Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Reallocation of the 216-220 MHz,	)	ET Docket No. 00-221
1390-1395 MHz, 1427-1429 MHz,	)	RM-9267
1429-1432 MHz, 1432-1435 MHz,	)	RM-9692
1670-1675 MHz, and 2385-2390 MHz	)	RM-9797
Government Transfer Bands	)	RM-9854

To: The Commission

COMMENTS

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SUMMARY

Herein Final Analysis Communication Services, Inc. ("Final Analysis") and Orbital Communications Corporation ("ORBCOMM") (together, "the Parties") jointly submit comments in response to the Notice of Proposed Rule Making ("NPRM") in the above-captioned proceeding. The Parties commend the Commission for examining the many, varied and competing proposals for allocations of spectrum in the above-referenced bands and for presenting proposals that enable the development of new and existing services and technologies. The Parties generally limit their comments herein to allocations at 1.4 GHz (i.e., in the bands 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, and 1432-1435 MHz).

Specifically, the Parties support Option 3 of the band plans proposed for allocations at 1.4 GHz and oppose Options 1 and 2. As is demonstrated herein, Option 3, which the Commission offers as a compromise proposal, best serves the public interest and should be adopted for allocations at 1.4 GHz.

In Its NPRM, the Commission asks commenters to address how the proposals meet the goals identified in the Commission's 1999 Spectrum Policy Statement. As is demonstrated below, of the options for allocations at 1.4 GHz, only Option 3 is consistent with the Commission's 1999 Spectrum Policy Statement. Option 3, which allocates the subject bands to NVNG MSS, is the only Option that ensures efficient use of the spectrum for all users and is in the public interest. The Commission's policy of considering allocations of spectrum to new technologies would also be furthered by adoption of Option 3 and an allocation for the NVNG MSS.

The objective of the 1999 Spectrum Policy Statement that is obviously best served by adoption of Option 3 is equity. The Commission has long acknowledged that each NVNG MSS system requires dedicated feeder link spectrum, on a global basis, for both uplink and downlink communications. Yet, despite the critical need for dedicated feeder links, insufficient unencumbered spectrum is currently allocated, on an international or domestic basis, to NVNG MSS feeder link operations. In the international context, the 1390-1393 MHz and 1429-1432 MHz bands, at issue in this proceeding, have been identified as the only frequencies suitable and available for global allocation for NVNG MSS feederlink operations.

At WRC-2000, the United States delegation obtained global support for its proposal to consider at WRC-03 the 1390-1393 MHz and 1429-1432 MHz bands for allocation on a global basis to NVNG MSS services for feeder link uplinks and downlinks, respectively. That proposal is now on the agenda for WRC-03. The years of effort, technical studies, and WRC negotiation have resulted in the successful achievement of the United States WRC-2000 objectives, with the proposed allocation of these frequencies to NVNG MSS on the very next WRC agenda. Under these circumstances, the equities are clear; the NVNG MSS industry has demonstrated that the Commission should allocate spectrum for NVNG MSS feeder links on a primary basis in the bands requested herein and proposed in Option 3.

The Parties believe that radio astronomy operations can be adequately protected if Option 3 is adopted and NVNG MSS feederlinks are deployed in the 1.4 GHz bands, as allocated. The Parties also believe that the NVNG MSS should be able to share with PMRS. Finally, In order that a compromise may be reached, the Little LEO Licensees accept the allocation of four megahertz proposed in Option 3 as adequate.

