Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Mobile Satellite Ventures Subsidiary LLC	)	File No. SAT-LOA-20030827-00174
	)	File No. SAT-AMD-20031205-00347
	)	File No. SAT-AMD-20040227-00021
Application for Authority to Launch And Operate an L-band Mobile Satellite Service Satellite at 63.5° W.L.	)	Call Sign S2487

Order and Authorization

Adopted: January 10, 2005 **Released:** January 10, 2005

By the Chief, International Bureau:

I. INTRODUCTION

1. By this Order, we authorize Mobile Satellite Ventures Subsidiary LLC (MSV) to launch and operate an L-band[1] Mobile Satellite Service (MSS) satellite, known as MSV-2, at 63.5° W.L. to provide service within South America and between South America and the United States.[2] Grant of this application will allow MSV to expand its MSS offerings to include South America, increasing competition in the global MSS marketplace to the benefit of U.S. consumers.

II. BACKGROUND

2. MSV is the successor to Motient Services, Inc. (Motient, formerly known as AMSC Subsidiary Corporation).[3] It is authorized to operate the U.S.-licensed L-band MSS satellite,

[1] The "L-band" is a general designation for frequencies from 1 to 2 GHz. In this *Order and Authorization*, however, the term "L-band" denotes only the 1545-1559 MHz and 1646.5-1660.5 MHz frequency bands (upper L-band) and the 1525-1544 MHz and 1626.5-1645.5 MHz frequency bands (lower L-band).

[2] MSV amended its application to operate at the 63.5° W.L. orbit location instead of the 82° W.L. orbit location originally proposed. *See Amendment, File No. SAT-AMD-20031205-00347.* MSV further amended its application to make the following changes to the technical parameters of the satellite: (i) increase the size of the L-band service link antenna; (ii) increase equivalent isotropically radiated power (e.i.r.p.) of the satellite; (iii) increase the potential number of L-band spot beams; and (iv) modify the baseline air interface protocol from GMR only to GMR-2 (satellite adaptation of GSM), S-cdma2000 (satellite adaptation of cdma2000), and SW-CDMA (satellite adaptation of W-CDMA). MSV states that it has included revised link budgets to reflect the changes. According to MSV, these changes will make the technical parameters of its proposed satellite for service to South America consistent with the technical parameters of its proposed replacement satellite for service to North America. *See* MSV Application File No. SAT- AMD-20040227-00021 at 1-2.

[3] AMSC is the only entity the Commission authorized to launch and operate a U.S. MSS system operating in the L-band. In November 2001, the Commission approved the application of Motient and TMI Communications and Company, Limited Partnership (TMI) to consolidate their U.S. L-band MSS operations into a new company called

AMSC-1.[4] It also holds a blanket license for mobile earth terminals (METs) that access both AMSC-1 and MSAT-1 (the Canadian-authorized L-band MSS satellite).[5] Through these facilities, MSV provides land, maritime, and aeronautical MSS, including voice and data service, throughout the contiguous United States, Alaska, Hawaii, the Virgin Islands, and coastal areas up to 200 miles offshore.[6]

3. MSV proposes to launch and operate its MSV-2 satellite to serve South America from the 63.5° W.L. orbital location, utilizing the L-band frequencies at 1525-1559 MHz (space-to-Earth) and 1626.5-1660.5 MHz (Earth-to-space) for service links. It also proposes to operate feeder links, tracking, telemetry, and control (TT&C), and gateway-to-gateway communication links in the 10.7-10.95 GHz and 11.2-11.45 GHz bands (space-to-Earth) and the 12.75-13.25 GHz band (Earth-to-space).[7] MSV proposes to use MSV-2 to provide basic voice and data MSS and high-speed packet data MSS to South America, including public safety services.[8] According to MSV, permitting it to launch and operate MSV-2 will increase competition to consumers in South America and will enable it to better compete in the global MSS marketplace. MSV notes that Inmarsat, Iridium, and Globalstar are among the MSS providers that provide MSS in both North and South America.

4. Although MSV-2 will be placed in a geostationary satellite orbit (GSO), MSV acknowledges that the L-band portion of its satellite will provide MSS, and thus its satellite is considered "non-geostationary-satellite-orbit-like" (NGSO-like) for processing purposes. This means that its L-band request would be considered in a modified processing round where competing applications are invited and considered concurrently, under the rules adopted in the *Space Station Licensing Reform Order*.[9] MSV states that its application should not be subject to a modified processing round because it proposes to provide service to South America using only the L-band frequencies that the Commission has already coordinated and authorized for MSV's North American system. To the extent deemed necessary, MSV requests a waiver of the

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Mobile Satellite Ventures LP (MSV LP). *See* Motient Services Inc., TMI Communications and Company LP, and Mobile Satellite Ventures LLC, *Order and Authorization*, 16 FCC Rcd 20469 (Int. Bur. 2001).

[4] Amendment of Parts 2, 22, 25 of the Commission's Rules to Allocate Spectrum for and to Establish Rules and Policies Pertaining to the Use of Frequencies a Land Mobile Satellite Service for the Provision of Various Common Carrier Services, 4 FCC Rcd 6041 (1989)

[5] AMSC Subsidiary Corporation, 13 FCC Rcd 12316 (1998).

[6] MSV Application File No. SAT-LOA-20030827-00174 at 3.

[7] The term "feeder link" refers to fixed-satellite service radio links carrying signals in both directions between a MSS satellite and gateway earth stations. The gateway earth stations connect the MSS system with other networks, such as the public switched telephone network.

[8] MSV states that it will provide generic network services such as asset tracking, voice mail, Short Message Service(s), cell broadcast service(s), and most other GSM/CDMA supplementary services, including support to Law Enforcement Agencies. Customer support features, such as directory and operator assistance, credit card calling, and emergency referral will be provided as required. Most new services to be provided by the system will be based on high-speed packet-data modes, capable of providing multi-media interconnection to the Internet or other public and private data networks, web surfing, telecommuting, interactive services, FTP, and other regional or national high-quality data multi-casting services. *See* MSV Application File No.SAT-AMD-20040227-00021 at 9.

