears to be an accurate assumption.

Since Norris' general satellite service proposal contemplates the provision of FSS, MSS and DBS using the same satellite, the orbital spacing of satellites operating in the proposed general satellite service at Ka-band must comply with the widest separation standards for each of the three services. In the fixed-satellite service, the Commission currently assigns orbital locations based on a two degree spacing policy. 7/ In contrast, the higher power density DBS satellites have necessitated nine degree spacing in the DBS service. Orbital assignments of satellites in a general satellite service would have to comply with the nine degree spacing criteria to accommodate DBS operations in that service. 8/

Moreover, transmissions at the higher frequencies in Ka-band are more subject to rain fade interference than at either C-band or Ku-band. To compensate for the rain fade, Ka-band satellites must operate at orbital locations which provide higher earth

7/ Licensing of Space Stations in the Domestic Fixed-Satellite Service, 54 RR2d 572 (1983).

8/ In this regard, it is not even clear whether Norris' proposal contemplates that all satellites licensed in the general satellite service would provide all three services -- FSS, MSS and DBS, or whether an applicant could apply to use frequencies allocated to the general satellite service to operate a satellite in any one or more of the three services.

station elevation angles for areas subject to greater rain fade (e.g., the southeastern U.S.) in order to serve the same geographic areas as C-band or Ku-band satellites. Therefore, orbital locations from which fifty state coverage is possible at C-band and Ku-band are not capable of providing fifty state coverage at Ka-band. At Ku-band, fifty state coverage can be achieved from all orbital locations between 90° W.L. and 105° W.L. and between 121° W.L. and 131° W.L. (assuming a ten degree elevation angle). 9/

At Ka-band, to compensate for the greater rain fade experienced at higher frequencies, higher earth station elevation angles are necessary to provide coverage. GTE Spacenet estimates that a twenty degree elevation angle would be necessary to provide fifty state coverage at Ka-band. However, twenty degree elevation angles are not possible from all fifty states. Even assuming elevation angles of fifteen degrees, fifty state coverage at Ka-band is not attainable. 10/ GTE Spacenet has

9/ At Ku-band, the orbital locations between 107.3° W.L. and 118.7° W.L. are reserved for Canadian satellites. As development of Ka-band satellites occurs, it is likely that a portion of the arc will similarly be reserved for Canadian Ka-band operations, and thus, those locations will not be available for U.S. Ka-band satellites.

10/ In its application, Norris asserts that its satellites' coverage will be fifty state (application at I-5). It also states that its proposed satellite will be designed to provide optimized coverage from an orbital location between 85° W.L. and 100° W.L. (Norris' application at I-6). Since higher elevation angles are necessary at Ka-band, it is clear that the optimized coverage reference by Norris would be achieved only for CONUS locations.

determined that CONUS coverage at Ka-band could be achieved at orbital locations between 80° W.L. and 118° W.L. With the ACTS satellite to be located at 100° W.L. and orbital locations west of 100° W.L. reserved for Canadian satellites, two or at most three U.S. commercial Ka-band satellites capable of CONUS coverage could be assigned orbital locations based on the nine degree spacing necessary to accommodate DBS operations. In contrast, based on the current two degree spacing standard, as many as thirteen FSS satellites could be accommodated at Ka-band. While those satellites would not be individually capable of fifty state coverage, that number of available orbital locations would be sufficient to accommodate multiple satellite systems which would provide fifty state coverage (using two or more satellites). The limited number of available orbital locations and the inability of any Ka-band satellites to provide fifty state coverage demonstrates why Norris' proposed general satellite service would be an inefficient use of spectrum and orbital locations.