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COMMENTS

Final Analysis Communication Services, Inc. ("Final Analysis") and Orbital Communications Corporation ("ORBCOMM") (collectively, the "Parties"), licensees in the Non-Voice, Non-Geostationary Mobile Satellite Service ("NVNG MSS"),[1] by their attorneys, hereby jointly submit their comments in response to the Commission's *Notice of Proposed Rule Making*[2] in the above-captioned proceeding:

The Parties commend the Commission for examining the many, varied and competing proposals for allocations of spectrum in the above-referenced bands and for presenting proposals that enable the development of new and existing services and technologies. The Parties generally limit their comments herein to allocations at 1.4 GHz (i.e., in the bands 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, and 1432-1435 MHz). Specifically, the Parties support Option 3 of the band plans proposed for

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1 Final Analysis Communication Services, Inc., *Order and Authorization*, 13 FCC Rcd 6618 (1998) ("*Final Analysis License*"), *Application for Clarification and Review*, filed May 1, 1998; Orbital Communications Corp., *Order and Authorization*, 13 FCC Rcd 10828 (1998) ("*ORBCOMM Second Round License*").

2 *In the Matter of Reallocation of the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands*, 66 FedReg. 7,443 (Jan. 23, 2001)(hereinabove and hereinafter referred to as "*NPRM*").

allocations at 1.4 GHz and oppose Options 1 and 2. As is demonstrated below, Option 3, which the Commission offers as a compromise proposal, best serves the public interest and should be adopted for allocations at 1.4 GHz.

I. INTRODUCTION

The Commission has long acknowledged that each NVNG MSS system requires dedicated feeder link spectrum, on a global basis, for both uplink and downlink communications.[3] Despite the critical need for dedicated feeder links, insufficient unencumbered spectrum is currently allocated, on an international or domestic basis, to NVNG MSS feeder link operations. In the international context, the 1390-1393 MHz and 1429-1432 MHz bands have been identified as the only frequencies suitable and available for global allocation for NVNG MSS feederlink operations. This particular spectrum is suitable because of its propagation characteristics and, perhaps more importantly, because of the potential for a global allocation. These frequencies are not heavily occupied in other countries and regions by other services that are highly sensitive to potential interference.

Over the past several years, the NVNG MSS industry and the United States government have worked very hard together to try to obtain a global allocation in these frequencies for NVNG MSS. At the 2000 International Telecommunication Union ("ITU") World Radio Conference ("WRC-2000"), as a result of the intensive efforts undertaken during the past four years by the NVNG MSS industry and the United States government, the United States delegation obtained global support for its proposal to

[3] *See, e.g.,* Amendment of Part 25 of the Commission's Rules to Establish Rules and Policies Pertaining to the Second Processing Round of the Non-Voice, Non-Geostationary Mobile Satellite Service, *Report and Order*, 13 FCC Rcd 9111 (1997), ¶ 48.

place on the agenda for WRC-03 the allocation of the 1390-1393 MHz and 1429-1432 MHz bands on a global basis for NVNG MSS feeder links.[4]

In their Petition for Rulemaking, filed by the Parties on August 16, 2000, and supported by a similar Petition for Rulemaking filed on the same date by the Satellite Industry Association ("SIA"),[5] the Parties demonstrated that, in light of the developments outlined above, now is the perfect time for the Commission to take positive action to demonstrate unequivocal support for the position advocated by the United States government at WRC-2000 and avoid confusion in the global arena. The Parties recognized that the frequencies in the 1390-1393 MHz and 1427-1432 MHz bands are of interest to a number of other services and have been the subject of numerous comments in several Commission proceedings, including the recently concluded proceeding establishing a new Wireless Medical Telemetry Service ("WMTS") and granting WMTS a primary allocation in the 1429-1432 MHz band.[6] The Parties also noted that additional petitions for rulemaking filed by parties in other services were also then pending.[7] The Parties raised their concern that, although the Commission previously has informally acknowledged the interests of the NVNG MSS industry in this spectrum,[8] the more recent grant of a primary allocation in the 1429-1432 MHz band to

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4 *See* ITU-R Resolution 800 [GT PLEN-2/4] (WRC-2000), 1.16; ITU-R Resolution 127 (WRC-2000). The WRC-03 Agenda was subsequently approved by the ITU Council in July. Accordingly, the proposed allocation is now on the Agenda for WRC-03.