[9] Amendment of the Commission's Space Station Licensing Rules and Policies, *First Report and Order and Further Notice of Proposed Rulemaking*, IB Docket No. 02-34, 18 FCC Rcd 10760, 10782-90, paras. 48-67 (2003) (*Space Station Licensing Reform Order*).

Commission's processing round requirement for its L-band operations. In contrast, MSV states that its proposed feeder links are considered "GSO-like" since feeder links, by definition, involve transmissions to and from the satellite via a fixed central "gateway" earth station. Accordingly, MSV argues that its feeder link request should be considered under the Commission's first-come, first-served process applicable to "GSO-like" satellites.[10] MSV also requests a waiver of footnote NG104 of Section 2.106 of the Commission's rules, which requires the 10.7-10.95 GHz and 11.2-11.45 GHz frequency bands to be used for international service only, so that it can use these frequencies for both domestic feeder links and TT&C.[11]

5. MSV further requests a waiver of Section 25.165(a) of the Commission's rules,[12] which requires the posting of a bond within 30 days of the grant of a satellite authorization. MSV notes that it plans to provide public safety services which the Commission said in the *Space Station Licensing Reform Order* could qualify for a waiver of the bond requirement.[13] Finally, MSV requests a waiver of our station keeping rules set forth in Section 25.210(j),[14] which requires that GSO space stations be maintained within 0.05° of their orbital longitude.[15] We placed MSV's application on public notice and no comments were filed.

III. DISCUSSION

A. Processing Procedure

6. In its *Space Station Licensing Reform Order*, the Commission established a modified processing round procedure for "NGSO-like" satellite systems. The Commission defined NGSO-like satellite systems as those in which the earth station has little or no directivity towards a satellite so that the earth station must track the satellite in all directions, such as hand-held satellite telephones.[16] Based on this definition, we consider MSV-2's L-band service link as an NGSO-like system for the purpose of determining whether a processing round is required.

7. Under a modified processing round framework, we place the first-filed application on public notice and invite parties to file other potentially competing applications by a specified cut-off date.[17] We consider all applications filed by the cut-off concurrently. The Commission then issues licenses by dividing the available spectrum equally among the qualified applicants.[18]

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[10] *Space Station Licensing Reform Order*, 18 FCC Rcd at 10804-18, paras. 108-50.

[11] MSV Application File No. SAT-LOA-20030827-00174 at 23.

[12] 47 C.F.R. § 25.165(a).

[13] MSV Application File No. SAT-AMD-20031205-00347 at 4, *citing Space Station Reform Order*, 18 FCC Rcd at 10825, para. 169.

[14] 47 C.F.R. § 25.210(j).

[15] *See* Mitigation of Orbital Debris, *Second Report and Order*, IB Docket No. 02-54, 19 FCC Rcd 11567 (2004) (*Orbital Debris Order*).

[16] *Space Station Licensing Reform Order*, 18 FCC Rcd at 10773, para. 21.

[17] *Space Station Licensing Reform Order*, 18 FCC Rcd at 10782-83, para. 48.

[18] *Space Station Licensing Reform Order*, 18 FCC Rcd at 10782-83, para. 48. This is because omnidirectional antennas, such as those used in NGSO systems and GSO MSS systems, cannot serve the same geographic areas in the same frequencies without causing mutual harmful interference. The processing round approach thus ensures

8. MSV, however, is not seeking a license to use any additional L-band spectrum. Rather, MSV-2 will use the same L-band frequencies as those on which AMSC-1 is licensed. When the Commission receives NGSO-like applications that seek to use the same frequencies for which that applicant is already licensed, it processes that request immediately without instituting a modified processing round.[19] We find that MSV's request to use MSV-2 to serve South America does not warrant a different result. We will not initiate a modified processing round to award U.S.-L-band "South American" licenses in the same bands in which AMSC-1 is operating. As a practical matter, any NGSO-like satellite serving South America in the bands licensed to AMSC-1 is likely to cause harmful interference to AMSC-1's North American operations. This is because, in this case, the large North American and South American coverage areas are in close proximity to each other and, indeed, are likely to overlap. Thus, geographic separation is not sufficient to limit co-frequency interference between multiple NGSO-like systems serving each of these areas. The Commission has said it will not consider applications for new systems where the new system's operations would cause interference to licensed systems.[20] Thus, we would not license another U.S. system to operate in the same frequencies as AMSC-1. Further, if we do not allow MSV to expand its coverage into South America, we would be preventing a U.S.-licensed system from providing L-band service in this region altogether. In addition, operations by MSV in South America can be self-coordinated to limit interference into MSV's North America service. Consequently, we will waive the modified processing round requirement for NGSO-like systems in this situation and will award MSV authority to construct and launch an NGSO-like satellite to serve South America in the L-band if it is otherwise qualified.

9. We agree with MSV that its request for Ku-band fixed-satellite service feeder links is governed by the first-come first-served policy for GSO-like satellites set forth in *First Space Station Licensing Reform Order*. There are no prior requests to use these Ku-band frequencies at the 63.5° W.L. orbit location and there are no nearby satellites using these frequencies with which MSV-2 might interfere. Consequently, we will grant MSV license to operate on these frequencies if it is qualified.

B. Legal Qualifications

10. In considering applications to launch and operate a new satellite system, we must determine whether a grant will serve the public interest. In making this determination, we consider whether the applicant is legally, technically and otherwise qualified to launch and operate the satellite. As the designated U.S. L-band licensee, the Commission has determined that MSV possesses the requisite legal qualifications to hold a Commission license.

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multiple competitive systems. In contrast, GSO-like systems, which use directional antennas, can provide co-frequency, co-coverage service at orbital spacings of 2°. This, in itself, allows for multiple systems.

[19] *See, e.g.*, Application of EarthWatch, Inc., *Order and Authorization*, 12 FCC Rcd 21637 (Int'l Bur. 1997) (Bureau treated application to add two NGSO satellites to an authorized two-satellite NGSO system, where no additional frequencies were requested, as a modification to the initial NGSO license).

[20] *Space Station Licensing Reform Order*, 18 FCC Rcd at 10806, para. 113.

