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DOMESTIC FACILITIES DIVISION
SATELLITE RADIO BRANCH

July 3, 1991

Ms. Donna R. Searcy
Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: Application of Ellipsat Corporation,
File No. 11-DSS-P-91(6)

Dear Ms. Searcy:

On behalf of Ellipsat Corporation, I am transmitting herewith an original and four copies of the Opposition of Ellipsat Corporation to Petitions and Reply to Comments with respect to the above-referenced application.

Should there be any questions concerning this matter, kindly communicate with the undersigned.

Very truly yours,

Jill Abeshouse Stern
Jill Abeshouse Stern

Enclosures

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Before the
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Washington, D.C. 20554

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In the Matter of)
)
 ELLIPSAT CORPORATION) File No. 11-DSS-P-91(6)
)
 Application for Authority to)
 Construct Ellipso I, an)
 Elliptical Orbit Satellite)
 System in the 1610-1626.5 MHz)
 and 2483.5-2500 MHz Bands)

OPPOSITION OF ELLIPSAT CORPORATION
TO PETITIONS, AND REPLY TO COMMENTS

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July 3, 1991

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SUMMARY

In this pleading, Ellipsat Corporation opposes and responds to all petitions and/or comments filed concerning its November 5, 1990 application to construct Ellipso I. As detailed in that application, Ellipso I will introduce low-cost radiodetermination and mobile voice services within the United States, using small elliptical orbit satellites operating in the RDSS frequency bands. Coverage and capacity of the initial Ellipso I service would be enhanced, in little more than one year after launch, by Ellipso II. An application for the eighteen enhanced satellites which comprise Ellipso II was filed with the Commission on June 3, 1991.

None of the parties challenging the Ellipso I system has offered any factual or legal justification for denial or dismissal of the Ellipso I application. As Ellipsat shows herein, it has fully complied with all of the Commission's information requirements applicable to domestic satellite applicants and is technically, financially and legally qualified to be a Commission licensee.

Ellipsat fully complies with the technical requirements applicable to use of the RDSS bands, and no evidence to the contrary has been provided. While two parties, Motorola Satellite Communications, Inc. and American Mobile Satellite Corporation, question Ellipsat's technical qualifications, their minor technical criticisms of Ellipso I are unsubstantiated and clearly do not warrant denial of Ellipsat's application.

Nor has any bona fide question been raised about Ellipsat's financial qualifications. Ellipsat is financially prepared to construct, launch and operate the Ellipso I system. Under relevant Commission precedent, Ellipsat has provided evidence of its ability and intent to proceed expeditiously with construction, launch and operation of its Ellipso I system, and it is strongly in the public interest that it be permitted to do so.

The expressed concerns of radio astronomers about operations in the RDSS bands should be rejected. Ellipsat fully complies with Commission requirements relating to protection of radio astronomy service operations in both the 1610-1613.8 MHz and 4990-5000 MHz bands. The unique design of the Ellipso system offers a practical and effective method of protecting radio astronomy observations through a space-and-frequency separation approach, and Ellipsat has initiated discussions with the National Academy of Sciences in an effort to assuage radio astronomy concerns.

The comments of GTE Spacenet and RDSS Inc. both express the same unnecessary concern about protection of future L-Band RDSS systems using in-orbit space segment capacity. Their concern about inter-satellite coordination is premature and speculative. Absent details about the proposed systems, definitive analysis of GTE's fears is impossible. As a general matter, however, Ellipsat has already indicated that it will not interfere with existing or future systems conforming to the RDSS technical

standards, and is willing to coordinate with conforming systems. To the extent that RDSS Inc. opposes Ellipsat's proposal to provide RDSS and mobile voice services as a non-conforming use, Ellipsat has established that a waiver to permit such use would be fully consistent with Commission precedent and would facilitate introduction of new, publicly beneficial communications services.

The comments of Constellation Communications Corporation are primarily concerned with Ellipsat's spread spectrum approach. Constellation professes a desire to ensure that the Commission's multiple entry objectives for the RDSS band are met, Ellipsat fully shares this goal. Spread spectrum technology is the best way to achieve these objectives in the RDSS bands, as the Commission itself has concluded. To the extent that Constellation seeks to reverse the Commission's prior public interest determinations, that is beyond the scope of the Ellipso I application, and a petition for rulemaking is the proper recourse.

Finally, while agreeing with many of the concerns expressed by Comsat about the complexity of Motorola's Iridium system and the international and domestic issues it presents, Ellipsat disagrees that these concerns apply equally to Ellipsat. The Commission has authority under relevant precedent to grant Ellipsat's application now without a rulemaking. Not only does the Commission have authority to proceed without rulemaking, but this approach would serve the public interest by allowing

Ellipsat, and other systems that conform to the existing RDSS technical requirements, to expedite introduction of publicly beneficial services.

In sum, none of the petitions or comments has offered any legitimate reason for denial or dismissal of Ellipsat's application. Nor has any filer carried the statutory burden of proof imposed on one who opposes a new technology or service. Ellipsat has clearly shown that its system is technically sound, will meet user requirements for an introductory system, and that it is prepared to move forward expeditiously with implementation of its proposed service.

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OPPOSITION OF ELLIPSAT CORPORATION
TO PETITIONS, AND REPLY TO COMMENTS

Ellipsat Corporation ("Ellipsat"), by its attorneys, hereby
opposes and responds to the following petitions and/or comments
regarding its above-captioned application for authority to
construct the Ellipso I satellite system: Petition to Dismiss
and/or Deny of Motorola Satellite Communications, Inc.
("Motorola"); Petition of American Mobile Satellite Corporation
("AMSC"); Petition to Deny and Comments of the Committee on Radio
Frequencies of the National Academy of Sciences ("NAS"); Comments
of RDSS Inc. ("RDSS Inc."); Comments of Constellation
Communications, Inc. ("Constellation"); Comments of GTE Spacenet
("GTE"); and Comments of Communications Satellite Corporation
("Comsat").

I.

INTRODUCTION AND SUMMARY

On November 5, 1990, Ellipsat filed the first application for a low earth orbit satellite system using frequencies in the RDSS bands. In that application, Ellipsat described its plan to introduce low-cost radiodetermination and mobile voice services within the United States, using small elliptical orbit satellites operating in the 1610-1626.5 MHz and 2483.5-2500 MHz bands. The November 5, 1990 application requested authority to construct Ellipso I, the initial phase of the Ellipso satellite system, consisting of six satellites. Designed for rapid and cost-effective deployment, Ellipso I would provide initial commercial service within two years following Commission authorization. Coverage and capacity would be supplemented rapidly by Ellipso II, consisting of eighteen additional elliptical satellites with enhanced capabilities. Ellipso II would complete the system constellation and provide enhanced coverage of the United States in little more than one year after introduction of initial service. An application for Ellipso II was filed with the Commission on June 3, 1991.¹

¹ The June 3, 1991 application will be referred to as the "Ellipso II Application." Ellipsat's November 5, 1990 application will hereinafter be referred to as the "Ellipso I Application."

The Ellipso I application was accepted for filing on April 1, 1991.² Seven parties subsequently filed petitions and/or comments relating in whole or in part to the November 5, 1990 Ellipso I application.³ None of these pleadings provides any justification whatsoever for dismissal or denial of Ellipsat's application. Nor has any party carried the statutory burden imposed on those who oppose a new technology or service "to demonstrate that such proposal is inconsistent with the public interest."⁴ As shown herein, Ellipsat has fully complied with all of the Commission's information requirements applicable to domestic satellite applicants,⁵ and is technically, financially and legally qualified to be a Commission licensee.

In essence, the Motorola and AMSC petitions seek to raise questions about Ellipsat's technical qualifications. No factual or legal support has been offered, however, for their respective arguments. Ellipsat fully satisfies the technical requirements applicable to the RDSS bands, and conforms to the spread spectrum

² Public Notice, Report No. DS-1068, DA 91-407 (released April 1, 1991).