5 The SIA Petition for Rulemaking is not referenced in the *NPRM.*

6 *See* Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service, ET Docket 99-255 ("*WMTS Rulemaking*"), *Report and Order*, FCC 00-211 (released July 12, 2000) ("*WMTS Order*").

7 Those petitions are now being addressed in the above-captioned proceeding.

8 *See* Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service, *Notice of Proposed Rulemaking,* 14 FCC Rcd 16719 (1999) ("*WMTS NPRM*"), ¶ 14 and n. 20.

WMTS appears contradictory and may significantly adversely impact any chance of success in obtaining the necessary NVNG MSS global allocation at WRC-03. Additionally, because the Commission had indicated its intent to consider other requests for allocation in these same frequencies, the Parties stressed that it is important that the requirements of the NVNG MSS industry for a domestic, as well as an international, allocation for feeder link spectrum in these particular bands now receive full and due consideration.

In the NPRM, the Commission presents three different band plan options for allocation of spectrum at 1.4 GHz. However, only Option 3 includes allocation of any spectrum for NVNG MSS feeder links. For the reasons stated herein and in the Petitions for Rulemaking filed by the Parties and by SIA on August 16, 2000, incorporated herein by reference, the Parties urge the Commission to adopt Option 3 and reject Options 1 and 2.

II. ONLY ADOPTION OF OPTION 3 IS CONSISTENT WITH THE COMMISSION'S 1999 SPECTRUM POLICY STATEMENT

In Its NPRM, the Commission asks commenters to address how the proposals meet the goals identified in the Commission's 1999 Spectrum Policy Statement. As is demonstrated below, only the adoption of Option 3 is consistent with the Commission's 1999 Spectrum Policy Statement.[9]

A. Background

Communications to and from NVNG MSS satellites are made over both service and feeder links. Service links allow subscribers to communicate directly with orbiting

[9] It should be noted that in the 1999 Spectrum Policy Statement, at ¶24, the Commission specifically addressed the interest of the Little LEOs in the bands at issue here and indicated that it would consider the impact of allocations for other services on the possible use of this band for Little LEO feeder links.

satellites from low-cost fixed or mobile terminals. Subscriber uplink communications are required[10] to be very short, "burst" type transmissions. The frequencies used by the NVNG MSS for subscriber uplink communications are shared among the licensed NVNG MSS systems as well as between NVNG MSS and terrestrial operations. Service downlink frequencies are allocated to the NVNG MSS in the VHF and UHF bands, but they are so limited that at least one licensed NVNG MSS system has been granted first priority to apply for and use seven additional channels of service downlink spectrum.[11]

Feeder links are also critical to the commercial implementation of NVNG MSS-based data services because feeder links support data transfers and telemetry, tracking and control ("TT&C") functions between earth stations and the satellites. Feeder link transmissions require both continuous communication with the satellite, as well as sufficient dedicated spectrum in both uplink and downlink directions to ensure proper operation of the constellation and to achieve full system capacity.

Although NVNG MSS systems utilize a relatively small amount of spectrum overall, particularly in comparison to Big LEO voice and broadband systems, there is far from enough spectrum in the bands allocated internationally and in the United States to NVNG MSS to accommodate all of the licensees' requirements. For example, in the United States, each of the four NVNG MSS commercial licensees has only 50 kHz of uplink feeder link spectrum in VHF spectrum bands. This spectrum is heavily utilized by other incumbent users and is not very suitable for NVNG MSS feeder link operations on a global basis due to coordination constraints and the limitations imposed by foreign

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[10] *See* Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum to the Fixed-Satellite Service and the Mobile-Satellite Service for Low-Earth Orbit Satellites, 8 FCC Rcd 1812 (1993).

satellite systems. Moreover, the need to utilize VHF frequencies for feeder uplinks limits the availability of that same spectrum for much needed service links. Most importantly, none of the NVNG MSS second round licensees has been assigned any dedicated downlink feederlink spectrum, which forces them to give up scarce service downlink spectrum to accommodate their feederlinks.