C. Technical Qualifications

1. East-West Station Keeping Tolerance

11. MSV requests a waiver of Section 25.210(j) of the Commission's rules,[21] which requires that GSO space stations be maintained within 0.05° of their assigned orbital longitude in the east/west direction, unless specifically authorized by the Commission to operate with a different longitudinal tolerance, and except as provided in Section 25.283(b) (end-of-life disposal) of the Commission's rules.[22] MSV seeks to operate within 0.10° of its orbital longitude.[23] According to MSV, a waiver is justified because there are no nearby satellites to which MSV-2's operations could cause interference.[24] In addition, MSV states that the costs of complying with a ±0.05° east-west station keeping tolerance (such as increased fuel to maintain a tighter tolerance) outweigh any purported benefits.[25]

12. The Commission may grant a waiver for good cause shown.[26] Waiver is appropriate if (1) special circumstances warrant a deviation from the general rule, and (2) such deviation would better serve the public interest than would strict adherence to the general rule.[27] Generally, the Commission may grant a waiver of its rules in a particular case only if the relief requested would not undermine the policy objective of the rule in question, and would otherwise serve the public interest.[28] MSV states that a waiver is justified because there are no other satellites at that location to which it could cause interference. MSV's analysis, however, is limited to those systems that are operating co-frequency with the MSV spacecraft and does not include other spacecraft that are not co-frequency, but that may be impacted by the extended station keeping box. Without this additional information, we are not able to conclude that the public interest justifies a waiver, given the potential impact on the operations of other satellites. Accordingly, we deny MSV's waiver request.

13. Although we deny MSV's request, we do so without prejudice to MSV requesting a modification of its license to permit its satellite to be maintained within a 0.10° station keeping box. In support of such a modification request, MSV should provide information regarding the identity of known satellites located at, or planned to be located at the location proposed by MSV, or assigned a location in the vicinity such that the station-keeping volume of the respective satellites might overlap. MSV need not address every filing with the International Telecommunication Union (ITU) that meets these criteria, but should assess and address any systems reflected in ITU filings that are in operation or that MSV believes may be progressing toward launch, *e.g.*, by the system being listed on a launch vehicle manifest. In the event an

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[21] 47 C.F.R. §25.210(j).

[22] 47 C.F.R. § 25.283 (b). *See also Orbital Debris Order,* 19 FCC Rcd 11567.

[23] MSV Application File No. SAT-AMD-20040227-00021 at 41. We construe this request as one to maintain the MSV satellite within 0.1° of its assigned orbital longitude, as assessed at the nodal point of the orbit.

[24] MSV Application File No. SAT-AMD-20040227-00021 at 41.

[25] MSV Application File No. SAT-AMD-20040227-00021 at 41-42.

[26] 47 C.F.R. § 1.3. *See also* WAIT Radio v. FCC, 418 F.2d 1153 (D.C. Cir. 1969) (*WAIT Radio*); Northeast Cellular Tel. Co. v. FCC, 897 F.2d 1166 (D.C. Cir. 1990) (*Northeast Cellular*).

[27] *See Northeast Cellular*, 897 F.2d at 1166.

[28] *See WAIT Radio*, 418 F.2d at 1157

overlap is indicated, MSV should identify the measures it would take to avoid in-orbit collisions with such satellites.[29]

2. North-South Station Keeping Tolerance

14. To save station keeping fuel, MSV requests authority to operate MSV-2 with an initial north-south inclination[35] of as much as six degrees.[36] This inclination would decrease under the influence of gravitational forces of the sun and moon, and then would begin to increase, thereby fluctuating between about one and six degrees during the expected life of the satellite. MSV states that its satellite will operate consistent with the requirements for inclined orbit satellites set forth in Section 25.280.[37] We will grant MSV's request. We note, however, that granting this request creates a potential for harmful interference between MSV-2's Ku-band operations and Ku-band NGSO fixed-satellite service (FSS) satellites. Pursuant to ITU Radio Regulations GSO satellites, such as MSV-2, are protected against interference from NGSO FSS satellites operating in the same band provided that GSO satellite's north-south inclination is 4.5° or less.[38] Thus, during those periods in which MSV-2 will operate at an inclination of up to 4.5°, MSV's network will be fully protected from interference from NGSO FSS networks.[39] During the periods in which MSV-2 will operate at an inclination more than 4.5°, its operations will not be protected. We expect MSV to coordinate its operations at these higher inclinations with

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[29] Regardless of whether MSV seeks such modification, we are following our standard practice of requiring submission of information regarding methods that will be used to avoid collisions with other spacecraft operating within the ± .05° station keeping volume. *See* para. 53 *infra*.

[35] The inclination of an orbit is the angle between the orbital plane and the Earth's equatorial plane, measured counter-clockwise. A zero inclination orbit would mean the satellite is orbiting directly over the equator; an inclination of 90 degrees is a perfectly polar orbit.

[36] MSV Application File No. SAT-AMD-20040227-00021 at 42.

[37] 47 C.F.R. § 25.280.

[38] *See* Article 22.5I, Table 22-4A.

[39] *See* Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-frequency With GSO and Terrestrial Systems in the Ku-Band Frequency Range, *First Report and Order and Further Notice of Proposed Rulemaking*, 16 FCC Rcd 4096 (2000), at 4143-44.

licensed NGSO FSS operators. Absent a coordination agreement, we require MSV's operation at inclinations between 4.5° and 6° to be on a non-interference basis.[40]

3. L-band Operations

a. Introduction

15. MSV-2 will have separate antenna systems for the service and feeder links. The L-band service link antenna will use a 24-meter reflector with approximately 400 spot beams for coverage of the South America. It proposes to operate in the 1525-1559 MHz downlink and 1626.5-1660.5 MHz uplink frequency bands, with mobile units operating in South America. Under the International Table of Frequency Allocations, the 1525-1535 MHz band is allocated on a co-primary basis to MSS and the Space Operation Service in Region 2.[41] The 1535-1559 MHz and 1626.5-1660 MHz bands are allocated on a primary basis to MSS. The 1660-1660.5 MHz band is allocated on a co-primary basis to MSS and the Radio Astronomy Service.[42] In addition to these co-primary allocations, there are a number of footnotes to the International Table of Frequency Allocations that place additional constraints on MSV's operation in portions of these bands. We discuss these in turn.