³ All of these pleadings were filed on June 3, 1991, with the exception of the RDSS Inc. comments which were late-filed on June 4, 1991. For the Commission's convenience, Ellipsat has consolidated, in this single document, its oppositions and responses to the seven petitions and/or comments relating to the Ellipso I application.

⁴ 47 U.S.C. §157(a).

⁵ See Fixed Satellite Service, Appendix B, 93 F.C.C.2d 1260, 1265 (1983) (hereinafter referred to as "Appendix B"). See also 47 C.F.R. §25.392.

transmission design authorized in the RDSS Licensing Order.⁶ In such cases, the Commission has made clear that it will not second-guess an RDSS applicant's technical assumptions.⁷

Moreover, the minor technical criticisms of the Ellipso system raised by Motorola and AMSC are unproven and, even if valid (which they are not), certainly do not outweigh the public interest benefits of granting Ellipsat's application as soon as possible. Indeed, AMSC's technical criticisms must be disregarded entirely because all of its technical calculations are based on erroneous factual assumptions about Ellipso I that do not take into consideration any of the critical data supplied in Ellipsat's January 30, 1991 Technical Clarification and Erratum. Nonetheless, Ellipsat herein fully addresses each of the challenges to its system raised by Motorola and AMSC, and demonstrates conclusively that its system concept is technically sound and will meet user requirements.

Although Motorola and AMSC also question Ellipsat's resources, Ellipsat has more than established its financial ability and preparedness to construct, launch and operate the Ellipso I system.⁸ Letters of assurance from ITR Group and

⁶ Radiodetermination Satellite Service, 104 F.C.C.2d 650, 60 R.R.2d 298 (1986) ("RDSS Licensing Order"). See also 47 C.F.R. §25.392.

⁷ See, e.g., Geostar Corp., 60 R.R.2d 1725, 1728-29 (1986).

⁸ It bears emphasis that Ellipso I was designed as a modest, rapidly deployable system, and the cost of constructing the satellites is relatively minimal compared to the cost of a geosynchronous system or even a low earth orbit system like

Venture First Associates, two highly regarded investment firms, establish that sufficient funding can and will be arranged for Ellipso I. Indeed, ITR Group has stated, with respect to Ellipsat, that it is "prepared to ensure that all financial goals are met." Ellipsat is thus fully capable of implementing its system and promptly providing service to users, consistent with existing precedent.

With respect to the concerns of the radio astronomers, Ellipsat believes that a practical accommodation can be reached between the respective needs of the radio astronomers and Ellipsat. Discussions with NAS have already been initiated to that end. At present, the radio astronomy service has secondary status in the 1610.6-1613.8 MHz band.⁹ Nonetheless, Ellipsat has proposed to protect radio astronomy observations by placing transmissions from its mobile units completely outside the 1610-1613.8 MHz band, and locating its fixed ground control stations in the 1610-1613.8 MHz band outside the six zones centered on the six radio astronomy sites identified in Appendix D of the RDSS Allocation Order.¹⁰ Discussions are ongoing, and Ellipsat is hopeful that the radio astronomer's concerns can be met.

Iridium.

⁹ See 47 C.F.R. §2.106 n.734.

¹⁰ Radiodetermination Satellite Service, 58 R.R.2d 1416, 1434 (1985), clarified, 104 F.C.C.2d 637, 60 R.R.2d 245 (1986) ("RDSS Allocation Order"). Since Ellipsat uses the band to serve the ground stations as well as the mobiles, this method of protection can be achieved.

GTE and RDSS Inc. express concern about protection of possible future, undefined L-Band RDSS systems using in-orbit space segment capacity. Their concern about intersatellite coordination is premature and speculative at this point. Ellipsat has clearly stated that it will not interfere with future systems that conform to the RDSS technical standards set forth in Part 25 of the Commission's Rules. Consistent with Commission policy, Ellipsat is prepared to coordinate any technical differences with any and all such conforming systems. Without adequate information about the specific systems contemplated by GTE and RDSS Inc., however, a definitive analysis of their concerns is impossible. Contrary to the arguments of RDSS Inc., formal reallocation proceedings are not required under relevant Commission precedent, and grant of the Ellipso I application can and should be expedited under the requested waiver approach.

Constellation's primary concern appears to be with ensuring that the Commission's multiple entry objectives are met in the RDSS band. Ellipsat fully shares this goal. In fact, the Ellipso system is designed to permit licensing of multiple, competing systems in the RDSS bands. To the extent that Constellation questions the efficacy of the spread spectrum techniques used by Ellipsat to achieve the Commission's multiple entry objectives, such issues are more appropriately raised in the context of a petition for rulemaking to re-examine the Commission's policy determination that a spread spectrum design

"best assures that the benefits of a competitive marketplace are made available to RDSS users."¹¹

While endorsing use of the 1610-1626.5 band for ". . . Ellipsat type systems,"¹² Comsat essentially argues that the Commission should institute a rulemaking to consider the issues raised by Motorola's Iridium application. Ellipsat agrees with many of Comsat's concerns about the complexity of Motorola's Iridium system and the international issues it presents. But these concerns do not apply to Ellipsat, or require rulemaking before grant of its application. Rulemaking would potentially delay introduction of a new service, and is unnecessary in Ellipsat's case. The Commission has a regulatory option that would present a timely and effective solution, namely to authorize Ellipsat and other systems that conform with the Part 25 technical standards under a waiver approach. As detailed in prior Ellipsat filings¹³ and herein, this approach is fully consistent with Commission precedent.¹⁴

In sum, Ellipsat is fully qualified technically, legally and financially, to be a Commission licensee as fully demonstrated in its application and herein, and nothing in the petitions or

¹¹ RDSS Licensing Order, 104 F.C.C.2d at 654, 60 R.R.2d at 302 (1986).

¹² Comsat Comments at 13.

¹³ Ellipso I Application at 38-39 n.5; Ellipso II Application at 48; Ellipsat Reply Comments at 9, General Docket 89-554 (filed January 8, 1991).

¹⁴ See, e.g., Qualcomm, Inc., 4 F.C.C. Rcd 1543 (1989).

comments demonstrates otherwise. The Motorola, AMSC and NAS petitions should be promptly dismissed or denied; the comments of RDSS, Inc., GTE, Constellation and Comsat should be rejected; and the Commission should move forward expeditiously with grant of Ellipsat's application and introduction of the publicly beneficial service it proposes.

II.

OPPOSITION TO MOTOROLA PETITION TO DENY AND/OR DISMISS

A. Ellipsat has Fully Satisfied the Information Requirements for Domestic Satellite Applications

Motorola asks dismissal of Ellipsat's application on the grounds that the application is incomplete.¹⁵ Contrary to Motorola's contention, Ellipsat has fully satisfied the information requirements for domestic satellite applications, and is entitled to consideration of the merits of its application.¹⁶

¹⁵ Motorola Petition at 4.

¹⁶ Ironically, Motorola attacks Ellipsat for purported omissions in its application, while Motorola itself has failed to meet a requirement fundamental to any petition to deny: its petition is not supported by an affidavit, as required by the Communications Act and Commission rules. See 47 U.S.C. §309(d)(1). This deficiency requires dismissal of Motorola's filing as a formal petition. See KHVH, Inc., 77 F.C.C.2d 890, 894, 47 R.R.2d 833, 834 (1980); Los Angeles License Renewals, 68 F.C.C.2d 75, 42 R.R.2d 1459 (1978). If the Commission should decide to address Motorola's substantive arguments, nonetheless the filing should be treated as no more than an informal objection. See 47 C.F.R. §25.154(b)(1). See also K & L Communications, Inc., 70 F.C.C.2d 1987, 1989 n.3, 45 R.R.2d 187, 189 n.3 (1979).