The insufficient allocation of spectrum has required the licensees to employ extraordinary measures to ensure efficient spectrum utilization, including careful coordination among systems, the development of innovative and technically complex frequency sharing techniques, and even reliance upon future international allocations for NVNG MSS for adequate service downlink channels. Uncertainty about the availability of adequate spectrum for feeder link operations constrains the ability of NVNG MSS system operators to satisfy their business assumptions about how to deploy their constellation infrastructure and conduct their network operations effectively.

The NVNG MSS industry's need for additional spectrum will become increasingly acute as more NVNG MSS systems become operational and their traffic loads increase. Without additional feeder link spectrum, the ability of NVNG MSS operators to provide highly economical commercial data services to the public in urban as well as rural areas will remain seriously constrained.

B. Option 3 Promotes Greater Efficiency in Spectrum Markets

In its 1999 Spectrum Policy Statement, the Commission discussed the complicated task it faces of managing the spectrum to advance the pro-competitive goals of the Communications Act of 1934 and the Telecommunications Act of 1996, while at the same time ensuring that other public interest goals are met. Of the

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[11] *See* 47 CFR §25.142(e); *see also* Final Analysis License, *supra* note 1 at ¶36.

proposals for allocating spectrum at 1.4 GHz, only Option 3 meets the Commission's articulated policy objectives for allocation of this spectrum.

1. Allocation

In exercising its spectrum allocation responsibilities, the Commission seeks, unless the public interest deems otherwise, to make allocations that provide licensees with the flexibility to offer a multiplicity of services based on the particular demands of the market. Option 3, which allocates the subject bands to NVNG MSS, is the only Option that ensures efficient use of the spectrum for all users and is in the public interest.

NVNG MSS is an economical service utilizing a very small amount of spectrum overall but offering multifaceted services to a plethora of consumer and industrial sectors. Option 3 is the only option that includes an allocation of spectrum to the NVNG MSS service. Option 3 is also the only option that considers and accommodates the interests of the parties that have or have expressed an interest in that spectrum: the wireless medical telemetry service ("WMTS"); the NVNG MSS; the Land Mobile Communications Council ("LMCC"), and Itron, Inc. ("Itron"). The Commission's *NPRM* recognizes that "there is insufficient spectrum available to accommodate all of the petitions and requests before the Commission" and states that Option 3 "is a compromise between the LMCC, Little LEO Licensees, and Itron petitions."[12] Indeed, in an effort to reach a compromise, the Little LEO licensees have indicated that in the United States they can accept an allocation of four megahertz, rather than the six megahertz of spectrum that is being sought globally.

[12] *See NPRM,* slip op. at 13, ¶30, 15, ¶34.

On the other hand, allocation of these bands on a primary basis to other services to the exclusion of NVNG MSS (as is proposed in Options 1 and 2) would preclude the use of these bands by the NVNG MSS industry for feeder link operations, thereby continuing to limit the service options that can be offered to the public by some of the NVNG MSS systems due to lack of spectrum. Other parties with interests in these bands can be accommodated elsewhere or on a shared or secondary basis.[13] In contrast, despite several years of effort, no clear alternative spectrum has been identified for allocation to the NVNG MSS industry to meet its critical need for additional feeder link spectrum. The spectrum is needed not only to achieve dedicated feeder link spectrum but also to avoid the reduction of service link spectrum that would be caused by operating feeder links in the scarce downlink service link spectrum as is currently required.

2. New Technology

Another policy factor in the 1999 Spectrum Policy Statement is that the Commission will consider petitions to permit the use of new technologies. The NVNG MSS is still a new technology. More to the point, it is a new technology that when initially authorized was not allocated sufficient spectrum—a fact that the Commission recognizes. Thus, the Commission's policy of considering allocations of spectrum to new technologies would be furthered by adoption of Option 3 and an allocation for the NVNG MSS.

