Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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Federal Communications Commission
Office of Secretary

In the Matter of	)	
	)	
Rulemaking to Amend Part 25 of	)	
the Commission's Rules to Establish	)	IB Docket No. 96-220
Rules and Policies Pertaining to the	)	
Second Processing Round of the	)	
Non-Voice, Non-Geostationary	)	
Mobile Satellite Service	)	

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COMMENTS OF E-SAT, INC.

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Executive Summary

The small amount of spectrum available for licensing to the second processing round of the Commission's Non-Voice, Non-Geostationary Mobile Satellite Service makes it imperative that the Commission adopt rules for the service which foster efficient use of the available spectrum. To this end, the Commission should adopt a rule or policy to accommodate spread-spectrum systems, such as E-SAT, which can operate co-channel with other users in a given frequency band without causing those users harmful interference. The Commission must license systems, such as E-SAT's, which, because of their technical characteristics, are not mutually exclusive to current licensed NVNG MSS systems or to the other pending second round applicants.

In this proceeding, the Commission should utilize the rules and policies it has applied over the years to license as many applicants as possible and avoid mutual exclusivity. This approach maximizes competition and ensures that the marketplace, not the Commission, determines winners and losers. The Commission further can utilize its past policies of not assigning additional spectrum to systems which have not fully implemented their constellations. Thus, the Commission should restrict spectrum assignments in this round to the new second round applicants. However, the Commission should maintain both the existing licensees' applications as well as the unfulfilled portions of the second round applications on file, so that additional spectrum allocated at future WRCs can be assigned to this group. This approach will ensure that both existing licensees and new licensees will have an incentive to work together to obtain additional spectrum allocations.

Because of the serious international consequences of auctioning licenses for global satellite systems, and because the Commission has the means to avoid auctions, the Commission should not utilize auctions in this proceeding. Finally, however, the Commission assigns licenses, it should not utilize an auction to assign a license to E-SAT, which is not mutually exclusive with any existing licensee or applicant.

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To: The Commission

COMMENTS OF E-SAT, INC.

E-SAT, Inc., by its attorneys, hereby submits its comments in the above-referenced proceeding. E-SAT is an applicant in the Commission's second processing round of the Non-Voice, Non-Geostationary Mobile Satellite Service (NVNG MSS).[1]

As an initial matter, E-SAT notes that the Commission has made no allowance in its Notice for applicants which are capable of sharing spectrum with other users and thus are not mutually exclusive with other applications. As discussed herein, E-SAT has proposed a CDMA system which will operate at a power level which is so low that it will not cause interference to other systems. As such, E-SAT is not mutually exclusive with any other proposed system and can be

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[1] See Application of E-SAT, Inc., File No. 26-SAT-P/LA-95.

granted a license as soon as service rules are adopted. In these comments, E-SAT proposes rules that will enable the Commission to accommodate spectrum-efficient CDMA systems and avoid mutual exclusivity for at least one of the pending second round applicants.[2]

I. Introduction

The Commission has an opportunity in this proceeding to define the future of satellite licensing and take a step forward in enabling the provision of innovative new global satellite services. Crucial to the successful resolution of these challenges is a careful balancing of both international and domestic considerations, including:

- the need to accommodate spectrum-efficient technologies such as CDMA;
- the desire for a vibrant and competitive NVNG MSS industry offering a variety of innovative and valuable services;
- the urgent need for additional allocations for NVNG MSS;
- the need for U.S. leadership in promoting spectrum management and regulatory policies that foster the continued growth of the Little LEO industry and the U.S. satellite industry in general; and
- the importance of maintaining certainty and order in the regulatory process by utilizing long-standing Commission policies and processing methods to avoid mutual exclusivity.

It is possible for the Commission to resolve this proceeding in a way that realizes all of these goals. In these comments, E-SAT proposes several changes to the rules proposed by the Commission which build on firmly rooted policies that have aided the U.S. satellite industry in the introduction of innovative services and competitive systems.