In its petition, Motorola purports to identify various information requirements which it alleges have not been addressed by Ellipsat. Review of Motorola's specific examples, however, reveals that Motorola's allegations are wholly unsubstantiated. Motorola has failed to identify any substantial omissions and, indeed, has invented deficiencies in some cases. In fact, Ellipsat has provided meaningful responses to the Commission's information requirements for satellite applicants, and has fully described all pertinent technical and operational aspects of its system.

In Exhibit A hereto, Ellipsat responds to, and refutes, each alleged deficiency cited by Motorola. One example will suffice here to establish the exaggerated nature of Motorola's charges. In its petition, Motorola claims that no information has been provided by Ellipsat about in-orbit or on-ground spares.¹⁷ In its application, however, Ellipsat clearly states that there will be no spares.¹⁸ Thus, even though spares are not required, nor even proposed in this instance, Motorola has sought to imply that somehow Ellipsat's application is deficient in this regard.

Although Motorola alleges that Ellipsat's application is "devoid of any information" about salient features of its system, a point-by-point review of each claimed omission demonstrates the reverse. Contrary to Motorola's contentions, Ellipsat has

¹⁷ Motorola Petition at 9.

¹⁸ See Ellipso I Application at Appendix A.

provided information responsive to each of the following information requirements: the size and capability of the Ellipso I satellites (Appendix A), the total DC and RF power allocation (Appendix A), link budgets (Appendices B and H), baseline earth station parameters (Appendix B, Sections B, C and D), eclipse capability (Exhibit I), specific milestones (system proposal at 32; individual satellite applications at 3), financial statements (Appendices D and E), power flux density (Appendices A and B), electrical energy system description (Exhibit I to individual satellite applications), and TT&C (Application at 30-31). In short, there is no factual basis for Motorola's unsubstantiated and irresponsible claim that Ellipsat's application is "devoid of any information" concerning the foregoing items.

In its application, Ellipsat made a diligent and conscientious effort to answer all of the Commission's filing requirements as fully and completely as possible.¹⁹ Dismissal of applications at the threshold stage is reserved for applications that are "so patently violative of the rules as to

¹⁹ Ellipsat requested a waiver of Appendix B to the extent that it did not satisfy the applicable requirements. See Ellipso I Application at 41.

make processing a futile gesture."²⁰ In contrast, Ellipsat has provided complete information about its system, and no material or substantial omission in its application has been demonstrated by Motorola.

B. Ellipsat is Technically and Financially Qualified to Be a Commission Licensee

1. Ellipsat is Technically Qualified

Motorola bases its challenge to Ellipsat's technical qualifications on various minor criticisms of the Ellipsat system design. As detailed below, not only are the criticisms unfounded, but they are so insignificant as to raise questions about the propriety of Motorola's motives.²¹ Clearly, none of

²⁰ K & L Communications, Inc., 70 F.C.C.2d 1987, 1989, 45 R.R.2d 187, 188-9 (1979). The Commission has never required applications to be letter perfect. It is well-established in this regard that substantial completeness, not total completeness, is the standard for acceptability. See Roanoke Christian Broadcasting, Inc., 47 R.R.2d 1067 (1980). See also K & L Communications, 70 F.C.C.2d at 1989, 45 R.R.2d at 188. ("[T]he Commission's procedures do not contemplate processing only fault-free applications.")

²¹ The pettiness of Motorola's criticisms is surprising. In reviewing Motorola's application, Ellipsat noted a number of technical deficiencies. However, in its June 3, 1991 petition to deny or dismiss Motorola's application, Ellipsat focused only on fundamental deficiencies of Motorola's system from a technical and regulatory standpoint. In thus focusing its petition, Ellipsat acknowledged the practical reality that the Motorola satellite system, like any satellite system, will be subject to additional review and analysis during the research and development process before a final configuration is achieved. Ellipsat assumed that Motorola's contractors and/or consultants would identify and correct the minor technical deficiencies, and therefore did not want to waste the Commission's time by raising them.

Motorola's points, individually or collectively, provides a basis for dismissal or denial of Ellipsat's application.

To start with, Motorola's attack upon the Ellipsat system must be evaluated in light of the minimal technical standards applicable to the RDSS bands. In the RDSS area, the Commission has made clear that it will not involve itself in disputes relating to an applicant's technical assumptions, including such matters as antenna gains and link budget analyses.²² In this regard, the Commission recognizes that an RDSS applicant's technical assumptions necessarily "rest on balances among system cost, capacity and performance and involve engineering and business judgments based on many factors including market conditions, available technology and the amount of risk the operator is willing to incur."²³ The Commission has therefore declined to mandate specific system parameters or coding schemes, relying instead upon permittees to coordinate any technical differences.²⁴

Given the minimal technical standards applicable to the RDSS bands, and the Commission's desire to facilitate introduction of new technologies, the scope of technical review by the Commission is necessarily limited. Motorola has not shown -- as it

²² Geostar Corp., 60 R.R.2d at 1728.

²³ Id.

²⁴ Id. at 1729 n.11. See also RDSS Licensing Order, 104 F.C.C.2d at 662, 60 R.R.2d at 307.

cannot -- that the Ellipso system violates any specific technical requirements. Moreover, each of its specific technical criticisms of Ellipso I is easily refuted and does not provide a sufficient basis for denial of Ellipsat's applications.

a. Ellipsat's Coverage Will Meet User Requirements

In its petition, Motorola questions the coverage provided by the Ellipso I system.²⁵ Coverage is not relevant, however, in the context of a petition to deny.²⁶ With respect to coverage, Ellipsat has consistently maintained that Ellipso I is a limited, introductory system, designed to implement initial commercial service on a rapid basis and permit development and testing of the system concept. As envisioned, Ellipso II would enhance U.S. coverage within a relatively short period of time.²⁷ Ellipsat has, in fact, applied for the 18 additional Ellipso II satellites, effectively mooting Motorola's concerns.

²⁵ Motorola Petition at 11-13.

²⁶ See Lipper-LaRue, 60 R.R.2d 1482, 1485 (1986).

²⁷ In its November 1990 application, Ellipsat made clear that the Ellipso II system was being described for informational purposes, and to place Ellipso I within the context of the entire domestic satellite constellation. Reference should be made to Ellipsat's June 3, 1991 application for full details about Ellipso II.

The FCC has not mandated any minimum coverage requirements in the RDSS bands. Nor is coverage a comparative criterion.²⁸ Coverage is a matter of business judgment and marketplace demand, and Ellipsat is properly entitled to conclude, on the basis of its business judgment, what coverage the marketplace needs. It believes that the Ellipso I system, consisting of six satellites, will meet user requirements for an introductory system. Periodic vehicle position updates, for example, may be available at least every 50 minutes, depending on satellite phasing and clustering.²⁹

In its Ellipso I application, Ellipsat estimated that a user would have an average of 20 minutes of uninterrupted service every hour.³⁰ To confirm this estimate, Ellipsat has undertaken an extensive review of its satellite coverage in conjunction with its consultant, Spectrum Research, Inc. Spectrum Research, Inc. has extensive experience in the research and development of small satellite technology, primarily for the military, and has a high

²⁸ If the FCC should adopt comparative or other criteria in the future, Ellipsat would be permitted to amend its application to conform with any requirements and policies that may be adopted for satellite systems in the relevant bands. See Public Notice at 3, Report No. DS-1068, DA 91-407 (released April 1, 1991).

²⁹ In this regard, Motorola's belief that two Ellipso satellites must be in view of the user to obtain an accurate RDSS solution is incorrect. (Motorola Petition at 12-13). The range and Doppler frequency measurements from only one satellite, made at two or more different times using the principles discussed in the Ellipso I application for Geobeacon, can provide the desired RDSS solution consistent with the Ellipso I system design.

³⁰ Ellipso I Application at 7.

level of expertise in optimizing low earth orbits for specific coverage areas. In reviewing the Ellipso satellite coverage, Spectrum Research used a custom designed computer program, specific to Ellipsat's applications, that is capable of analyzing 2,500 points over the U.S. from a coverage standpoint. This program enabled Spectrum Research to determine the percentage of time the satellite is in view from the best location (maximum) and the worst location (minimum).