Because of the aforementioned differences in spacing requirements between FSS and DBS, the Commission has consistently found the services to be operationally incompatible. This incompatibility has necessitated that FSS and DBS be allocated different portions of the spectrum. In 1981, the Commission explained this incompatibility as follows:

...the relatively extreme technical difference between the BSS [DBS] and FSS systems would require inordinately large orbital separations between BSS and FSS satellites serving

overlapping or adjacent service areas. It was judged that these large orbital spacings would preclude either service from developing its full potential by severely limiting the number of satellite positions that would be available for either service. 11/

The operational incompatibility and the resulting need for FSS and DBS to be assigned to different portions of the spectrum are no less than they were in 1981. In fact, the differences are even more pronounced than they were in 1981. At that time, orbital spacing standards for C and Ku-band were three and four degrees respectively. At two degree spacing -- the current standard -- even more potential FSS orbital locations would be lost if a general satellite service with nine degree spacing to accommodate DBS was implemented.

The reality of the general satellite service allocation proposal is that there could be only one commercial satellite system capable of providing fifty state coverage assuming that Norris is permitted to launch its second satellite at 100° W.L. upon termination of the ACTS program. Thus, the general satellite service would be a de facto monopoly service -- there could be only one provider. If Norris' application is granted and its proposed reallocation adopted, Norris would receive an automatic "pioneer's preference" for the life of its satellite

11/ An Inquiry Relating to Preparations for the 1983 Region 2 Administrative Radio Conference of the International Telecommunication Union for the Planning of the Broadcasting-Satellite Service in the 12 GHz Band and the Associated Uplinks, Gen. Docket No. 80-398 (Second Notice of Inquiry), FCC 81-248, released June 5, 1981 (emphasis added).

since no other satellite licensee in the general satellite service could be assigned orbital locations which would enable them to serve fifty states.

The proposed General Satellite Service would be inefficient for another reason. It would reduce the availability of additional spectrum for a service where there is increased demand -- FSS, and would increase the availability of spectrum for services for which there is little current demand -- DBS and MSS. During the past decade, the increased use of FSS services has been exponential. A decade ago, the primary uses of the few FSS satellites then operational were to serve the cable television industry and to provide long distance telephone services. Since that time many additional satellites have been launched. FSS capacity has been used to provide a wide variety of services including, for example, other video applications (e.g., satellite news gathering, business video), high speed data transport and a variety of private network applications. For example, Very Small Aperture Terminal (VSAT) networks -- perhaps the most rapidly growing use of FSS -- had not yet begun to be deployed. Today, literally thousands of locations are served by VSAT networks which provide users with data, video and voice capabilities.

While FSS expansion into Ka-band has not yet occurred, that expansion is inevitable given the continuing growth in demand for FSS service. Just as growth in use of C-band led to development of Ku-band, continued growth of Ku-band will hasten the commercial development of Ka-band satellites. In contrast, it

has been eight years since the Commission adopted regulatory policies for DBS and began to award permits. 12/ To date, not one DBS system has been constructed and no DBS service is being provided. Similarly, in the MSS service, the Commission concluded that the anticipated demand for those services would not be sufficient to support multiple MSS systems. Based upon that conclusion, the Commission directed a group of MSS applicants to form a consortium (the American Mobile Satellite Corporation) and operate one joint system. In short, under Norris' general satellite service proposal, the Commission would be taking spectrum allocations and orbital locations away from a heavily utilized and growing service and assigning them to three services, two of which have no present or anticipated demand for additional spectrum at Ka-band. 13/

Neither do Norris' claimed efficiency benefits of frequency reuse, narrower spot beams and traffic aggregation 14/ withstand analysis. Frequency reuse can be achieved simply by dual polarization (Norris contemplates only single polarization for its satellite). Dual polarization can be accomplished just as

12/ Direct Broadcast Satellite Service, 90 FCC2d 676 (1982).

13/ The American Mobile Satellite Corporation -- a proponent of additional spectrum for MSS, states that the most appropriate frequencies for additional MSS allocations are 1260-1300 MHz and 1435-1530-MHz, not at Ka-band. See, Comments of American Mobile Satellite Corporation in RM-7400 (Petition to Establish a Satellite and Terrestrial CD Quality Broadcasting Service), filed August 20, 1990 at 5.