b. Co-Primary Allocation for the Space Operations Service

16. As noted, both the 1.5 GHz downlink band and 1.6 GHz uplink band are allocated on a co-primary basis to MSS and the Space Operations Service in Region 2. Because, however, all L-band user terminals will transmit from South America and no user terminals within the United States will operate with MSV-2, we need not impose additional conditions on MSV-2 with respect to the 1626.5-1660.5 MHz receive bands on the satellite. Rather, we remind MSV that L-band terminals must operate in accordance with laws of the jurisdiction in which they will operate. We also remind MSV that it must coordinate with existing Space Operations Service stations in the 1525-1559 MHz band under the ITU Radio Regulations and that its operations are not entitled to any protection from interference until it has completed coordination.

c. Passive Research for Extraterrestrial Emissions

17. Further, according to Footnote 5.341 of the ITU Radio Regulations, some countries are conducting passive research in the 1525-1559 MHz band to search for intentional emissions of extraterrestrial origin.[43] The use of the 1525-1559 MHz band by the mobile-satellite service is subject to coordination under Article No. 9.11A of the ITU Radio Regulations.[44] Thus, we require MSV to coordinate its MSS operations in good faith with passive research operations

[40] We also note that, to the extent MSV's planned operations in inclined orbit are impacted by denial of its request for waiver of the east-west station keeping requirement, MSV will need to seek modification of its authorization to reflect any change in planned operations.

[41] For the allocation of frequencies, the International Telecommunication Union (ITU) has divided the world into three regions. Region 2 includes North and South America. *See* 47 C.F.R. § 2.104.

[42] 47 C.F.R. § 2.106.

[43] International Footnote 5.341 to Section 2.106 of the Commission's rules, 47 C.F.R. § 2.106.

[44] *See* International Footnote 5.354 to Section 2.106 of the Commission's rules, 47 C.F.R. § 2.106.

being conducted by other countries. Further, any radio station authorization for which coordination has not been completed may be subject to additional terms and conditions as required to effect coordination of the frequency assignments of other administrations.[45]

d. Maritime and Aeronautical Mobile-Satellite Distress Communications Services

18. International Footnote 5.353A of the ITU Radio Regulations states that MSS systems operating in the 1530-1544 and 1626.5-1645.5 MHz frequency bands may not interfere with maritime mobile-satellite (MMSS) distress, urgency, and safety communications that are also provided in these frequencies. International Footnote 5.353A protects MMSS distress, urgency, and safety communications, such as Global Maritime Distress and Safety System (GMDSS), by providing priority access and real-time preemptive capability for GMDSS communications. Domestically, to ensure MSS compliance with the provisions of Footnote US315, which is similar to International Footnote 5.353A, the Commission established priority access and preemption standards and policies for the Mobile-Satellite Service in this band and incorporated these standards into its rules.[46]

19. Further, mobile-satellite service operators must comply with International Footnote 5.357A of the ITU Radio Regulations for operations in the 1545-1555 MHz and 1646.5-1656.5 MHz frequency bands and with International Footnote 5.362A[47] of the ITU Radio Regulations for operations in the 1555-1559 MHz and 1656.5-1660.5 MHz bands. These footnotes provide that the aeronautical mobile-satellite (R) service (AMS(R)S) shall have priority access and immediate availability over all other MSS operations. AMS(R)S is a mobile satellite service using mobile terminals on-board aircraft. This service can be used to support domestic and international air traffic, including air traffic control. The (R) indicates that the spectrum is used for aeronautical communications related to the safety and regularity of flights primarily along national and international civil air routes. Further, MSS systems operating on these bands may not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44 of the ITU Radio Regulations.[48]

20. Although no METs in the United States will communicate with MSV-2, MSV must still comply with the Commission's rules regarding priority access and real-time preemption because MSV's Satellite Ground Station Subsystem (GSS) and Mobile Switching Center (MSC)

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[45] *See* 47 C.F.R. § 25.111(b).

[46] Establishing Rules and Policies for the use of Spectrum for Mobile Satellite Services in the Upper and Lower L-Band, *Report and Order*, 17 FCC Rcd 2704 (2002).

[47] International Footnote 5.362A to Section 2.106 of the Commission's rules states: "In the United States, in the bands 1555-1559 MHz and 1656.5-1660.5 MHz, the aeronautical mobile-satellite (R) service shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. " Similar language is contained in Footnote US308 to Section 2.106 of the Commission's rules, 47 C.F.R. § 2.106.

[48] Article 44.1 of the ITU's Radio Regulations sets the order of priority for communication in the aeronautical mobile service and aeronautical mobile-satellite service. Priorities 1-6 are as follows: 1) distress calls, distress messages and distress traffic; 2) communications preceded by the urgency signal; 3) communications relating to radio direction-finding; 4) flight safety messages; 5) meteorological messages; and 6) flight regularity messages.

will manage all satellite resources (*i.e.*, frequencies and power) and control the allocation of those resources to the mobile user terminals that use the satellite. Thus, MSV will control the means of preempting those mobile terminals operating with MSV-2 in South America. MSV states that its satellite system will comply with all applicable requirements. As with its current system, MSV will maintain a reserve pool of resources that will permit any additional demands of the AMS(R)S and GMDSS network to be met immediately. This AMS(R)S and GMDSS reserve pool will be maintained by retrieving resources from within the MSV network. We believe that the continuation of this practice, which has been successful on MSV's existing satellite, represents a reasonable approach to meeting MSV's priority and preemption requirements.

21. MSV does not request authority for U.S. fixed-gateway earth stations. Gateway earth stations located in the United States will be licensed under separate application in accordance with Part 25 of the Commission's rules. Nonetheless, in 1993, the National Telecommunications and Information Administration (NTIA) and the Federal Aviation Administration (FAA) created a minimum set of capabilities to ensure that fixed-gateway earth stations operating in the 1545-1559 MHz and 1646.5-1660.5 MHz bands comply with Footnote US308 and ITU Radio Regulation 5.357A and 5.362A.[49] We will require that any U.S. fixed-gateway earth station communicating via MSV-2 meet the minimum set of capabilities set forth in the "1993 NTIA Recommendations."