[13] *See* Comments of Final Analysis and Comments of ORBCOMM, filed September 16, 1999, in ET Doc 99-255. In its discussion of Option 3, the Commission recognizes that the new WMTS allocation can be shifted to 1427-1430 MHz, and utility telemetry could be elevated to co-primary status in that band, achieving the objectives of both services and allowing the Commission to allocate 1430-1432 MHz to NVNG MSS feeder links.

3. Equity

The objective of the 1999 Spectrum Policy Statement that is obviously best served by adoption of Option 3 is equity. As noted above, the Commission has long acknowledged that each NVNG MSS system requires dedicated feeder link spectrum, on a global basis, for both uplink and downlink communications. Yet, despite the critical need for dedicated feeder links, insufficient unencumbered spectrum is currently allocated, on an international or domestic basis, to NVNG MSS feeder link operations. In the international context, the 1390-1393 MHz and 1429-1432 MHz bands, at issue in this proceeding, have been identified as the only frequencies suitable and available for global allocation for NVNG MSS feederlink operations.

Moreover, the Little LEO Licensees have been working with the United States government to obtain spectrum for NVNG MSS feeder links in the 1.4 GHz bands for many years. The United States efforts to obtain additional global allocations for NVNG MSS feeder links began with the development of proposals for WRC-95. At that time, the NVNG MSS industry was encouraged by the Commission to study the frequency bands around 1.4 GHz for possible international allocation for NVNG MSS feeder links.

Recognizing the critical need for the allocation of more feeder link spectrum to NVNG MSS on a global basis, the United States introduced sharing studies into ITU-R Working Party 8-D in 1996 on NVNG MSS feeder links in the 1.4 GHz bands,[14] but there was insufficient time for technical review to allow the consideration of allocations at WRC-97. Consequently, the United States proposed that WRC-97 initiate technical sharing studies of the use of 1390-1400 MHz for NVNG MSS uplink feeder links and

[14] *See* ITU-R Doc. 8-D/142-E, 18 Oct. 1996.

1427-1432 MHz for NVNG MSS downlink feeder links, and Resolution 127 (WRC-97) to this effect was approved.[15]

Between the 1997 Conference Preparatory Meeting and WRC-97, the United States parties performed studies and hardware demonstrations (through Texas A&M University) to confirm the feasibility of sharing between NVNG MSS in the 1.4 GHz band with existing applications, including radio astronomy, earth exploration-satellites ("EES"), and radiolocation in the same and adjacent bands. The studies and demonstrations showed such sufficient promise for sharing with these other services that WRC-97 resolved "as a matter of urgency to carry out studies to determine the operational and technical measures required to facilitate sharing in the portions of the band 1390-1400 MHz" between NVNG MSS and existing services.[16] Similarly, WRC-97 also resolved "as a matter of urgency" to carry out further studies for sharing in the 1427-1432 MHz band between NVNG MSS downlink feeder links and existing in-band services.[17]

In response to the WRC-97 directive to undertake additional studies, an extensive effort was undertaken to identify the specific methods for sharing the uplink and downlink feederlinks in the 1.4 GHz bands with the incumbent services in and near those bands. In 1998 a detailed sharing study[18] was submitted to ITU-R Working Party 8D, approved, and sent to ITU-R Study Groups 7and 9 for review. Subsequently, ITU-R

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15 *See* United States Proposals for the 1997 World Radiocommunication Conference, October 1997, Document No. USADD.R01, October 17, 1997 version, page 6.

16 *See* Resolution 127 (WRC-97), *resolves* 1.

17 *Id.*, *resolves* 2.

18 *See* United States of America, Document 8D/47-E, Compatibility Analysis Between Non-Geostationary Mobile Satellite Services (NON-GSO MSS) Feederlinks and the Existing Services Near 1.4 GHz, 15 April 1998.