For Ellipso I (as described in the application), the maximum coverage is 50% and the minimum is 26%. This means that the satellite will be in view for 30 minutes per hour from the best location. The average coverage (averaged over 2500 points within the U.S.) is 39% or 23 minutes per hour. These numbers are consistent with the projections in the Ellipso I application.³¹

In sum, Ellipsat has accurately stated the coverage of the Ellipso I system. Though a limited, introductory system, Ellipso I will provide near-term and needed service to the public. Ellipso II will provide enhanced coverage (essentially 100%). Regardless of the actual system coverage, however, the critical points are that no statute or regulation exists that specifies a minimum coverage standard, and that Ellipsat believes, on the

³¹ The availability of service is dependent on the "clustering" of the satellites within each plane and the phasing of the planes relative to each other. If necessary to accommodate business objectives, the coverage can be enhanced by minor changes in orbit design. The Commission has "consistently noted the dynamic nature of the satellite industry and changes or improvements . . . are not to be discouraged." Geostar Corp., 60 R.R.2d at 1728 n.8.

basis of its business judgment, that the Ellipso I system will meet user requirements for an introductory system.

b. Ellipsat's Spacecraft Design Fully Satisfies Commission Requirements

Motorola's technical criticisms about the Ellipso I spacecraft design lack relevance and accuracy, and do not provide any sufficient basis for denial of Ellipsat's application.

Motorola contends that the Ellipsat S-Band antenna would be physically blocked by the satellite.³² To the best of Ellipsat's knowledge, there is no more than minimal satellite blockage associated with the wide beamwidth antenna.³³ In undertaking its desired antenna patterns, Ellipsat will consider the effect of the spacecraft body in the near field zone of the antenna. The final space station design configuration will be determined by detailed engineering analysis, computer simulation and testing. However, based on Ellipsat's calculations, any blockage that might occur would be insignificant.

Motorola also points out that the satellite will traverse the Van Allen radiation belt. Ellipsat is fully aware of the

³² Motorola claims, without any support, that the satellite is physically unstable. (Motorola Petition at 16.) Ellipsat has consulted with the satellite manufacturer who supplied the technical description and has been assured that the satellite is stable throughout the orbit.

³³ The S-Band transmit antenna should be located on the bottom of the spacecraft, not at the top as depicted in Figure 10 of the Ellipso application. It should also be pointed out that the sketch of the Ellipso I space station is not drawn to scale, and this may have caused Motorola's confusion.

potential radiation effects of the Van Allen belt, and has accounted for those effects by assuming a shorter useful satellite lifetime of less than 5 years.

Motorola has also challenged Ellipsat's spacecraft antenna pattern.³⁴ The antenna pattern defined in the Ellipso I application was developed to meet coverage contour and user requirements. Ellipsat has consulted with qualified antenna manufacturers and experts, and has been assured that the antenna pattern can be accomplished by forming two separate beams. The antenna pattern/eirp coverage is a system requirement and Ellipsat, during negotiations with its suppliers, will develop the preferred way of meeting this antenna pattern/eirp coverage requirement.³⁵

c. Ellipsat Complies With Applicable International Radio Regulations

With respect to power flux density, Motorola asserts that Ellipsat does not comply with ITU Regulation 2557 regarding RDSS downlink frequencies.³⁶ Motorola bases its conclusion in this

³⁴ See Motorola Petition at 16.

³⁵ Motorola states that errors exist in Ellipsat's link calculations (Motorola Petition at 15 n.17). In fact, there is a typographical error in the path loss for the mobile to GCS link. (Ellipso I Application at Appendix B.) However, the overall link calculation numbers are correct, and provide for an adequate margin. If Ellipsat had made the calculations using the typographical error, then the margin would have been higher than the 7.4 dB stated.

³⁶ Motorola Petition at 13.

regard solely on Appendix A of the Ellipso I application in which Ellipsat indicates that the power flux-density will exceed -154 dBw/m²/4kHz at 5° elevation, but that the PFD limits for other elevations will comply with international regulations. The information for 5° elevation in the Ellipso I application was incorrectly stated. The correct number is -155 dBw/m²/4kHz at 5° elevation angle. Due to the antenna beam falling off and increased slant range, the ITU PFD requirements can be met at the 5° elevation angle. Thus, the Ellipso system fully complies with the power flux density limits, for all elevation angles, set forth in ITU Regulation 2557.

2. Ellipsat Is Financially Qualified

Motorola's challenge to Ellipsat's financial qualifications is similarly without merit. In its application, Ellipsat provided all of the financial information required by Appendix B.³⁷ It provided a detailed schedule of the estimated investment costs and operating costs for the proposed system by year including annual depreciation, maintenance and operating costs, and estimated annual revenue requirements over the design lifetime of the satellites.³⁸ Ellipsat also provided documentation establishing that it would be able to meet the

³⁷ See Appendix B, 93 F.C.C.2d at 1267 ¶I.

³⁸ Ellipso I Application at 33-36; id. at Appendices D & E.

estimated cost of constructing, launching and operating the Ellipso I system for one year.³⁹

In questioning Ellipsat's qualifications, Motorola implies that the Commission requires detailed information about Ellipsat's "capitalization and that of its major shareholders" to evaluate Ellipsat's financial qualifications.⁴⁰ Ellipsat provided a balance sheet and operating statement appropriate for a newly formed company in its Ellipso I application. A more recent balance sheet and operating statement, reflecting the company's intervening growth, were submitted with the Ellipso II application on June 3, 1991. Ellipsat has made clear, however, that it does not intend to use existing assets to finance the system, contrary to Motorola's implication. Motorola's assertions are totally misguided in this regard. Ellipsat plainly stated that it would rely upon debt and equity financing for its system.⁴¹ In addition, Ellipsat indicated that pre-sale of capacity options could be an additional source of revenue.⁴²

³⁹ See id.

⁴⁰ Motorola Petition at 17.

⁴¹ See Ellipso I Application at 33-36.

⁴² Because pre-sale of capacity, and system revenues, are not the sole source of funding for the system, Motorola's concerns about Ellipsat's business plan (Motorola Petition at 20-21) and its attack upon the underlying assumptions are misplaced. Ellipsat does not rely totally on a perceived market of users with digital cellular telephone equipment as Motorola contends. Ellipsat also based its projections on other users who will purchase a combined satellite/terrestrial unit.

To demonstrate the availability of adequate funding, in both its Ellipso I and Ellipso II applications, Ellipsat supplied letters from Venture First Associates, the Southeast's largest high technology venture capital fund, and from ITR Group, a highly regarded investment and merger acquisition group specializing in the communications industry. ITR Group has extensive experience in arranging debt and equity financing for communications and high technology ventures. These two financial companies are eminently qualified to provide their opinions, as they did, that sufficient debt and/or equity financing can be arranged for both phases of the Ellipso system. ITR Group has stated that it is "prepared to ensure that all financial goals are met through a variety of financial instruments, including equity and debt."⁴³ As evidence of its support for the project, Venture First subsequently agreed to become an equity investor in Mobile Communications Holdings, Inc., Ellipsat's parent company. In addition, KPMG Peat Marwick has been retained as an additional financial advisor. (See Exhibit B hereto.)

Under well-established Commission precedent, applicants may rely on debt and/or equity financing to demonstrate financial ability. Where equity financing is proposed, for example, the Commission has permitted an applicant to submit a letter from an investment banking firm expressing the opinion that a successful

⁴³ Ellipso II Application at Appendix E. A copy of the ITR letter appended to Ellipso II Application is attached hereto as Exhibit B.

public offering of equity and equity-related financings could be made.⁴⁴ The October 26, 1990, and June 3, 1991, letters from Venture First and ITR Group, similarly establish that Ellipsat is financially qualified to construct, launch and operate the Ellipso system.⁴⁵

It is also well-established that financial qualifications must be considered in the context of the specific service to be provided.⁴⁶ In the RDSS area and other new services, the Commission has taken a more flexible approach than in other areas to establishing financial qualifications, and has not required applicants to demonstrate current ability to finance their entire system.⁴⁷ As the Commission has correctly recognized, in a new

⁴⁴ See Advanced Mobile Phone Service, Inc., 91 F.C.C.2d 512, 517, 52 R.R.2d 735, 740 (1982).