E-SAT proposes that the Commission take the following steps with regard

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[2] See infra p. 11 - 12.

to the second NVNG MSS processing round:

1. License applicants, such as E-SAT, that are not mutually exclusive with other applicants.
2. License as many of the pending applicants as possible and allow the marketplace to determine which services and which service providers should survive.
3. Provide an incentive for pending second-round applicants and current licensees to work together with the U.S. government to obtain additional international spectrum allocations for this service.
4. Show international leadership by utilizing long-standing policies to avoid mutual exclusivity. *Under no circumstances should auctions be used to assign licenses for NVNG MSS.*

II. The Commission Should Not Use Auctions to Assign Licenses for NVNG MSS

A. Auctions Are Inappropriate for Global Satellite Systems Such As NVNG MSS.

In keeping with long-standing Commission policy in satellite licensing, the Commission should reconfigure the proposed band-plan to accommodate all four pending second-round licensees. Although the Commission is authorized to use auctions under § 309(j) of the Communications Act, the Act requires the Commission "to continue to use engineering solutions, negotiation, threshold qualifications, service regulations, and other means in order to avoid mutual exclusivity in application and licensing proceedings."[3] Reconfiguring the proposed band plan would be in keeping with the mandate of §309(j) as well as long-standing Commission policy to avoid mutual exclusivity.

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[3] Communications Act of 1934, as amended, 47 U.S.C. § 309(j)(6)(E).

The Commission should make every effort to avoid auctioning licenses for global satellite systems. As noted in the comments of the Satellite Industry Association, filed on this day, auctions will lead to a number of invidious effects on the Satellite Industry, the U.S. economy and the American public including:

- a net outflow of revenue from the U.S. economy due to sequential auctions
- a loss of U.S. leadership in satellite policy as companies seek licenses in other countries to avoid the threat of auctions;
- an increase of *a priori* planning of spectrum, increasing the difficulty of obtaining international allocations for U.S. satellite systems and resulting in a highly inefficient use of spectrum.[4]

Given the universal opposition to spectrum auctions from the satellite industry, the ease with which the Commission may avoid mutual exclusivity in this processing round, and the unavoidable problems that satellite spectrum auctions will cause, the Commission should not, under any circumstance, use auctions to assign NVNG MSS licenses.

Auctions are particularly inappropriate for NVNG MSS due to the fact that, unlike other services in which auctions have been used or proposed, Little LEOs will not be granted exclusive use of the spectrum acquired at auction. As noted previously, Little LEOs will share spectrum with existing users. If auctions are used, this will create the bizarre outcome of having two operators using the exact same spectrum with one having paid for the use of the spectrum and the other not. It will actually penalize an entity for making more intensive use of the spectrum. This is directly contrary to the stated goal of § 309(j) to foster the "efficient and intensive use of the electromagnetic spectrum."[5]

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[4] Comments of the Satellite Industry Association, IB Docket 96-220 (filed December 20, 1996) at 3.

[5] 47 U.S.C. § 309(j)(3)(D).

In addition, because the spectrum is shared and not exclusive, it will be impossible for Little LEOs to accurately value the spectrum for which they will be bidding until after inter-system and inter-service coordination is complete. Because Little LEOs will share spectrum with incumbent services, they must coordinate with both satellite and terrestrial users *all over the world.* Coordination is likely to be much more difficult than it has traditionally been for the fixed satellite service. Licensees will not know how much spectrum they will be allowed to use, in what parts of the world - or even the U.S. - they will be allowed to use it, or the conditions of use until well after auction payments are due. It is literally impossible to value the spectrum in advance of coordination.[6] An inaccurate valuation at auction could easily lead to the financial failure of a licensee, which would delay service to the public.