Working Parties 7C and 7D conducted separate studies[19] that generally concurred with the sharing conclusions of the original WP 8D effort, but they requested additional hardware tests to confirm the theoretical studies.

At WRC-2000, the United States delegation obtained global support for its proposal to consider at WRC-03 the 1390-1393 MHz and 1429-1432 MHz bands for allocation on a global basis to NVNG MSS services for feeder link uplinks and downlinks, respectively. That proposal is now on the agenda for WRC-03. The years of effort, technical studies, and WRC negotiation have resulted in the successful achievement of the United States WRC-2000 objectives, with the proposed allocation of these frequencies to NVNG MSS on the very next WRC agenda.[20]

Now that the NVNG MSS industry, after many long years of effort, is on the brink of success in obtaining an international allocation, equity requires that the Commission give its clear support to a primary allocation to NVNG MSS in the bands requested herein and proposed in Option 3. In contrast, it would be manifestly inequitable to shut NVNG MSS out of an allocation in these bands, thereby foreclosing any realistic opportunity of obtaining an international allocation.

4. Assignment

The assignment objective considers options for innovative assignment mechanisms that facilitate rapid deployment of the services for which the allocation has

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19 *See* ITU-R Working Party 7C Liaison Statement To WP 8D,"Technical Information Regarding Resolution 127 (WRC-97)", Document 8D/107-E, 6 October 1998; Working Party 7D Liaison Statement To WP 8D, "Liaison Statement To Working Party 8D From Working Party 7D (Reply To: Document 7D/35, "Liaison Statement To Working Parties 7C And 7D"), Document 8D/221-E, 26 March 1999.

20 Agenda Item 1.16, ITU Council Resolution 1156, Agenda for the World Radiocommunication Conference (WRC-03), Document C2000/88-E, 26 July 2000.

been made. Since feeder links are to be used by NVNG MSS systems, the Parties believe that the best method of assignment is by an assignment mechanism that: (1) will afford NVNG MSS licensees an opportunity, upon allocation of the frequencies, to seek a minor modification of their space segment licenses to add the feeder link frequencies allocated; and (2) have the Commission's staff expeditiously process the applications.

5. Secondary Market

The NVNG MSS licensees are generally non-common carriers that make satellite capacity available to commercial mobile radio service ("CMRS") providers and value-added resellers on a contractual basis. Thus, allocation of spectrum to the NVNG MSS is consistent with the secondary markets objective that looks to facilitate full utilization of spectrum by the highest value end users.

C. Option 3 Makes More Spectrum Available to More Services

As the Commission recognized in the NPRM, only Option 3 results in allocation of spectrum to the NVNG MSS, the WMTS, PMRS and Utility Telemetry. Thus, only Option 3 makes more spectrum available to more services. Moreover, the Commission accomplishes this by adroitly matching those services that can share the various bands, thereby making maximum use of the available spectrum. Clearly, Option 3 best satisfies the public interest by making the best use of scarce radiofrequency resources to satisfy all requirements.

III. RADIO ASTRONOMY OPERATIONS CAN BE ADEQUATELY PROTECTED

The Parties believe that radio astronomy operations can be adequately protected if Option 3 is adopted and NVNG MSS feederlinks are deployed in the 1.4 GHz bands, as allocated. The NVNG MSS community has made extensive efforts to develop innovative methods for sharing feederlinks in the 1.4 GHz bands with the

radioastronomy services ("RAS") in the nearby 1400-1427 MHz band by using a combination of efficient modulation techniques. Such techniques include using a type of modulation offering rapid spectrum roll-off, ensuring that undesired mixer products fall outside the sensitive 1400-1427 MHz band, and the use of transmitters that limit intermodulation and have a low noise floor. The RAS has generally concurred with the results of the NVNG MSS studies,[21] but it has requested that further studies involving measurements of equipment having operational characteristics be used to validate the theoretical studies.