⁴⁵ Although Motorola has challenged Ellipsat's financial qualifications, questions could be raised about its own qualifications in that regard. Motorola has proposed to rely solely on internal resources. (Motorola Application at 115.) Admittedly, Motorola is a company with substantial assets. However, Motorola has not met the relevant test of financial qualifications based upon Appendix E of its application. It submits only a 1989 Annual Report for the parent company reflecting inadequate "net liquid assets" to cover the \$3 billion costs of constructing, launching and operating its system. See Advanced Mobile Phone Service, Inc., 91 F.C.C.2d at 516 52 R.R.2d at 740.

⁴⁶ RDSS Licensing Order, 104 F.C.C.2d at 663, 60 R.R.2d at 308.

⁴⁷ See id. at 307-309. The Commission there stated that "RDSS is a new, innovative and as yet unproven service and applicants without substantial internal assets may have difficulty obtaining the large amounts of financing necessary to construct, launch and operate these systems." Id. at 308. For this reason, the Commission found it "desirable to permit licensees to obtain financing for their project in stages." Id. at 308. Scrutiny of financial qualifications has been eliminated

service, some flexibility with regard to the showing of financial qualifications is necessary to encourage technical innovation.

In sum, Ellipsat is fully prepared to ensure that service is promptly made available to users. It is financially qualified to construct, launch and operate its satellite system for one year, and Motorola has not provided any evidence to the contrary.

III.

OPPOSITION TO PETITION OF AMERICAN MOBILE SATELLITE CORPORATION

In its petition, American Mobile Satellite Corporation ("AMSC") seeks to dismiss or deny Ellipsat's November 5, 1990 application, primarily on the alleged ground that Ellipsat's application is technically deficient and speculative. The AMSC filing suffers from a fatal defect that renders evaluation and meaningful discussion of its arguments virtually impossible: all of its calculations are based on erroneous data about the Ellipso system, and do not take into account Ellipsat's January 30, 1991 Technical Clarification.⁴⁸

or de-emphasized in other satellite services with no apparent adverse affect. See Satellite Communications Services, First Report and Order at 5, CC Docket No. 86-496, FCC 91-136 (released May 21, 1991).

⁴⁸ To the extent that AMSC questions Ellipsat's business plan, the discussion above, at pp. 18-22, fully addresses AMSC's concerns. It is noteworthy that, even in the case of a licensed system like AMSC, financing arrangements for the spacecraft were not concluded until nearly two years after licensing.

Throughout the technical appendix to AMSC's petition, assumptions and calculations are made on the basis of erroneous and out-dated information about the Ellipso I system. For this reason, virtually all of AMSC's comments about Ellipso I must be disregarded. In its January 1991 submission, for example, Ellipsat revised its link budget analysis, interference analysis, and spacecraft description, among other items. It appears that AMSC's technical consultant did not have access to or did not choose to acknowledge the correct system parameters.⁴⁹

⁴⁹ Ellipsat notes an additional defect in the AMSC filing. AMSC's pleading (which combines a rulemaking petition and petitions to deny the Motorola and Ellipsat applications) would appear to violate Commission Rule 1.44. Rule 1.44 requires separate pleadings for different requests. Although AMSC contends that all of its requests require Commission action, action upon Ellipsat's application would be presumably undertaken by delegated authority. See 47 C.F.R. §§0.91 & 0.291. Even if the AMSC petition satisfies the letter of Rule 1.44, however, it violates the spirit of that provision. By combining multiple pleadings, AMSC placed the burden on Ellipsat to sort through AMSC's various arguments and distinguish those arguments applicable to Ellipsat alone. AMSC also created an erroneous implication that the Motorola and Ellipsat systems are similar, when, in fact, there are significant and fundamental differences between Ellipso and the Iridium system. Among the distinctions are: the use of spread spectrum (CDMA) technology by Ellipsat in contrast to Motorola's use of TDMA, Ellipsat's same direction operation in compliance with current rules (in contrast to Motorola's bi-directional use of the L-Band, an exception to the present rules), and, most importantly, the fact that Ellipsat's system alone is designed to conform to existing technical requirements for use of the RDSS Bands.

A. Ellipso Complies With
Applicable Power Flux Density Limits

AMSC contends that Ellipso I will exceed emission power limits. (Technical Appendix at 2). It is apparent from AMSC's Table 1, however, that pre-clarification system parameters have been used. For example, AMSC assumes an antenna input power per channel of 100 watts (20 dBW) when, in fact, Ellipsat has specified a transmitter power of less than 1 watt (0 dBW). (Technical Appendix at 5). Obviously, these erroneous factual assumptions about the Ellipso system totally destroy AMSC's ultimate conclusions. In fact, using the clarified Ellipso I parameters, Ellipsat will fully comply with the applicable power flux density limit of - 3 dBW at 4 kHz.⁵⁰

With respect to PFD limits in the 2483.5-2500 MHz band (Table 3), AMSC again bases its conclusions on an incorrect assumption about Ellipso's eirp. While AMSC bases its analysis upon an estimate of 20 dBW eirp per channel from the satellite, the correct figure is 4 dBW (see Appendix B of Ellipso I application.) If AMSC had used the correct assumptions, it would have correctly concluded that Ellipsat fully complies with the applicable PFD limits.

⁵⁰ Ellipsat has assumed a further small reduction in eirp (2-3 dB) from the ground control stations, which can be achieved by a minor adjustment to the system with no significant effect on the link performance margin.

B. Ellipso Will Not Cause Harmful Interference

AMSC's analysis of interference with respect to operation of the Ellipso system (Technical Appendix at 11-30) must be disregarded in its entirety. It appears that AMSC never considered Ellipsat's interference analysis submitted as Appendix H in its January 1991 clarification. As Ellipsat clearly detailed in Appendix H, the Ellipso system is fully compatible with existing and future users of the RDSS bands who conform with existing technical requirements.

AMSC expresses concern that Ellipsat could interfere with fixed service users. As noted, Ellipso would meet flux density requirements on the ground as specified by international radio regulation 2557. AMSC's conclusions to the contrary are based on wrong assumptions about Ellipso's power flux density as reflected in Table 4 (Technical Appendix at 15).⁵¹

As to GLONASS, AMSC again relies on faulty assumptions about Ellipso. For example, Table 6 (Technical Appendix at 19) assumes an Ellipsat uplink eirp of 47.1 dBW, while the correct figure is 16 dBW per user. As a result, AMSC overestimates the interference potential. As detailed in Appendix H to Ellipsat's

⁵¹ Although AMSC refers to CCIR Report 382-6, it is not readily apparent what bearing this report has on Ellipsat's operation. The CCIR Report is not a formal recommendation and is not being proposed as the basis for any changes in the international radio regulations. It is noteworthy that the Ellipso system is a domestic system and the international regulations would be relevant only in those unusual instances where there may be some "spill-over" into foreign countries with fixed receivers operating in the RDSS bands.

application, there are no GLONASS receivers believed to be presently operating in the United States and, even if there were, any interference would be minimized because both systems use CDMA.⁵²

Although AMSC claims that Ellipsat would cause interference to GEO MSS systems, it bears emphasis that no obligation exists for Ellipsat to demonstrate compatibility with AMSC or other proposed GEO MSS systems. Nor has AMSC identified any such requirement. Ellipsat fully complies with the existing technical requirements for use of the RDSS bands which only require protection of existing and future conforming RDSS systems. AMSC is clearly not in this category. As Ellipsat documented in its application (Appendix H), its Ellipso system is fully compatible with conforming systems.⁵³

⁵² The Commission itself indicated, in its WARUC Report, Gen. Docket No. 89-554, FCC 91-188 (released June 20, 1991) that it has been unable to determine the extent of GLONASS operations above 1610 MHz or to assess the potential for interference to GLONASS in the 1610-1626.5 MHz range. Id. at para. 41.