Although the argument may be made that this uncertainty will be reflected in the price bid at auction, such a statement is based on very tenuous assumptions. In order for the uncertainty described above to be reflected in the price bid at auction, the uncertainty must be quantifiable. The uncertainty in coordination, however, is so great that one could not tell in advance whether a discount of 10-percent or 90-percent is appropriate. The chance of misjudging the discount is great and could have disastrous results on even the most careful bidder. Simply put, the uncertainty related to coordination *cannot be quantified with any reasonable accuracy.* Even the most well-informed bidder cannot access

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[6] As an example, although AMSC was licensed in 1989 and began operation of its MSS system over a year ago, coordination of the 28 MHz of spectrum which it is authorized to use in the upper L-band has not been completed. In fact, the Commission announced in an NPRM released on June 18, 1996 that "it is unlikely that we will be able to coordinate more than 10 to 12 MHz in the upper L-band." Establishing Rules and Policies for the Use of Spectrum for Mobile Satellite Service in the Upper and Lower L-band, IB Docket No. 96-132 (released June 18, 1996) at ¶ 9.

the information needed to properly discount the value of the spectrum because this information will not be available until coordination is well underway. It certainly will not be available in advance of an auction. The exchange of information necessary for an efficient distribution of licenses cannot occur because the uncertainties of coordination rob potential bidders of the information needed for a proper valuation of licenses.

This uncertainty is an unconscionable burden to place on use of spectrum which is already occupied by two incumbent operators, neither of which were required to pay a single dollar for their licenses. The Commission should focus on fostering the growth of this new service and should not burden it with unnecessary expenses and unreasonable financial strains by subjecting it to auctions, especially when these auctions can easily be avoided.

B. The Commission Should Encourage the Use of Spectrum Efficient Technology that Avoids Mutual Exclusivity.

In its Notice, the Commission has failed to address how its auction authority, as set out in § 309(j) is limited to instances of mutually exclusive applications, it of the Communications Act, can be applied to a spread spectrum system that does not interfere with other applicants. Such systems share spectrum with existing users and are not mutually exclusive with those systems.[7] Because the Commission's auction authority, as contained in section 309(j), cannot be applied to a spread spectrum system. E-SAT, for instance, proposes to overlay its signal on either Starsys or the remaining licensees. E-SAT's application is therefore not mutually exclusive with any other application and can be licensed as

[7] Spread spectrum systems do require coordination in order to ensure no interference is caused to other users, or received from other users, but such coordination would be necessary with *any* licensee. Spread spectrum systems accomplish this goal without excluding other users from the bands in which they operate.

soon as service rules are adopted. If § 309(j) really is to be used simply to resolve mutual exclusivity, and not to create some sort of property right in the license acquired, the Commission may not use auctions to assign licenses to spread spectrum systems that share spectrum with existing or planned users. The Commission should encourage the shared use of spectrum, since such use results in the same intensive and efficient use of spectrum which lies at the heart of the theory on which auctions are based.[8]

The market forces on which the Commission relies to produce an efficient allocation of resources fail in the case of NVNG MSS spectrum. The "property right"-oriented licensing structure created by the use of auctions fails to accommodate technologically innovative and spectrally efficient techniques such as CDMA and encourages inefficient use of the spectrum. The Commission should address this failure by allowing the licensing of non-interfering, non-mutually exclusive spread spectrum systems.

C. The Commission Should License As Many Systems As Possible.

Most applicants agree, and market estimates confirm, that demand for NVNG MSS services will be sufficient to support all of the currently proposed systems.[9] The limiting factor on NVNG MSS services is spectrum availability, not

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[8] See Implementation of Section 309(j) of the Communications Act Competitive Bidding, 8 FCC Rcd 7635 (1993) at ¶ 34, noting that "*Absent market failures*, the parties that value licenses the most should generally best serve the public and make rapid and efficient use of the spectrum." (emphasis added).

[9] A document prepared as part of the Industry Advisory Committee preparatory work for WRC-97 estimates the potential market for Little LEO services will reach $5.5 billion by the year 2002. Draft Contribution to Section 2.1 of the IWG-2A Report - Demand and Demand Growth for NVNG

(continued...)

market demand. If pending applications are dismissed or if the current spectrum is auctioned, the Commission will destroy the progress these applicants have made in developing their systems as well as their incentive for continuing to fight for international allocations of spectrum. This, in turn will inhibit the ability of these and other companies to enter the service as effective competitors in the future. By forcing mutual exclusivity in the present and choosing one or two providers, the Commission will sacrifice competition in the future, harm this infant industry and sharply curtail user choice.