It should be noted that the proposed allocation for NVNG MSS feeder downlinks under Option 3 is for two megahertz at 1430-1432 MHz. The original sharing studies, however, assumed an allocation of three megahertz at 1429-1432 MHz. Thus, there will be an additional megahertz of offset between the RAS band and the NVNG MSS downlink band than was originally assumed. This additional offset will enable additional attenuation of the NVNG MSS out-of-band emissions in the RAS band. In addition, reducing the NVNG MSS feederlink allocation to two megahertz in each direction, from the three megahertz originally proposed and studied, should result in a corresponding reduction in the number of potential sources of interference in the bands, which should also lower the aggregate out-of-band emissions from the NVNG MSS into the RAS band.

Moreover, recent work by the radioastronomy community on measures to protect its own systems from out-of-band interference provides additional assurance of RAS

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[21] *See* Working Party 7D Liaison Statement To WP 8D, "Liaison Statement To Working Party 8D From Working Party 7D (Reply To: Document 7D/35, "Liaison Statement To Working Parties 7C And 7D"), Document 8D/221-E, 26 March 1999.

protection. Indeed, one paper recently submitted by the radio astronomy community in United States Working Party meetings[22] indicates that radioastronomy receivers are now capable of routinely achieving very high rejection of signals adjacent to RAS bands, and cites the 70 dB attenuation of IRIDIUM signals at Arecibo as an example. Apparently, the RAS community experience with advanced filtering techniques, not previously considered in the above-referenced studies, enables the RAS to protect its own operations from at least 70 dB of out-of-band emission interference.

Taken together, the limited proposed allocation to the NVNG MSS, the additional offset of the NVNG MSS allocation from the 1400-1427 MHz band, and the expected continued improvement in RAS receivers provide ample assurance that the RAS will be more than adequately protected by NVNG MSS feederlink operations in the 1390-1392 and 1430-1432 MHz bands.

IV. NVNG MSS SHARING WITH PMRS

Option 3 proposes that NVNG MSS share with PMRS in both the NVNG MSS uplink band at 1390-1392 MHz and the NVNG MSS downlink band at 1430-1432 MHz. The Parties believe that the NVNG MSS should be able to share with PMRS. The PMRS operational characteristics should be compatible for sharing with NVNG MSS feederlink ground stations. Moreover, there will be a very limited number of NVNG MSS ground stations, and they will very likely be located in remote areas. In the 1390-1392 MHz band, the remotely located NVNG MSS feeder uplinks would not impact PMRS operations, which would presumably be concentrated in urban areas. The remote

[22] *See* M.M. Davis, SETI Institute, "Characteristics of Radio Astronomy Receivers Relevant to the Rejection of Emissions in Adjacent and Nearby Bands", US TG 1/7-1Rev2, 2/22/01.

location of the NVNG MSS ground stations would also facilitate easy avoidance by mobile PMRS terminals operating in the 1430-1432 MHz band.

NVNG MSS downlink transmissions in the 1430-1432 MHz band will be operating at the very low NVNG MSS pfd at the ground of –154 dB(W/m^2/4kHz), which will avoid harmful interference to the PMRS systems operating in the same band. Sharing these bands with the land mobile service, therefore, appears to be an ideal sharing situation for both services.

V. FOUR MEGAHERTZ OF SPECTRUM SHOULD BE ADEQUATE FOR LITTLE LEO FEEDER LINKS IN THE UNITED STATES

Allocation of two megahertz in each direction for NVNG MSS feederlinks in the 1.4 GHz bands should be adequate for the existing and currently planned Little LEO systems in the United States. The worldwide allocation was originally planned for three megahertz in each direction in order to ensure flexibility for licensing in countries around the world. However, at the current time, two contiguous megahertz in each direction appears to be adequate for operations in any individual country, including the United States, for the currently forecast systems. In order that a compromise may be reached, the Parties accept the allocation of four megahertz proposed in Option 3 as adequate in the United States.