14/ Norris petition for rulemaking, supra at 5.

well in C-band and Ku-band satellites. Narrow spot beams are necessary for Ka-band satellites because of the higher power needed to operate at those frequencies. Aggregation of traffic -- FSS, DBS and MSS -- using the same spectrum will enable use of the same earth stations for all three services. To the extent that some specific users may utilize all three services, they could realize the operating efficiency of single, multi-purpose earth stations. However, any efficiency benefit of multiple use earth station equipment would be outweighed by the reduced usable orbital positions and corresponding reduction in services. 15/

**III. PREVIOUS INSTANCES OF EQUIPPING SATELLITES
FOR MULTIPLE SERVICES DO NOT SUPPORT AN
ALLOCATION FOR A GENERAL SATELLITE
SERVICE AT Ka-BAND**

Norris supports its Ka-band general satellite service allocation proposal with references to several previous situations where the Commission has approved equipping satellites to perform multiple purposes. These examples -- addition of a Geostar transmit/receive payload in the Radiodetermination Satellite Service (RDSS) on GTE Spacenet's GSTAR IV, an FSS satellite 16/ and Geostar's provision of RDSS and messaging over

15/ The differences between FSS, MSS and DBS are substantial. It is inherently unlikely that any users would have a need to utilize more than one of those services. Moreover, they could not be used simultaneously unless separate earth stations are being utilized.

16/ GTE Spacenet Corporation, 2 FCC Rcd 5312 (1987).

the same satellite -- 17/ are clearly distinguishable from Norris' proposal for a general satellite service allocation. In the first situation, the Commission made an express finding that Geostar's RDSS operations would have "no significant adverse impact on fixed-satellite service in the 12/14 GHz band." 18/ In the second situation, Geostar's application was approved to enable it to provide FSS on an "ancillary" basis. 19/

Significantly, in those cases, the different services are provided over the same satellites but use different frequency bands. Thus, unlike the general satellite service proposal, those situations do not involve provision of dissimilar and incompatible services in the same frequency bands. There is no reduction of available orbital positions or other efficiency losses resulting from those arrangements.

In support of its reallocation proposal, Norris also cites the Commission's decision to allow AMSC to use feeder link frequencies allocated to the fixed-satellite service. 20/ That example bears no relevance to the general satellite service reallocation proposal. It does not involve provision of different services -- either compatible or incompatible -- over

17/ Geostar Positioning Corporation, Mimeo No. 6144, released August 7, 1986.

18/ 2 FCC Rcd at 5313.

19/ Geostar Corporation, supra.

20/ Amendment of Parts 2, 22 and 25 of the Commission's Rules, et al. (Docket No. 84-1234), 4 FCC Rcd 6041 (1989).

the same satellite using the same frequencies. Rather, the Commission approved AMSC's proposal to operate satellites at unassigned locations at the outer fringes of the arc -- 62° W.L. and 139° W.L.-- to provide feeder links. These assignments were approved based upon a Commission determination that they would not have any adverse impact on the number or types of services that can be made available to users by domestic fixed-satellites. 21/ Moreover, the Commission noted that feeder link operations, as proposed by AMSC, are indeed themselves fixed-satellite services. Thus, those assignments were fully consistent with the FSS allocations at Ku-band. 22/ Significantly, however, despite the fact that MSS feeder links constitute FSS service, the Commission repeatedly has refused to allow AMSC to operate its feeder links at its central orbital location -- 101° W.L. In rejecting AMSC's request, the Commission concluded properly that MSS feeder links were operationally incompatible with adjacent FSS operations and would therefore cause objectionable interference to FSS services, thus limiting available FSS bandwidth. 23/

In short, none of the examples cited by Norris supports its proposal to combine three distinct and operationally incompatible services in one general satellite service allocation.

21/ Id. at 6052-6053.

22/ Id. at 6053.

23/ Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service, 5 FCC Rcd 179, 184 (1990).