⁵³ AMSC suggests that the Ellipso and Iridium systems have a number of apparent reliability problems (Technical Appendix at 46-55). AMSC's discussion does not distinguish between Ellipso and Iridium. The two systems are very different, and cannot be equated in this fashion. In any event, AMSC's contentions about Ellipso are based on erroneous pre-clarification assumptions and must be disregarded. This is also true of AMSC's calculation of Ellipsat capacity projections (Technical Appendix at 56-58 and Table 13) which uses incorrect assumptions about Ellipso's operation.

Two minor points merit mention. First, AMSC's criticism of Ellipso's "adapter" (Technical Appendix at 62-3) is unfounded. Based on discussions with potential manufacturers, Ellipsat believes that an "add-on" device, which consists of an RF upconverter, antenna and synchronization device, and associated electronics, could be developed at the projected cost. In

IV.

OPPOSITION TO PETITION TO DENY AND
REPLY TO COMMENTS OF THE COMMITTEE ON RADIO
FREQUENCIES OF THE NATIONAL ACADEMY OF SCIENCES

A. Ellipso Can Protect Radio Astronomy
Operations in the 1610-1613.8 MHz Band

The Ellipso system can fully protect the radio astronomy service, and discussions have already been initiated to assuage the concerns of the National Academy of Sciences in this regard. The National Academy of Sciences on behalf of its Committee on Radio Frequencies ("NAS") objects to Ellipsat's system primarily on the ground that Ellipsat has not persuaded the Committee that the Ellipso system, which proposes to utilize 1610-1626.5 MHz for its uplinks, "can protect radio astronomy observation in the 1610.6-1613.8 MHz band from harmful interference. . . ."

That is not the legal standard that RDSS applicants must meet. The Commission, in authorizing the RDSS service, specifically refused to elevate radio astronomy to a primary service, and explicitly denied as unnecessary the Academy's petition for rulemaking to effect that objective.⁵⁴ As the

addition, as noted above, Ellipso users will be able to use either the adapter or a universal satellite/cellular unit. Second, Ellipsat is mystified by AMSC's claim that its system will not provide "true" RDSS. (Technical Appendix at 66). AMSC's apparent basis for this statement is the visibility of the Ellipso satellites. This is really a coverage/availability issue, not a question of the system's service offering. Moreover, as fully discussed above at 14 n.29, two satellites in view are not required to provide reliable position location.

⁵⁴ See RDSS Allocation Order, 58 R.R.2d at 1419-20.

Commission recognized in the 1985 RDSS Allocation Order, the measure of protection for radio astronomy is that "urged" in Footnote 734 to the Table of Frequency Allocations, to wit:

The band 1610.6-1613.8 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations. In making assignments to stations of other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).⁵⁵

The Commission did not resolve the question of specific "technical standards" to protect the radio astronomy service in the RDSS Allocation Order. A definitive resolution, the order implied, was premature, particularly in light of the "preliminary agreement" between Geostar and the NAS (Appendix D thereto), which, the Commission believed, could "serve as a basis whereby RDSS service can be offered without serious interference problems between the two services."⁵⁶ In the 1986 RDSS Licensing Order,⁵⁷ the Commission adopted technical standards in light of the then-pending applications, including "a provision in Part 25 indicating that RDSS operations are subject to the provisions of

⁵⁵ 47 C.F.R. §2.106 n.734 (emphasis added).

⁵⁶ RDSS Allocation Order, 58 R.R.2d at 1419.

⁵⁷ 104 F.C.C.2d 650.

Appendix D . . . "58 The resulting Section 25.392(g) of the Rules specifically recognized, however, that the Commission might adopt further policies and rules at a later date.

The precise terms of Appendix D, which the Commission itself recognized as only "preliminary,"59 have no particular continuing validity with respect to different systems, other than as evidence that a practical accommodation can be reached between the respective needs of the radio astronomers and the RDSS operators. It is on that basis that Ellipsat represented in Appendix H to its application, as revised on January 30, 1991, that it had "initiated discussions with the National Academy of Sciences and is prepared to enter into an agreement comparable to that reached by the National Academy and Geostar."

NAS itself recognizes the inefficiency of the Appendix D approach. The Geostar approach is less than 20 percent efficient from the radio astronomer's point of view.60 In fact, a more practical and effective method to protect radio astronomy observations than the 200-millisecond "silent period" used by Geostar is now available through the unique design of the Ellipso system. Since Ellipso utilizes the full 1610-1626.5 MHz band for uplink transmissions, it can selectively place the transmissions from mobile units completely outside the 1610-1613.8 MHz of

58 Id. at 668.

59 RDSS Allocation Order, 58 R.R.2d at 1420.

60 NAS Comments at 3 n.3.

interest to the Committee. Moreover, since the Ellipso system requires only six ground control stations (GCS), these can be placed outside the six zones centered on the six radio astronomy sites identified in Appendix D.

Ellipsat believes that the radio astronomers' concerns can be fully met through techniques such as the space-and-frequency separation approach described above. While the Ellipso I system fully complies with Commission requirements, and is thus grantable, discussions with NAS are ongoing in an effort to reach a mutually agreeable accommodation.⁶¹

B. Ellipso Complies With Commission
Requirements For Protection of Radio
Astronomy Operations in the 4990-5000 MHz Band

NAS expresses concern that the second harmonic of the service downlinks in the 2483.5-2500 MHz band may interfere with the primary allocation of 4990-5000 MHz for astronomical continuum studies. The NAS comments do not question the fact

⁶¹ Any out-of-band emissions from Ellipso mobile units operating within the six coordination zones can be controlled through filtering. The $-237 \text{ dBW/M}^2/\text{Hz}$ flux limitation recommended by NAS for out-of-band emissions (NAS Comments at 5) has never been adopted by the Commission. Nor is it a formal international recommendation or requirement.

NAS concerns about signalling downlinks in the 1610-1626.5 MHz band can also be readily assuaged. The Ellipso spacecraft is not equipped to provide any downlinks in the band 1610-1626.5 MHz, and Ellipsat does not propose to use downlinks in that band. On page 11 of the Ellipsat application, referenced in the Committee's comments, both the L-band signalling subscripts should have been "u," i.e., designating uplink signalling channels.

that the Ellipso system will comply with 47 C.F.R. §2.106 n.US74 ("US74") but the Committee urges that "RDSS operators should be required . . . to provide adequate filtering in the satellite, in order to reduce interference . . . below the levels specified in CCIR Report 224." (NAS Comments at 7). Ellipsat is prepared to fully comply with US74 and in addition "to provide adequate filtering in the satellite" to the extent practicable. The Committee's comments, however, provide neither the basis nor the quantification for a "requirement" in contradiction to U.S. footnote 74.⁶²

V.

REPLY TO COMMENTS OF GTE SPACENET AND RDSS, INC.

A. GTE Spacenet Concerns About L-Band Inter-satellite Coordination Are Premature and Speculative

The GTE Comments are apparently filed for the limited purpose of addressing the discrete issue of L-Band intersatellite licensee coordination. GTE Spacenet does not have any concrete concerns and, in fact, states that sharing between LEO and RDSS

⁶² US74 reads in pertinent part:

In the bands . . . 4999-5000 MHz . . . the radio astronomy service shall be protected from extraband radiation only to the extent that such radiation exceeds the level which would be present if the offending station were operating in compliance with the technical standards or criteria applicable to the service in which it operates.