e. Distress and Safety Communications

22. MSV has requested authority to use the 1544-1545 MHz and 1645.5-1646.5 MHz band segments. According to International Footnotes 5.356 and 5.375 of the Table of Frequency Allocations, the use of these bands by the mobile-satellite service is limited to distress and safety communications.[50] MSV proposes to use MSV-2 to provide basic voice and data MSS services and high-speed packet data MSS services to South America. Although MSV's dispatch radio or "push to talk" feature may be used for distress and safety communications, MSV has not explained how it can limit transmissions in the 1544-1545/1645.5-1646.5 MHz bands to safety and distress communications only. Given the broad range of commercial services available on the MSV system, we will not permit MSV-2 to operate in the 1544-1545/1645.5-1646.5 MHz bands and potentially disrupt emergency communications in these bands.

f. Coordination with other L-band MSS Systems

23. In North America and nearby international airspace and maritime areas, five satellite systems, which all operate in geostationary-satellite orbit (GSO), currently provide service in the L-band's 66 megahertz (33 megahertz in each transmission direction) MSS allocation. In 1996, the operators of the five North American L-band systems signed a Memorandum of Understanding (MoU). The MoU specified that "[s]pectrum allocations to individual operators will be reviewed annually on the basis of actual usage and short-term projections of future need." Unlike most international coordinations that create permanent assignments of specific spectrum,

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[49] *See* Letter to Cheryl Tritt, Chief, Common Carrier Bureau, FCC, from Richard D. Parlow, Associate Administrator, Office of Spectrum Management, NTIA, and Gerald Markey, Manager, Spectrum Engineering Division, FAA, and attachment to the letter (Jan. 14, 1993) (*1993 NTIA Recommendations*).

[50] International Footnotes 5.356 and 5.375 to Section 2.106 of the Commission's rules, 47 C.F.R. § 2.106.

the operators' assignments can change from year to year based on their marketplace needs. While the most recent annual operator-to-operator agreement has not been renewed since 1999, the five parties have continued to coordinate their operations informally and have been operating interference-free. We remind MSV that any L-band operations in South America must be coordinated with other MSS systems, and until such time that coordination has been completed these operations will be on a non-harmful interference basis to other lawfully operating satellite or radio facilities and will receive no protection from interference caused by those facilities.

4. Ku-band Operations

a. International Plan

24. MSV's fixed-satellite service feeder link and TT&C operations will be conducted in the 10.7-10.95/11.2-11.45/12.75-13.25 GHz frequency bands. Feeder link and TT&C operations will be conducted from earth stations in the United States. According to International Footnote 5.441 of the Table of Frequency Allocations,[51] use of these bands by geostationary-satellite systems in the fixed-satellite service shall be in accordance with the plan prescribed in Appendix 30B of the ITU Radio Regulations. The FSS plan does not provide for operation of a U.S.-licensed satellite at 63.5° W.L. The plan will have to be amended to take into account MSV-2's operation at that location. Appendix 30B specifies a procedure for amending the plan to permit additional FSS uses upon a showing of compatibility with FSS allotments and assignments pursuant to the plan. MSV has submitted an analysis based on the published ITU MSPACE-g program[52] and the ITU Appendix 30B Ku-band reference database.[53] This analysis indicates that MSV's proposed Ku-band operations would have no excess interference impact on other FSS systems implemented by other countries pursuant to Appendix 30B. If there is excess interference, MSV believes that it can be satisfactorily resolved through coordination agreements with affected administrations.[54] We agree that such coordination seems feasible. The operating authority we grant here for MSV's Ku-band operation is contingent, however, upon issuance of a favorable ITU finding pursuant to Appendix 30B, Article 6, and Section III of the ITU's Radio Regulations.

b. Two-Degree Spacing

25. The Commission's FSS satellite licensing policy is predicated upon two-degree orbital spacing between geostationary satellites.[55] This policy permits the maximum use of the

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[51] International Footnote 5.441 to Section 2.106 of the Commission's rules, 47 C.F.R. § 2.106.

[52] ITU Software Suite, Space Plans' System (SPS) Version: 2.12 (including MSPACE_g), September 2002, International Telecommunication Union Radiocommunication Bureau (BR) Informatics Administration and Publications Department (IAP).

[53] Appendix 30B Ku-band reference database is ALOTI4AE made from input file RS35K_030403.txt and RS35K_030403.ref after recording in the List of sub-regional systems EUTELSAT EXB-80.5E, EXB-86E, EXB-83.5E, EXB-88.5E, "WARC ORB 88 FSS Plan in the 13/10-11 GHz band, APPENDIX 30B ASCII File, http://www.itu.int/ITUR/space/plans/ap30b/RS35K_030403.zip.

[54] MSV Application File No. SAT-AMD-20040227-00021, Appendix A, at 53.

[55] For more information regarding the Commission's two-degree spacing policy, *see* Licensing Space Stations in the Domestic Fixed-Satellite Service, *Report and Order*, 48 F.R. 40233 (Sept. 6, 1983).

geostationary satellite orbit.[56] MSV has submitted the technical information specified in the Commission's rules.[57] Upon review of this information, we find that MSV-2's FSS feeder link and TT&C operations are two-degree compliant and meet all other technical requirements.

26. We note, however, that although there are no power-flux-density (PFD) limits in the Commission's rules for emissions from a GSO satellite in MSV's proposed FSS downlink bands, the ITU has established PFD restrictions to prevent interference with terrestrial wireless services.[58] MSV's PFD specifications are consistent with these restrictions.[59]

c. Waiver of Footnote NG104

27. Footnote NG104 of Section 2.106 of the Commission's rules states that use of the 10.7-11.7 GHz and 12.75-13.25 GHz bands in the United States by the Fixed-Satellite Service in the geostationary-satellite orbit shall be limited to international systems.[60] MSV requests a waiver of this rule for its feeder link and TT&C operations, which will be conducted from an earth station in the United States. In light of the international nature of MSV's proposed service, which involves both service links and feeder links to complete the communications link, a waiver request of Footnote NG104 for feeder link operations is unnecessary.