IV. Ka-BAND CAN AND WILL BE DEVELOPED WITHOUT REALLOCATION TO ESTABLISH AN INEFFICIENT GENERAL SATELLITE SERVICE

Norris may be correct that development of Ka-band will produce important public interest benefits including congestion relief at C-band and Ku-band as well as stimulation of new services. It does not follow, however, that a general satellite service allocation is necessary to promote development of Ka-band satellite service. Expansion of FSS services into additional frequency bands occurs as operational capacity in currently-used bands becomes scarce, as new competitors seek market entry and as compatible ground equipment becomes available. In the 1970's, domestic fixed-satellite services were provided almost exclusively at C-band. Beginning with the satellites authorized in 1980, FSS Services expanded to Ku-band. As the FSS industry continues to mature, additional entrants, additional equipment and additional services are inevitable. Utilization of Ka-band frequencies to fulfill that additional demand for FSS services also is inevitable. Moreover, the NASA ACTS program, repeatedly alluded to in Norris' rulemaking petition and application, will promote development of Ka-band earth station equipment. Once that equipment becomes available, market pressures will stimulate development of Ka-band fixed-satellite services.

On previous occasions, the Commission has implemented regulatory programs designed to foster development of new services and increased spectrum utilization. None of the

examples cited by Norris 24/ involved Commission actions which resulted in less usable spectrum -- as would be the result of a general satellite services allocation. In fact, virtually all previously-adopted satellite regulatory programs have been designed to promote competition, innovation and choice by increasing spectrum and orbital availability and by reducing regulatory barriers to entry and growth. 25/ It will not be necessary to deviate from those policies in order to hasten the development of services at Ka-band.

V. **NORRIS IS NOT ENTITLED TO A PIONEER'S PREFERENCE**

In addition to proposing the reallocation of frequencies at Ka-band from the fixed-satellite service to a general satellite service, Norris has requested that its application be awarded a "pioneer's preference" in light of the risk to be undertaken by it. To date, the Commission has not adopted a rule providing for pioneers' preferences. However, Norris' proposal would not be entitled to a pioneer's preference based upon the Commission's proposed rule.

On April 27, 1990, the Commission released a notice of proposed rulemaking in General Docket No. 90-217, wherein it proposes to award pioneer's preferences to innovators who seek to

24/ Norris petition at 9.

25/ See, for example, Domestic Communications Satellite Facilities, 35 FCC2d 844 (1972) (the "Open Skies" policy) and Licensing of Space Stations in the Domestic Fixed-Satellite Service, 54 RR2d 572 (1983) (Reduced Spacing).

have spectrum reallocated to provide new services. 26/ Under that proposed rule, parties filing rulemaking petitions requesting spectrum allocations for new services developed by the petitioner could request such a preference and file simultaneously an application for a license to offer the proposed new service. If granted, the petitioner's application would not be subject to competing applications and applications from other prospective service providers could be held in abeyance to afford the "pioneer" a head start to bring its service to the public. 27/

Under the Commission's proposal, the key criterion for pioneer's preference eligibility is that the service be new. As the Commission stated in its Notice:

In order for a service to be considered new, we would require that the proposal be for more than just additional spectrum for services that are already being provided. Moreover, we expect the new service to be more than just a minor variation of an existing service. We intend to limit the "pioneer's preference" to those novel services that address public needs that are being addressed inadequately. 28/

Norris' general satellite service proposal would not meet this test for a new service. There is nothing novel or original about the service Norris seeks to offer. Its proposed general satellite service at Ka-band is merely an aggregation of three

26/ Establishment of Procedures to Provide a Preference to Applicants Proposing an Allocation for New Services, 5 FCC Rcd 2766 (1990).

27/ See, proposed section 1.402 of the Commission's Rules.

28/ 5 FCC Rcd at 2767.

existing, separate satellite services on one satellite. FSS services are currently offered by numerous service providers and are widely available. MSS and DBS services already have been authorized by the Commission. Stated simply, the services which Norris proposes to offer over a Ka-band satellite are neither new nor innovative.