(emphasis supplied).

systems "does appear feasible."⁶³ However, GTE Spacenet wants broad assurance that Ellipsat (and any other licensees using the 1610-1626.5 MHz band) will be required "to coordinate with GTE Spacenet and/or any entity providing service via the RDSS payloads aboard GTE Spacenet's satellites, to ensure interference-free operations for all licensees operating in this band."⁶⁴

While Ellipsat appreciates GTE Spacenet's desire to prevent harmful interference to potential customers, GTE surely cannot expect the Commission to grant protection absent a demonstration of potential harm. GTE Spacenet was granted authorization to carry receive-only payloads aboard its satellites for the purpose of accommodating Geostar's interim RDSS system. Presumably, to the extent that new customers are involved, a separate blanket license for mobile terminals and appropriate conditions of operation, at a minimum, would need to be considered by the Commission.

Ellipsat has made clear that its system is designed for compatibility with licensed RDSS systems and those systems that meet the technical requirements for RDSS systems previously established by the Commission. To the extent that GTE Spacenet customers meet those parameters, the Ellipsat system and GTE

⁶³ GTE Comments at 2.

⁶⁴ Id.

L-Band payloads should be able to co-exist without harmful interference. As is apparent, however, Ellipsat cannot speculate upon potential users or scenarios. Absent concrete information about the proposed user, or specific concerns about Ellipsat's system, the Commission cannot reasonably be expected to adopt the broad coordination requirement that GTE Spacenet seeks in its comments.

For the foregoing reasons, the Commission should decline to adopt the request of GTE Spacenet that licensees be compelled to coordinate with GTE Spacenet's RDSS payloads. As noted, the proposed use of those payloads is entirely speculative, and certainly cannot be evaluated without specific details of the proposed use and a concrete demonstration of potential harm. Moreover, Ellipsat has expressed willingness to coordinate with conforming systems.

B. RDSS Inc. Has Not Shown Any
Valid Reason to Initiate Rulemaking

RDSS Inc. submitted late-filed comments on Ellipsat's application. RDSS Inc. has not shown good cause for acceptance of its comments. However, even if the Commission should consider the RDSS Inc. comments, it is clear that no concrete facts or arguments have been offered that have any bearing on grant of Ellipsat's application.

RDSS Inc. apparently intends to utilize existing space segment capacity to provide spread spectrum radiodetermination

satellite service. As a potential competitor, RDSS Inc. asserts that grant of the Ellipsat application "would risk prematurely crippling [its] ability...to offer the very RDSS services for which the spectrum is currently and specifically allocated."⁶⁵ Given the undocumented nature of this concern, and the secrecy of RDSS Inc. principals about the proposed operation, Ellipsat cannot provide any detailed analysis of the late-filed charges.⁶⁶

At a minimum, however, Ellipsat objects to the suggestion of RDSS Inc. that Ellipso is a non-RDSS system.⁶⁷ As detailed in its application, Ellipsat proposes to provide radiodetermination and mobile voice services. It believes this usage is consistent with the existing allocation and regulatory scheme. Most importantly, Ellipsat has filed a bona fide application to provide service in contrast to RDSS Inc. which only hints at its plans.

Although RDSS Inc. would prefer that the Commission undertake a time-consuming rulemaking (permitting potential competitors like RDSS Inc. to proceed without administrative delay), this step is clearly not required to accommodate

⁶⁵ Comments of RDSS Inc. at 3.

⁶⁶ The RDSS Inc. comments focus primarily on the Iridium system. Given the significant differences between Iridium and Ellipso, it is not clear that the expressed concerns about interference (RDSS Inc. Comments at 4-8) apply to Ellipso. However, to the extent that the RDSS Inc. comments apply equally to Ellipso, the discussion above at pp. 31-32 about inter-satellite coordination addresses those concerns.

⁶⁷ Id. at 3-4.

Ellipsat's application. As detailed there, the Commission has authority to permit radiodetermination and mobile voice services in the RDSS bands as a non-conforming use, where the public interest is served and no interference would result.⁶⁸ Ellipsat has demonstrated the public interest benefits of providing combined radiodetermination and mobile voice services in the RDSS bands. In this regard, the Geostar experience demonstrates that the marketplace cannot support a "pure" RDSS system. Combined services would provide the economic basis for provision of publicly beneficial RDSS services. Moreover, Ellipsat has demonstrated that no interference would be caused to existing or future systems that meet the baseline technical parameters previously established by the Commission.

Under these circumstances, the Commission should flatly reject the untimely, unsubstantiated and wholly speculative concerns expressed by RDSS Inc., a company whose only apparent interest is to delay or prevent introduction of competing L-Band RDSS systems.

⁶⁸ See, e.g., Qualcomm, Inc., 4 F.C.C. Rcd at 1544; RDSS Licensing Order, 104 F.C.C.2d at 660, 60 R.R.2d at 306.

VI.

REPLY TO COMMENTS OF
CONSTELLATION COMMUNICATIONS, INC.

Constellation's comments reveal a fundamental misunderstanding of the Ellipsat system, and should be rejected.⁶⁹ Constellation's primary concern appears to be the Commission's policies with respect to open or multiple entry. It opposes grant of Ellipsat's application "until it can be demonstrated that this proposed LEO system is in fact consistent with the licensing of multiple, competing LEO systems in the RDSS bands."⁷⁰ Although Constellation discusses the Commission's pro-competitive policies at great length, it is unclear how this general discussion relates to Ellipsat.

Ellipsat shares Constellation's concern with fostering competition in the RDSS bands. Indeed, Ellipsat has emphasized the ability of its system, in contrast to non-CDMA systems, to permit a variety of competitive services and providers consistent with the Commission's public interest determinations underlying the 1986 RDSS Licensing Order.⁷¹ The Commission there found that

⁶⁹ Constellation filed an application on June 3, 1991 in which it seeks concurrent consideration of its Aries low earth orbit satellite system with Ellipsat's application. Concurrently herewith, it filed a petition for rulemaking and comments on Ellipsat's application.

⁷⁰ Constellation Comments at 1.

⁷¹ See RDSS Licensing Order, 104 F.C.C.2d at 659-61, 60 R.R.2d at 305-306. For a complete discussion of the merits of spread spectrum (CDMA) systems in this regard, see Ellipsat's petition to Deny directed against Motorola's application, filed June 3, 1991. To the extent that Constellation urges the

spread spectrum technology would best meet its multiple entry goals in the RDSS bands.⁷² Constellation's attack upon Ellipsat is therefore misguided. If Constellation questions the efficacy of CDMA techniques to achieve the multiple entry objectives envisioned by the Commission, then the proper recourse is a petition for rulemaking. It bears emphasis, however, that the Commission is not required to institute rulemaking absent a conclusive showing that the agency's public interest determinations underlying the 1986 RDSS Licensing Order, including the benefits of spread spectrum technology, are no longer valid.⁷³

Constellation is similarly off-base when it requests scrutiny of Ellipsat's applications "before any decision is made to consider the Ellipsat system as a baseline for LEO systems in the RDSS bands."⁷⁴ Contrary to Constellation's implication, Ellipsat has not requested treatment as the baseline system. The Commission has previously established a baseline system for the RDSS bands, and the burden is on a party seeking to revise

Commission to adopt allocation and licensing policies for the RDSS bands, as described in its June 3, 1991 petition for rulemaking, its comments are not directed exclusively against Ellipsat's application and are more appropriately addressed in the context of the rulemaking petition.

⁷² 104 F.C.C.2d at 661 n.35, 60 R.R.2d at 306 n.35.

⁷³ See, e.g., WWHT, Inc. v. FCC, 656 F.2d 807, 819 (D.C. Cir. 1981).

⁷⁴ Constellation comments at 7.

existing policies to demonstrate that the Commission's prior public interest determinations are no longer valid.⁷⁵

VII.