The decision regarding which and how many competitors are to go forward should be made by the market, not by the Commission. The Commission simply does not have the information needed to choose which applicants should be allowed to compete in the market. In addition, an auction which is based on temporary or artificial mutual exclusivity will distort the market and limit competition unnecessarily.

Because of this short-term scarcity of spectrum, the Commission should make every effort to avoid mutual exclusivity. Several of the pending applicants have indicated their willingness to work together to resolve any short-term mutual exclusivity and are continuing their efforts to avoid mutual exclusivity to this day. All licensing options should be considered carefully before the Commission acts on the pending applications. As noted above, not only will licensing as many applicants as possible increase competition and service offerings, it will give the U.S. the best chance of obtaining additional allocations at WRC-97.

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[9](...continued)
Services, submitted by Final Analysis, Inc., 17 September, 1996 at 2. Another study estimates a market of roughly 4.5 million subscribers by the year 2003. The Market for Mobile Satellite Services: Prospects for LEOs and GEOs, Leslie Taylor Associates (Phillips Business Information, Inc., 1994) at 247.

III. How the Commission Can Avoid Mutual Exclusivity: Proposed Licensing Rules

A. The Commission Should Apply its Policies To Enable it to License as Many Systems as Possible

The Commission can resolve this processing round of applicants for licenses in the NVNG MSS by utilizing the methods it has successfully employed in the past to promote competition in the provision of satellite service as well as to ensure prompt implementation of service to the public. The Commission, through the years, has sought to maximize the resources available for applicants,[10] and license all qualified applicants, in order that the marketplace, not the Commission, determines which systems succeed and which systems fail.

As discussed in the section of these comments which addresses the Commission's analysis of the Little LEO market, it is neither necessary nor relevant for the Commission to attempt to determine how many systems are needed for effective competition. Rather, it is more important that the Commission attempt to accommodate as many qualified applicants as possible, and to process applications expeditiously. The Commission can then work with its licensees on coordination with each other and with government users, as well as on obtaining additional frequency allocations. It is in these areas that the Commission's expertise and assistance is vitally needed.

Just as it has in the case of domestic fixed-satellites,[11] Big LEOs[12] and the

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[10] See Reduced Orbital Spacing, 54 R.R.2d 577 (1983).

[11] See Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service, 50 Fed. Reg. 35228 (August 30, 1985) ("1985 Assignment Order").

first round of Little LEO applications,[13] the Commission should adopt baseline qualifications, such as financial rules, to ensure that licensed systems can be implemented in a timely fashion, and technical rules, including spectrum utilization plans (as with Big LEOs), which enable it to license as many of the applicants as possible.[14]

In the instant case, the Commission has taken several steps towards the goal of eliminating mutual exclusivity and permitting the licensing of as many qualified systems as possible. E-SAT, with some modifications, supports the Commission's proposal to eliminate the first round licensees from eligibility for more spectrum, the Commission's rule on affiliates, the adoption of strict financial standards, and adoption of spectrum utilization plans which will permit the licensing of multiple systems. However, E-SAT proposes that the Commission modify its spectrum utilization and licensing approach to take into account licensing a CDMA system, which E-SAT proposes. Accommodating a CDMA system such as the one E-SAT proposes will maximize the use of the spectrum available for NVNG MSS, including spectrum already allocated for use by an existing licensee, GE STARSYS, and/or spectrum specifically identified as available for the second round applicants.

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[12](...continued)

[12] Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610 - 1626.5/2483.5 - 2500 MHz Frequency Band, 9 FCC Rcd 5936 (1994) ("Big LEO Order").

[13] Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum for Fixed and Mobile Satellite Services for Low-Earth Orbit Satellites, 8 FCC Rcd 1812 (1993) ("Little LEO Order").

[14] See e.g. Reduced Orbital Spacing, supra note 15 at ¶ 1. See also Big LEO Order, at ¶ 1 in which the Commission describes its decision to avoid mutual exclusivity and adopt a technical sharing solution: "[W]e believe our decision will promote participation by the greatest number of applicants in an expeditions time frame."