GTE Spacenet's parent corporation, GTE Service Corporation (GTE), supports the Commission's pioneer preference proposal. 29/ However, as GTE noted in those comments, pioneer's preferences should be available only to true pioneers, i.e., those that "put at risk their energies, capital and know-how in order to experiment with and develop new services." 30/

Norris' proposed "new" services are existing services already allocated to other frequency bands. In the case of FSS, it is a service already allocated to Ka-band. Further, Norris is not even the pioneer in developing Ka-band for FSS services. NASA's ACTS program was conceived several years ago and its development is proceeding. Norris is not even the first commercial applicant to propose Ka-band FSS operations. As far back as 1983, American Satellite Company applied for authority to operate a triple hybrid satellite, including C, Ku and Ka-band capacity.

29/ See, comments of GTE Service Corporation in Gen. Docket No. 90-217, filed June 29, 1990.


30/ Id. at 11.

In summary, Norris' general satellite service Ka-band proposal is not a new service as contemplated by the Commission in its pioneer's preference rulemaking nor is Norris even the pioneer of FSS operations at Ka-band. Thus, it should not be awarded a pioneer's preference based upon the guidelines proposed by the Commission in Docket No. 90-217.

CONCLUSION

For all of the reasons discussed in these comments, reallocation of Ka-band frequencies to provide a general satellite service would not serve the public interest. Accordingly, GTE Spacenet respectfully urges the Commission to deny the instant petition for rulemaking and for award of a pioneer's preference.

Respectfully submitted,
GTE SPACENET CORPORATION



Troy D. Ellington
Vice President, Engineering
and Development

Terri B. Natoli
Industry Relations Manager

1700 Old Meadow Road
McLean, Virginia 22102
(703) 848-1400



Mitchell F. Brecher

BISHOP, COOK, PURCELL AND REYNOLDS
1400 L Street, N.W.
Washington, D.C. 20005-3502
(202) 371-5710

Its Attorney

November 13, 1990

CERTIFICATE OF SERVICE

I, Karen M. Cameron, DO HEREBY CERTIFY that true and correct copies of the foregoing Comments have been served by hand, on this 13th day of November, 1990 to parties listed below:

*Richard M. Firestone, Esquire
Chief, Common Carrier Bureau
Federal Communications Commission
1919 M Street, N.W., Room 500
Washington, D.C. 20554

*James R. Keegan, Esquire
Chief, Domestic Facilities Division
Common Carrier Bureau
Federal Communications Commission
2025 M Street, N.W., Room 6010
Washington, D.C. 20554

*Cecily C. Holiday, Esquire
Chief, Satellite Radio Branch
Common Carrier Bureau
Federal Communications Commission
2025 M Street, N.W., Room 6324
Washington, D.C. 20554

*Fern J. Jarmulnek, Esquire
Satellite Radio Branch
Common Carrier Bureau
Federal Communications Commission
2025 M Street, N.W., Room 6324
Washington, D.C. 20554

*Rosalee Gorman, Esquire
Satellite Radio Branch
Common Carrier Bureau
Federal Communications Commission
2025 M Street, N.W., Room 6324
Washington, D.C. 20554

*Thomas P. Stanley
Chief Engineer
Office of Engineering and Technology
Federal Communications Commission
2025 M Street, N.W., Room 7002
Washington, D.C. 20554

*Will McGibbon
Chief, Spectrum Engineering Division
Office of Engineering and Technology
Federal Communications Commission
2025 M Street, N.W., Room 7130
Washington, D.C. 20554

*Roy J. Stewart, Esquire
Chief, Mass Media Bureau
Federal Communications Commission
1919 M Street, N.W., Room 314
Washington, D.C. 20554

*Barbara Kreisman, Esquire
Chief, Video Services Division
Mass Media Bureau
Federal Communications Commission
1919 M Street, N.W., Room 702
Washington, D.C. 20554

*Leslie A. Taylor, Esquire
Leslie Taylor Associates
6800 Carlynn Court
Bethesda, Maryland 20817-4302

Karen M. Cameron

November 13, 1990

* Hand delivered