28. However, we grant MSV's request for waiver of Footnote NG104 for its TT&C operations, which will be conducted in the 11.45 GHz and 13.25 GHz bands. MSV states that it may co-locate new feeder link/TT&C earth stations with existing MSV earth stations already operating in Reston, Virginia and Alexandria, Virginia. Comsearch[61] has commenced a coordination analysis on MSV's behalf to determine whether MSV's proposed TT&C operations will interfere with co-primary fixed-service (FS) operations in those bands. This analysis has identified a small number of potential interference cases that MSV believes can be resolved through the use of shielding and other mitigation techniques and by coordination with the affected operators.[62] Moreover, two co-located TT&C earth stations should not significantly increase the coordination burden on FS applicants. Thus, we grant MSV a waiver of Footnote NG104 to allow it to provide TT&C in the 11.45 GHz and 13.25 GHz bands to MSV-2 from earth stations in Reston, Virginia and Alexandria, Virginia. MSV must still apply for license modifications of those two earth stations to request authority to communicate with MSV-2 in the 11.45 GHz and 13.25 GHz frequency bands.

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[56] *See, e.g.*, Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service, 11 FCC Rcd 13788, *Order and Authorization*, (1996), at 13790. Prior to the Commission's adoption of the two-degree spacing policy, satellites in the geostationary satellite orbit were usually spaced three or four degrees apart. By adopting rules that enabled satellite operators to place their space stations two degrees apart, the Commission was able to accommodate more geostationary satellites.

[57] *See* 47 C.F.R.§§ 25.114 and 25.210.

[58] See Section V of Article 21 of the ITU Radio Regulations.

[59] MSV Application SAT-AMD-20040227-00021 at 43. The Commission has established identical PFD limits for downlinks in the adjacent 10.95-11.2 GHz band. *See* 47 C.F.R. § 25.208(b).

[60] 47 C.F.R. § 2.106, Footnote NG104.

[61] Comsearch is a privately owned commercial frequency coordinator.

[62] MSV Application File No. SAT-AMD-20040227-00021 at 26.

d. Protection of other services

29. The Commission has allocated the 10.7-11.7 GHz band to FSS (space-to-Earth) on a co-primary basis with the Terrestrial Fixed Service.[63] The Commission has allocated the 12.75-13.25 GHz band to FSS (Earth-to-space) on a co-primary basis with the Terrestrial Fixed and Terrestrial Mobile Services.[64] MSV will have to comply with Section 25.203(c) of the Commission's rules, which sets forth coordination and other procedures designed to ensure that there is no harmful interference between stations operating in co-primary services.[65] MSV states that it will protect terrestrial fixed and terrestrial mobile services currently operating in the bands through several measures. First, MSV states it will coordinate its feeder link stations with terrestrial Fixed and Mobile systems as required by Section 25.203(c). In addition, MSV states it will have a coordination study conducted on its earth stations to determine their suitability for operation and will apply mitigation techniques to ensure adequate protection of the earth stations and terrestrial systems. To ensure that its feeder link operation will not impede implementation of the Commission's spectrum-relocation policy for Fixed Service licensees currently operating in the 18.3-19.3 GHz band, MSV states that it will demonstrate when applying for feeder link earth station licenses that the proposed uplink operation would not interfere with, or require protection from, the operation of any existing Fixed service station at its current site in the event that the Fixed Service station's assigned frequencies were to be shifted pursuant to Section 101.85, Section 101.89, Section 101.91, or Section 101.95 of the Commission's rules.[66]

30. In addition to protecting Fixed and Mobile services, MSV says that it will protect other services operating in the bands it will be using. Footnote US251 to Section 2.106 of the Commission's rules states that the 12.75-13.25 band is allocated to the Space Research Service (deep space) (space-to-Earth) for reception only at Goldstone, California.[67] MSV states that it will take "all practicable steps" to ensure that its feeder link transmissions will not interfere with the space research service at Goldstone, California.[68] Additionally, Footnote NG53 of Section 2.106 of the Commission's rules reserves the 13.15-13.20 GHz band for television pickup and Cable Television Relay Service (CARS) inside a 50 kilometer radius of the top 100 television markets identified in Section 76.51 of the Commission's rules.[69] To avoid interference with these services, MSV says it will not transmit in the 13.15-13.2125 GHz band from a site within 50 kilometers of a top 100 television market identified in of the Commission's rules.[70]

31. Last, Footnote US211 of Section 2.106 of the Commission's rules states that space station operators in the 10.7-11.7 GHz band should take all practicable steps to protect radio

[63] 47 C.F.R. § 2.106.

[64] *Id.*

[65] 47 C.F.R. § 25.203(c).

[66] 47 C.F.R. §§ 101.85, 101.89, 101.91, 101.95.

[67] 47 C.F.R. § 2.106, Footnote US251.

[68] MSV Application File No. SAT-AMD-20040227-00021 at 28.

[69] 47 C.F.R. § 2.106, Footnote NG53. MSV states that it understands that authority for uplink transmission in any portion of the 12.75-13.25 GHz band for which MSV does not already have authority will be withheld pending adoption of rules for coordination of such operation with Broadcast Auxiliary Service (BAS) and CARS mobile pickup operations. MSV Application File No. SAT-AMD-20040227-00021 at 28.

[70] MSV Application File No. SAT-AMD-20040227-00021 at 28.

astronomy observations from harmful interference in adjacent bands.[71] According to MSV, the National Science Foundation has explained that the protection level required at radio astronomy sites in the 10.6-10.7 GHz band is -160 dBW/m^2.[72] MSV has agreed to equip its replacement satellites with a transmitter output filter to limit the emissions in the 10.6-10.7 GHz band at or below this level. Existing in-orbit satellites in this band employ such a filter as part of past agreements between the MSS and radioastronomy communities. Consequently, subject to this agreement, we allow MSV to operate its feeder links and TT&C functions in the 10.7-10.95 GHz and 11.2-11.45 GHz bands on a non-harmful interference basis to radio astronomy operations in adjacent bands.

D. Bond Requirement

32. In its *Space Station Licensing Reform Order*, the Commission eliminated the financial requirements then in place and replaced them with a bond requirement.[73] The bond requirement is intended to ensure that licensees are financially able and committed to implementing their licensed systems in a timely manner. Under this requirement, any entity awarded a satellite license must execute a performance bond, payable to the U.S. Treasury, within 30 days of the date of the license grant. The bond is payable upon failure to meet any of the implementation milestones included in every license, where adequate justification for extending that milestone is not provided. Licensees may reduce the amount of the bond upon meeting each milestone.[74]

33. MSV requests a waiver of the bond requirement because it intends to provide public safety services on MSV-2, noting that it has a proven track record of providing critical public safety services with its current MSS system. Specifically, MSV states that AMSC-1's unique dispatch radio or "push-to-talk" feature has proven critical in times of emergency because it allows communications to be broadcast to a large group of users simultaneously, thereby allowing coordination of rescue efforts. MSV states that it will expand this and other public safety service offerings to South America on MSV-2.