B. The Commission Must Adopt Rules Which Permit It To License an Additional CDMA System

E-SAT, Inc. proposes to provide its service using spread spectrum techniques. Because this method of operation results in a very low power density, E-SAT will operate without causing interference to other NVNG MSS systems, either CDMA or FDMA, and without causing interference to government systems.[15] The Commission must modify its proposed spectrum sharing options to take into account a CDMA system such as E-SAT's. In this regard, E-SAT proposes that the Commission permit a CDMA system which will operate at a power flux density in both directions of -150 $dBW/m^2/4kHz$ or below, operate on a shared basis in the bands which are currently licensed and proposed for licensing in the current processing round, without the need for a dedicated, segmented, spectrum assignment.

Similarly, E-SAT's unique use of its feeder links should be accommodated in the Commission's policies and rules. E-SAT's use of frequencies for feeder links will be limited to the polar regions and will utilize earth stations with high gain antennas. In addition, the power levels will be close to that of E-SAT's user links. Consequently, E-SAT will be able to avoid interference to either user or feeder link stations of other MSS systems which may be licensed to use the same frequency bands.

The Commission already has stated its policies concerning coordination between licensees, including coordination between first round licensees and future licensees. As the Commission stated in adopting rules for the first round NVNG

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[15] In fact, the power levels at which E-SAT will operate are below the receive threshold of the licensed or applied-for systems. See Consolidated Reply of E-SAT, Inc., dated April 10, 1995, Attachment A. E-SAT's Amendment will also comply with its proposed PFD requirement.

MSS systems, Section 25.142(b)(3) "requires licensees and permittees, at the Commission's request, to cooperate fully in the coordination and accommodation of future systems."[16] In addition, the Commission went on to state that "[a]mong code division multiple access (CDMA) spread spectrum licensees, we anticipate the identification of the existing licensee's code family, the pre-selected codes and maximum number of simultaneous transmissions in a service area."[17] This approach should be maintained with regard to the second round, just as in the First NVNG MSS Licensing Order.

As the Commission develops its licensing and service rules for the second round applicants, it must ensure that a CDMA system such as E-SAT's will be accommodated in the licensing scheme.[18] E-SAT's approach will permit efficient use of the limited spectrum available for NVNG MSS.

C. If the Commission Utilizes an Auction to Assign Licenses, E-SAT's Application Should be Granted Outside Such a Proceeding

As discussed above, because the grant of a license to operate its system would not preclude the grant of any other license, E-SAT should be granted a license regardless of how the Commission decides to license other applicants in this proceeding. E-SAT's proposal is not mutually exclusive with that of any other applicant. E-SAT's system will operate without any impact on other systems. If the Commission conducts a competitive bidding process to assign licenses, it

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[16] Little LEO Order, at ¶ 9.

[17] Id., at note 14.

[18] In the case of the Big LEO MSS systems, the Commission determined that up to four CDMA systems could operate in the same spectrum. Two systems, TRW's Odyssey and GLOBALSTAR, are licensed and currently engaged in system coordination. See, Big LEO Report and Order, at ¶¶ 44 (CDMA system sharing); 61 (CDMA system coordination); and 62 (CDMA and TDMA/FDMA system coordination).

cannot and should not include E-SAT in such a process, as E-SAT is not mutually exclusive with the other applicants.

D. The Commission Should Consider Alternatives to its Spectrum Plans

In its NVNG MSS Notice, the Commission proposed three alternative spectrum plans, to accommodate three NVNG MSS systems in the second processing round.[19] These plans propose varying amounts of spectrum and a diversity of sharing and coordination arrangements required with current NVNG MSS licensees, international systems, and U.S. government users. None of the plans would accommodate a CDMA system such as E-SAT's. In addition, Little LEO system-1 provides so little spectrum that it is difficult to envision how any of the NVNG MSS applicants could implement even an interim system if limited to the bands proposed.