VI. THERE IS A CLEAR AND COMPELLING PUBLIC INTEREST IN ADOPTION OF OPTION 3

NVNG MSS telecommunications systems are uniquely suited to the provision of low-cost, near real time, high quality data information services to consumers and governments as well as companies in the transportation, environmental, utility, oil and gas, agribusiness, automotive and other industrial sectors. These services include personal and business messaging services, such as paging and e-mail, voice mail, file

transfers, mobile asset management and tracking, remote monitoring and control, data acquisition, environmental monitoring and disaster communications.

The low-cost global reach of NVNG MSS systems addresses many critical service needs not met by other technologies. Ground terminals can be equipped with global positioning systems ("GPS") receivers to provide quick, accurate low-cost positioning information for all types of cargo shipping containers, rail cars, barges and trucks. Terminals also can be equipped with microprocessors for data monitoring and control. With these terminals, users can monitor crop conditions and feed supplies on large farms, climate conditions at weather stations, water quality conditions, utility usage, consumable supplies in vending machines and copy machines, point-of-sale reports from retail stores, and a wide variety of inventory management data. Unlike the digital and broadband services that are now being deployed in the large metropolitan centers of the United States, NVNG MSS telecommunications systems enable low-cost access to such services as e-mail, pager messaging, remote meter reading, and asset tracking by customers located in rural and thinly populated areas that are currently underserved, or served only at high cost, by existing or planned wireline and terrestrial wireless communications systems.

NVNG MSS systems provide global coverage utilizing smaller satellites in lower orbits and less complex, less costly technology elements both in space and on the ground. As a result, NVNG MSS systems are extremely economical to build, launch, operate, communicate with, and maintain.

In its recent *WMTS Order*, the Commission noted that "a domestic allocation for Little Leo feeder links would be of little value without an international allocation due to

the international nature of this service."[23] To the contrary, a domestic allocation is necessary at this time to ensure that the international allocation will be forthcoming. At least a "primary" domestic allocation must be made to NVNG MSS to demonstrate unequivocally to other nations that the United States government will make the same commitment to support the NVNG MSS industry as it so successfully encouraged numerous other nations to make at WRC-2000.

Abandonment of the United States efforts to obtain this spectrum allocation for NVNG MSS would damage the credibility of United States advocacy efforts, erode international support, and possibly doom to failure any further effort to obtain international allocations for NVNG MSS in this band.[24] It could also raise questions internationally about United States support for the United States satellite industry. Due to the difficulty of finding spectrum suitable for global allocations, and the long lead times needed to perform and obtain approval of technical studies for such allocations, any action that chills domestic and international support for a global allocation for NVNG MSS feeder links may preclude any other global allocations for NVNG MSS service.

Under these circumstances, the public's interest in the broad range of economical and widely geographically available services offered by NVNG MSS will be harmed if all of the efforts expended over the past several years to obtain international NVNG MSS feeder link allocations are allowed to fail after they have been so successful in the international arena. The Commission should not undermine these efforts now but

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23 *See WMTS Order* at ¶21.

24 Any further undermining of the United States position on allocation of the 1429-1432 MHz band for downlink feeder links necessarily will have the same impact on international support for allocation of the companion 1390-1393 MHz band for uplink feeder links.

instead should, and can, support them with a domestic primary allocation to the NVNG MSS.

VII. CONCLUSION

For the reasons stated above, the Parties respectfully request the Commission to adopt Option 3 and amend the Table of Allocations at Section 2.106 to allocate a total of four megahertz of spectrum in the 1390-1392 MHz and 1430-1432 MHz bands on a primary basis for NVNG MSS feeder link operations.

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March 8, 2001

CERTIFICATE OF SERVICE

I, Beatriz Viera, hereby certify that a true and correct copy of the foregoing **Comments,** on behalf of Final Analysis Communication Services, Inc., Leo One Worldwide, Inc., and Orbital Communications Corporation was delivered by hand or regular mail this 8th day of March 2001, to the individuals on the following list:

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