34. In its *Space Station Licensing Reform Order*, the Commission stated that it would entertain requests for complete or partial waivers of this bond requirement, but limited its discussion to waivers "for satellite operators proposing satellites designed to provide public safety services." [75] The Commission noted that it would consider things "such as public safety intent in deciding whether a waiver is warranted."[76] In assessing "public safety intent," the Commission intended that the proposed satellite be wholly or partially designed for the specific purpose of providing public safety services.[77]

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[71] 47 C.F.R. § 2.106, Footnote US211.

[72] Letter from Lon Levin, Mobile Satellite Ventures to Ms. Marlene H. Dortch, Secretary, Federal Communications Commission (May 12, 2004).

[73] *Space Station Licensing Reform Order*, 18 FCC Rcd at 10822-24, paras. 161-65.

[74] *Space Station Licensing Reform Order*, 18 FCC Rcd at 10826-27, para. 172.

[75] *Space Station Licensing Reform Order*, 18 FCC Rcd at 10825, para. 169.

[76] *Id.*

[77] Although not directly applicable to space stations, the Communications Act, for purposes of allocating and assigning spectrum between 746 megahertz and 806 megahertz, defines "Public Safety Services" as services "the sole or principal purpose of which is to protect the safety of life, health, or property, that are provided

35. We look to the public interest benefit assessment contained in MSV's application to determine whether it expresses the requisite "public safety intent." MSV states that "grant of this application will serve the public interest by allowing MSV to better compete in the global MSS marketplace and providing the benefits of competition and new public safety services to the public in South America."[78] We conclude that this statement of purpose falls short of the type of public safety intent contemplated by the Commission. This statement indicates that MSV's primary goal in launching and operating its proposed satellite is to compete on a global scale and make its service more attractive to MSS users. MSV's "push to talk" feature does not justify a waiver of the bond requirement. All MSS systems are inherently useful in providing public safety service because the user terminals are small and transportable. MSV does not identify any specific "safety" services besides the dispatch radio service. Thus, nothing in MSV's proposal to provide basic voice and data and high-speed packet data mobile satellite services persuades us that MSV has demonstrated "good cause" for waiving the bond requirement. We must now determine the appropriate bond for MSV-2.

36. In the *Space Station Licensing Reform First Reconsideration Order*,[79] the Commission revised the bond requirements adopted in the *Space Station Licensing Reform Order*. Specifically, the Commission reduced the bond amounts from $7.5 million to $5 million for NGSO licensees, and from $5 million to $3 million for GSO licensees.[80] In addition, the Commission determined that GSO MSS licensees should be subject to the GSO bond requirements, even though they are considered "NGSO-like" for purposes of determining the appropriate application review procedures.[81] Consequently, we require MSV to post a $3 million bond within 30 days of the release date of this Order. If MSV does not submit this bond by the required date, this authorization shall be null and void.

IV. ORDERING CLAUSES

37. Mobile Satellite Ventures Subsidiary LLC's (MSV's) application File No. SAT-LOA-20030827-00174, Call Sign S2487, as amended by SAT-AMD-20031205-00347 and SAT-AMD-20040227-00021, IS GRANTED, in part, and MSV is authorized to launch and operate its MSV-2 satellite at 63.5° W.L. in the 1525-1544 MHz (space-to-Earth), the 1545-1559 MHz (space-to-Earth), the 1626.5-1645.5 MHz (Earth-to-space) and the 1646.5-1660.5 MHz frequency bands for service links, and the 12.75-13.25 GHz (Earth-to-space), 10.7-10.95 GHz and 11.2-11.45 GHz (space-to-Earth) frequency bands for feeder links, in accordance with the terms, conditions, and technical specifications set forth in its application, this attachment and the

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by...governmental entities or by nongovernmental organizations that are authorized by a governmental entity whose primary mission is the provision of such services and that are not made commercially available to the public by the provider." 47 U.S.C. § 338 (f)(1).

[78] MSV Application File No. SAT-LOA-20030827-00174 at 3.

[79] Amendment of the Commission's Space Station Licensing Rules and Policies, *First Order on Reconsideration and Fifth Report and Order*, IB Docket No. 02-34, 19 FCC Rcd 12637 (2003) (*Space Station Licensing Reform First Reconsideration Order*).

[80] *Space Station Licensing Reform First Reconsideration Order*, 19 FCC Rcd at 13654, para. 43.

[81] *Space Station Licensing Reform First Reconsideration Order*, 19 FCC Rcd at 13655, para. 46.

Commission's rules.

38. IT IS FURTHER ORDERED that MSV's request to operate in the 1544-1545/1645-1646.6 MHz band, which is limited to distress and safety communications, IS DENIED.

39. IT IS FURTHER ORDERED that in the absence of a coordination agreement, MSV's operation in the L-band will be on a non-harmful interference basis to other mobile-satellite service systems operating in the L-band. Consequently, MSV shall not cause harmful interference to any other lawfully operating L-band satellite or radio facility and shall cease operations upon written notification of such interference. MSV shall also inform the Commission in writing of such notification. Furthermore, MSV must notify all other operators in these frequency bands that it will be operating on a non-harmful interference basis. MSV must also notify its customers that its operations are on a non-harmful interference basis.

40. IT IS FURTHER ORDERED that MSV's operation in the upper L-band, 1545-1559 and 1646.5-1660.5 MHz bands, shall comply with the real-time access and priority preemption requirements set forth in International Footnotes 5.357A and 5.362A, to protect AMS[R]S.

41. IT IS FURTHER ORDERED that MSV's operation in the lower L-band, 1530-1544 and 1626.5-1645.5 MHz bands shall comply with the real-time access and priority preemption requirements set forth in International footnote 5.353A to protect the Global Maritime Distress Satellite Service.