E-SAT expects that alternative spectrum proposals will be made to the Commission in response to the proposals in the Notice. As with the need to accommodate E-SAT's CDMA system, E-SAT urges the Commission to consider fully the alternative spectrum plans submitted. Using one or a combination of the alternatives, along with making available a range of spectrum for E-SAT's CDMA system, could make it possible for the Commission to grant all four pending applications in the second round.

E. The Commission Should Provide Qualified Applicants with Partial Grants Only.

Because the amount of spectrum available for this processing round is so limited, the Commission should not attempt to dispose of the pending applications

[19] Notice at ¶¶ 45-77.

in their entirety. Rather, the Commission should assign spectrum segments to licensees, based on their proposed system characteristics (such as modulation), and maintain the applications on file so that additional spectrum can be assigned to this processing round if more allocations are made at WRC-97. Such an approach will enable the pending applicants to proceed with their systems and will ensure that both the existing licensees and pending applicants will have an incentive to work together to seek additional spectrum at WRC-97.[20]

F. The Commission Should Allocate and Assign the WRC-95 Spectrum to This Processing Round.

The Commission could lessen the current scarcity of spectrum immediately by freeing up the spectrum allocated to NVNG MSS at WRC-95. Although E-SAT proposed in its Petition for Rulemaking that the Commission make this spectrum available for licensing in the current processing round, the Commission took no action in its Notice to implement this allocation. No purpose is served by letting this spectrum lie unused by NVNG MSS, particularly when the service to which this spectrum is allocated is desperately in need of additional spectrum. In adopting licensing rules for NVNG MSS the Commission should make available the WRC-95 allocations.

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[20] In the Big LEO proceeding, the Commission kept the processing round open to address requests for feeder link assignments. See Big LEO Order, at ¶ 169. This was because the international allocations for the spectrum to be used by the feeder links had not yet been made. Also, in the geostationary MSS proceeding, the Commission did not reopen the processing round, even though the frequency band which was ultimately allocated for MSS was different from that for which most of the applicants had applied. Amendment of Parts 2, 22, and 25 of the Commission's Rules to Allocate Spectrum for and to Establish Other Rules and Policies Pertaining to the Use of Radio Frequencies in a Land Mobile Satellite Service for the Provision of Various Common Carrier Services, 2 FCC Rcd 1825 (1986).

G. The Commission Should Limit Access to Future Allocations to the Current Pool of Licensees and Applicants.

In licensing the first-round applicants, the Commission reiterated its belief that allowing entry of competitive systems "has always been a major concern" in licensing the NVNG MSS service.[21] The Commission refused to place limits on the spectrum assigned to first-round licensees, however, because it anticipated that additional spectrum "should become available for use in 1997 and beyond, and the majority of the spectrum that will be non-exclusively assigned to licensees can be used by future licensees as well."[22] Thus, the Commission recognized as far back as 1993 that additional spectrum should be assigned to new licensees. In keeping with this policy, the Commission should reserve WRC-95 spectrum and any additional allocation obtained at WRC-97 for all current licensees and pending applicants in the NVNG Mobile Satellite Service. By doing this, the Commission will ensure that healthy competition will exist in the satellite market by ensuring that its licensees have sufficient spectrum to ensure their success as effective competitors.

Such an approach is not unprecedented. As recently as June of this year the Commission proposed licensing the entire lower L-band - not just to one service, but to one licensee, AMSC.[23] The Commission proposed to license other systems only if the estimated spectrum requirements for AMSC were met.[24] The Commission proposed assigning this spectrum to a single licensee without opening the allocation to competing allocations because of its desire to ensure that the

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[21] NVNG MSS Licensing Order, 8 FCC Rcd 8450 (1993) at ¶ 20.

[22] Id. at ¶ 21 (footnotes omitted).

[23] Establishing Rules and Policies for the Use of Spectrum for Mobile Satellite Service in the Upper and Lower L-band, IB Docket No. 96-132 (released June 18, 1996) at ¶ 1.

[24] Id. at ¶ 10.

existing licensee had sufficient coordinated spectrum to operate its system.[25]

H. The Commission Should Exclude Current Licensees from Spectrum Assignments at this Time But Maintain the Pendency of Their Applications.