42. IT IS FURTHER ORDERED that MSV's use of the 12.75-13.25 GHz frequency band shall comply with the terms of Footnote US251 to 47 C.F.R. § 2.106 to ensure that MSV-2's Ku-band transmissions will not interfere with space research (deep space)(space-to-Earth) service at Goldstone, California.

43. IT IS FURTHER ORDERED that MSV may not transmit in the 13.15-13.2125 GHz band from a site within 50 kilometers of a top 100 television market identified in Section 76.51 of the Commission's rules.

44. IT IS FURTHER ORDERED that the authority for uplink transmission in any portion of the 12.75-13.25 GHz band from any specified site not previously authorized will be withheld pending adoption of rules for coordination of such operation with Broadcast Auxiliary Service (BAS) and Cable Television Relay Service (CARS) mobile pickup operations.

45. IT IS FURTHER ORDERED that Footnote NG104 to 47 C.F.R. § 2.106 IS WAIVED to allow MSV to provide TT&C in the 11.45 GHz and 13.25 GHz bands to MSV-2 from gateway earth stations located Reston, Virginia and Alexandria, Virginia.

46. IT IS FURTHER ORDERED that the authorization for feeder link operation conditionally granted herein pertains only to feeder link and tracking, telemetry, and control transmission between a single GSO satellite at 63.5° W.L. and a maximum of two fixed earth stations within the continental United States.

47. IT IS FURTHER ORDERED that MSV's authority to operate in the 10.7-10.95 GHz, 11.2-11.45 GHz and the 12.75-13.25 GHz bands is on a non-interference basis contingent upon the issuance of an ITU finding permitting such additional use pursuant to Appendix 30B of the ITU's Radio Regulations.

48. IT IS FURTHER ORDERED that MSV's use of the 10.7-10.95 GHz and 11.2-11.45 GHz frequency bands shall comply with the terms of Footnote US211 to 47 C.F.R. § 2.106 which urges applicants for airborne or space station assignments to take all practicable steps to protect radio astronomy observations in the adjacent bands from harmful interference, and, in accordance with the MSV agreement, limit emissions in the 10.6-10.7 GHz band to -160 dBW/m^2 or less.

49. IT IS FURTHER ORDERED that MSV shall coordinate with co-primary Space Operations Service stations in the 1525-1559 MHz band and will not be entitled to protection from interference until it has completed coordination.

50. IT IS FURTHER ORDERED that MSV shall coordinate with those countries conducting passive research in the 1525-1559 MHz band and will not be entitled to any protection from interference from passive research radio stations unless it completes coordination.

51. IT IS FURTHER ORDERED that MSV shall coordinate with co-primary Terrestrial Fixed Service providers in the 10.7-11.7 GHz band.

52. IT IS FURTHER ORDERED that MSV shall coordinate with Terrestrial Fixed and Terrestrial Mobile Services in the 12.75-13.25 GHz band.

53. IT IS FURTHER ORDERED that MSV's request to waive Section 25.210(j) of the Commission's rules to permit MSV to operate its MSV-2 satellite with an East-West station keeping tolerance of ±0.1° IS DENIED without prejudice.

54. IT IS FURTHER ORDERED that MSV must provide a written statement to the Commission within 60 days of the date of this grant that identifies any known satellites located at, or planned to be located at, MSV's assigned orbital location, or assigned in the vicinity of that location such that the station keeping volume of the respective satellites might overlap, and that states the measures that will be taken to prevent in-orbit collisions with such satellites. This statement should address any licensed FCC systems, or any systems applied for and under consideration by the FCC. The statement need not address every filing with the ITU that meets these criteria, but should assess and address any systems reflected in ITU filings that are in operation or that MSV believes may be progressing toward launch, e.g. by the appearance of the system on a launch vehicle manifest. If MSV elects to rely on coordination with other operators to prevent in-orbit collisions, it shall provide a statement as to the manner in which such coordination will be effected.

55. IT IS FURTHER ORDERED that MSV's operation at inclinations between 4.5° and 6.0° shall be on a non-interference basis until it completes coordination with license NGSO FSS operators.

56. IT IS FURTHER ORDERED that MSV's request for a waiver of Section 25.165(a) of the Commission's rules IS DENIED.

57. IT IS FURTHER ORDERED that MSV must construct, launch and place its authorized satellite into operation in accordance with the technical parameters and terms and conditions of this authorization by these specified time periods following the date of authorization:

A: Enter into a binding non-contingent contract to construct the licensed satellite system by January 11, 2006.

B: Complete the Critical Design Review of the licensed satellite system by January 11, 2007.

C: Begin the construction of the satellite by January 11, 2008.

D: Launch and begin operations of the satellite by January 11, 2010.

E: Licensee must file a bond with the Commission in the amount of $3,000,000.00, pursuant to the procedures set forth in Public Notice, DA 03-2602, 18 FCC Rcd 16283 (2003), within 30 days of the date of this GRANT.

Failure to meet any of these dates shall render this authorization NULL and VOID.

58. MSV shall prepare the necessary information, as may be required, for submission to the International Telecommunications Union (ITU) to initiate and complete the advance publication, international coordination, due diligence, and notification process of this space station, in accordance with the ITU Radio Regulations. MSV shall be held responsible for all cost-recovery fees associated with these ITU filings. We also note that no protection from interference caused by radio stations authorized by other administrations is guaranteed unless coordination and notification procedures are timely completed or, with respect to individual administrations, by successfully completing coordination agreements. Any radio station authorization for which coordination has not been completed may be subject to additional terms and conditions as required to effect coordination of the frequency assignments of other administrations. *See* 47 C.F.R. § 25.111(b).

59. MSV is obliged to comply with the applicable laws, regulations, rules, and licensing procedures of any countries it proposes to serve.

60. IT IS FURTHER ORDERED that the license term for the MSV-2 satellite, Call Sign S2487, is fifteen years and will begin to run on the date that Mobile Satellite Ventures Subsidiary LLC certifies to the Commission that the satellite has been successfully placed into orbit and its operation fully conforms to the terms and conditions of this authorization.

61. This Order is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon adoption. Petitions for reconsideration under Section 1.106 or applications for review under Section 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106, 1.115, may be filed within 30 days of the date of the Public Notice announcing that this action was taken.

FEDERAL COMMUNICATIONS COMMISSION

Donald Abelson
Chief, International Bureau