Similar to E-SAT's proposal that the Commission maintain the second round applications on file following the grant of spectrum now available, the Commission should not dismiss the applications of the current licensees. However, E-SAT supports the Commission's proposal to assign spectrum at this time to the second round applicants only.[26] This approach will enable additional NVNG MSS systems to implement their systems, at least in part.

Maintaining the pendency of the original licensees' applications will also recognize that both their systems as well as those of the second round applicants can benefit from future spectrum allocations. This approach will ensure that both the first round licensees and second round applicants have a common incentive to work for additional spectrum at WRC-97. After WRC-97, the Commission can assign spectrum to both the second round applicants and the first round licensees, to the extent spectrum has become available.

E-SAT also supports the Commission's determination that affiliates be

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[25] See Id. at ¶¶ 13, 14, noting that "the public interest requires that a Commission license carry with it some reasonable expectation that it will permit the holder to implement its system. Otherwise applicants and licensees -- as well as their investors and potential customers -- may be unwilling to commit the significant resources necessary to implement proposed systems, and this will have a chilling effect on the introduction of new services to the public."

[26] This is consistent with Commission policies not assigning additional spectrum or orbital locations to applicants which had not fully implemented their initially authorized systems.

considered as one applicant. As the Commission has pointed out, the licensing of affiliates would not be likely to increase competitive offerings in the NVNG market.[27] However, E-SAT proposes that the Commission apply this rule only in cases where there is de facto corporate affiliation.

I. Financial Qualifications

The Commission proposes, in its Notice, proposes to adopt strict financial qualifications for the applicants in this NVNG MSS processing round.[28] This standard is more stringent than that utilized by the Commission in processing the first round of Little LEO applicants and would require that applicants demonstrate that they have the finances necessary to construct, launch and operate their entire system for one year. This is the same standard that the Commission utilized in the Big LEO proceeding and has utilized for the domestic fixed-satellite service.[29] At least part of the rationale for applying strict financial standards for NVNG MSS in this processing round, according to the Commission, is to ensure that an under-financed applicant does not prevent a capitalized applicant from going forward.

As discussed in Section III, a grant of E-SAT's application will not prevent the grant of any other application in this processing round, and would be unlikely to preclude the grant of future applications. Consequently, the Commission's rationale for utilizing strict financial standards is not applicable to E-SAT. However, E-SAT is ready, willing and able to demonstrate its financial qualifications, under either the existing NVNG MSS financial standard or the Commission's proposed standard and accordingly, will not object to the adoption of

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[27] Notice, at ¶¶ 13-17.

[28] Notice, at para. 40.

[29] See, 1985 Assignment Order, at ¶ 21; Big LEO Order at ¶ 30.

the more stringent standard.

IV. The Commission Should Adopt Rules Which Assure Competition in the NVNG MSS Industry

The Commission has a long-standing policy of fostering competition and increasing the availability and diversity of services available to the public by licensing as many applicants as possible. This policy was recognized by the Commission in its Notice.[30] In applying this policy to Little LEOs, it is important to understand the market which these new satellite systems will serve, rather than develop a static market definition in an effort to determine how many systems are needed to ensure competition.

In its Notice, the Commission proposes to define the market for Little LEO services as a single market which it characterizes as "commercial radio location and two-way data messaging" ("CRL-TWDM").[31] This definition of the potential market for Little LEO services, however, is inaccurate. Although a number of Little LEO applicants promote their ability to provide a wide variety of data and messaging services, it is highly unlikely that the Little LEO industry will depend on customers who demand multiple data and messaging services from one service provider. A single customer is unlikely to require remote meter reading, asset tracking, personal messaging and fleet management all at once. Rather, customers are likely to require one of these applications. A shipping company will need asset tracking, while a truck company will need fleet management. Although these companies may also need personal messaging capabilities, they are unlikely to require remote meter reading capabilities. Likewise, an electric utility will

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[30] Notice of Proposed Rulemaking, IB Docket 96-220 (released October 29, 1996) at ¶ 1.

[31] Notice at ¶ 24.

have little need for asset tracking services.

Little LEO service providers will not succeed by trying to fulfill all the data messaging needs of a wide variety of customers. Instead, they will thrive and serve the public interest by serving specific markets and serving them well. The Commission should ensure that enough flexibility is retained in its licensing rules to allow Little LEO service providers to optimize their systems to serve well-defined markets. A system that targets real-time messaging, where constant satellite availability and very low delay is essential, will have different technical characteristics from a system that seeks to serve the remote meter reading market, where delay is much less important than the cost of each message. Similarly, a system that proposes asset tracking would have to incorporate a position location capability that might make it too expensive for remote meter reading while not providing the ubiquitous coverage needed for real time messaging.

Just as the markets targeted by the Little LEO industry differ greatly, system designs must also vary to meet the differing needs of these markets. *Little LEOs do not and should not all look the same.* Diversity of designs, capabilities and service offerings is essential to promote true competitiveness in the numerous and vastly different markets Little LEOs will serve and to best serve the public's needs. Defining the market, and a system's ability to serve that market, in terms of a broad range of services is inappropriate and could result in rules that impede the ability of Little LEOs to serve *any* market well. It could also result in the inability of this technology to be used for certain services.

It is important for the Commission to realize that although a system may have the technical capability of providing a service, this is not a guarantee that the service can be provided at a price that end users are willing to pay. A system that is designed to provide position location or other real-time services costs more

than a system that does not include these capabilities. In applications where cost is crucial, the added cost a system incurs by including the capability to offer a broad range of services may exclude it from certain price-sensitive markets such as asset tracking and remote meter reading. The marketing difficulties experienced by current MSS licensees attest to the fact that the ability to provide a service does not automatically translate to a willingness on the part of a customer to pay for that service.

The market approach of E-SAT is instructive. E-SAT is focussed primarily on the remote utility meter reading market and does not intend to provide real-time services proposed by other applicants such as asset tracking, e-mail, or personal messaging. Instead, E-SAT has optimized its system design to serve a specific market: low cost, time-insensitive data messaging applications such as the remote meter reading market. E-SAT's compact, low-cost and efficient system is designed to provide its non-real time services at a price point well below that which other applicants will be capable of achieving. E-SAT does not seek to be all things to all customers because it does not believe a system can be optimized to serve both real-time and non-real time markets. As a result of its focus on a specific market, rather than a broad, nebulous market, E-SAT has been working closely with a specific customer base and will be able to address that customer community's needs with technology and a price structure that are suitable for that market. The remote metering market requires very low power devices, small and inexpensive transceivers, and a very low cost per message. This market simply cannot be served by a system that must recover the cost of the additional satellites, hardware and processing required to provide real-time messaging or position location services. E-SAT will not serve every market, but it will serve the non-real time data market extremely well.[32]

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[32] While terrestrial wireless systems can be used to serve some non-real time (continued...)

The following chart depicts the pending applicants and the markets they propose to serve. This chart illustrates the potential for competition in the relevant markets for Little LEO services.[33]

Table 1
Proposed Markets to be Addressed by Current Licensees and Pending Applicants

	Asset Tracking	Real-time Personal Messaging	Remote Meter Reading	Environmental Monitoring	SCADA[34]	Vehicle Messaging
CTA	X	X	X	X	X	
E-SAT			X	X		
Final Analysis	X		X	X	X	X
Leo One	X	X		X	X	X
Orbcomm	X	X	X	X	X	X
GE Starsys	X	X		X	X	X

While this list is not meant to be an exhaustive representation of the potential markets for Little LEO services, it does illustrate the differing business plans being pursued by each company. While some business plans call for a wide service offering, others have chosen to specialize in particular markets.

The Commission should adopt rules that foster multiple systems and

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[32](...continued)
data markets, they cannot be employed in a cost-effective manner in areas where the data to be collected is in a remote or geographically dispersed area. Satellite systems are ideal for such applications.

[33] The information on proposed markets is taken from company marketing brochures, internet sites (when possible) and pending applications.

[34] Supervisory Control and Data Acquisition.