REPLY TO COMMENTS OF
COMMUNICATIONS SATELLITE CORPORATION

In its comments, Comsat supports use of the 1610-1626.5 MHz band for "Iridium and Ellipsat type" systems.⁷⁶ Nonetheless, it requests a rulemaking to address the "broad issues" raised by the Motorola application.⁷⁷ Although Ellipsat agrees that the Iridium application presents complex domestic and international regulatory issues, it disagrees with Comsat that these concerns apply equally to Ellipsat's application. The Ellipso system can and should be implemented without rulemaking.

⁷⁵ Constellation questions Ellipsat's ability to maintain its antenna gains over a large beamwidth. Ellipsat fully discussed this issue above in connection with the Motorola petition. See discussion, supra at 17. Constellation also objects to Ellipsat's proposed use of L-Band for feeder links. (Constellation Comments at 8.) Ellipsat opted to place the feeder links in L-band to minimize satellite complexity and cost, and to minimize coordination with other satellite and terrestrial systems. Although use of the L-Band for feeder links does not foreclose other compatible systems or limit spectrum efficiency, Ellipsat has made clear that it is prepared to locate its feeder links in a separate band, including the fixed-satellite service bands, if the Commission should so require. Ellipsat has also proposed to locate its fixed feeder links in the 1610-1613 MHz band. This would allow protection of radio astronomy observation sites as discussed above in connection with the NAS comments.

⁷⁶ See Comsat Comments at 13.

⁷⁷ Id. at 2.

Comsat suggests a number of reasons that, in its view, warrant rulemaking. None of these reasons, however, applies to Ellipsat's system. Indeed, Comsat's comments are directed primarily at the novel international and national issues posed by Motorola's global Iridium system, including the need for foreign involvement, the impact on WARC-92 and on the separate systems policy, and the relationship to Intelsat/Inmarsat. Ellipsat agrees that these issues must be addressed. However, Ellipso, which is a domestic system, does not pose the same problems, and can be implemented without foreign government involvement. Moreover, the Ellipso system is less complex from a technical standpoint than Iridium, and is designed to be implemented rapidly and expeditiously using state-of-the-art technology. Subjecting Ellipsat's system to the burdensome process of a rulemaking would add considerable and unnecessary delay to its introduction.

Contrary to Comsat's suggestion, the Commission has authority to grant Ellipsat's application without a rulemaking. Ellipsat has carefully designed its system to conform to the existing technical and allocation scheme applicable to the RDSS bands. Grant of its application would therefore require, at most, a waiver of the Table of Allocations. The Commission has, in the past, expedited the introduction of new technologies in similar situations without the necessity of a rulemaking.⁷⁸ For

⁷⁸ See, e.g., Qualcomm, Inc. 4 F.C.C. Rcd 1543 (1989).

example, it authorized Qualcomm to provide mobile satellite services using fixed satellite capacity as a non-conforming use of the fixed satellite bands. In the RDSS Licensing Order, the Commission authorized waivers for non-conforming uses of the RDSS bands.⁷⁹ Ellipsat has met the test for such a waiver, by demonstrating non-interference and public benefit.

In sum, the Commission has authority to authorize Ellipso's proposed RDSS and voice services as a non-conforming use of the RDSS bands, without need for rulemaking. Not only does the Commission have the requisite authority to proceed without rulemaking, but this approach would, in fact, serve the public interest by allowing systems, like Ellipsat's, to move forward expeditiously with the provision of publicly beneficial services, with a minimum of regulatory delay.⁸⁰

VIII.

CONCLUSION

⁷⁹ RDSS Licensing Order, 104 F.C.C.2d at 661, 60 R.R.2d at 306. See also Qualcomm, Inc., 4 F.C.C. Rcd at 1544; Rural Cellular Service, 58 R.R.2d 517, 519 (1985); DBS Systems, 92 F.C.C.2d 264, 268 (1982).

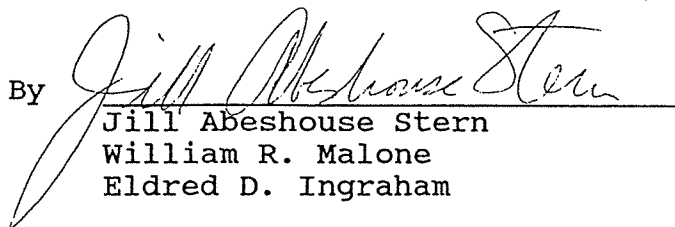
⁸⁰ To the extent that Comsat seeks rulemaking merely to consider the generic issue of low earth orbiting satellites, Ellipsat has previously urged the Commission to reject that approach. Where LEOs are used to provide authorized services, as is the case in the RDSS bands, they are merely an alternative technology or platform for providing already authorized services, not a wholly new service. See Ellipsat Reply Comments at 11, WARUC, Gen. Docket 89-554 (filed January 8, 1991).

For the foregoing reasons, the Commission should promptly dismiss or deny the petitions of Motorola, AMSC and the National Academy of Sciences, and reject the Comments of GTE, RDSS Inc., Constellation and Comsat as they relate to the Ellipso I application. Ellipsat is fully qualified to be a Commission licensee, and the Commission should move forward expeditiously with grant of Ellipsat's application and authorization of the publicly beneficial communication services it will provide.

Respectfully submitted,

ELLIPSAT CORPORATION

By


Jill Abeshouse Stern
William R. Malone
Eldred D. Ingraham

Miller & Holbrooke
1225 19th Street, N.W.
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Washington, D.C. 20036
(202) 785-0600

Its Attorneys

July 3, 1991
MOTOROLA(0261)

EXHIBIT A

EXHIBIT A

Point-By-Point Refutation of Motorola Allegations

In-orbit or On-ground Spares. Motorola claims that no information has been provided about in-orbit or on-ground spares. In its application, however, Ellipsat states that there will be no spares. See Ellipso I Application, Appendix A. For this reason, obviously, no information was required.

Mass and Power Budget. Motorola claims that Ellipsat's application is "devoid of any information" concerning mass and power budget. To the contrary, Ellipsat clearly indicated the size of the Ellipso I satellites (see Appendix A) and provided sufficient information to evaluate the sizing and capability of the satellites. A total DC and RF power allocation for the satellites was provided. As a practical matter, budgetary numbers for weight continually change during the satellite construction process and are not generally fixed until launch.

Service Link Budgets. Ellipsat is unaware of any obligation to provide service link budgets for 5 degree elevation angles. This requirement does not appear in the Commission's Appendix B. Ellipsat provided link budgets for the communication links at stated elevation angles. (See Ellipso I Application at Appendices B and H). Moreover, as indicated in the application, the signalling channels are included within the communications link, and are less controlling than the communications link budget.

Earth Station Parameters. Contrary to Motorola's charges, baseline earth station parameters for both the mobile and the fixed ground stations are provided in Ellipsat's application. See Ellipso I Application at Appendix B, Sections C and D. In addition, baseline parameters are inherent in the link calculations set forth in the Ellipso I Application at Appendix B, Section B. Under FCC rules, concrete applications for communications or TT&C earth stations need not be filed at this stage. See Appendix B, 93 F.C.C.2d at 1270 (Section IV).

Solar Noise Outages and Eclipse Conditions. Exhibit I to Ellipsat's individual satellite applications provides information about the system's eclipse capability. Regarding solar noise outages, Ellipsat considers this to be a relatively minor problem, which will be experienced by all applicants to a varying extent, including Motorola. In the case of Ellipsat, when the sun is in the northern hemisphere and the Ground Control Station (GCS) antenna beam intersects the sun line then for a short-period (seconds) the noise level on the link may increase. The frequency of this occurrence is small, since the satellites have to be both longitudinal and latitudinal in a specific location for this interference to occur. If the level of noise increase is such that it affects the operation, then a second GCS station at another location could be used to act as back-up for the interfered-with GCS. However, Ellipsat is of the opinion that operationally this will not be required, and users will operate

through this short period of link noise increase, which occurs very infrequently.

Service to Hawaii, Puerto Rico and Virgin Islands. Appendix B requires an applicant to describe service if any to Hawaii, Puerto Rico and the Virgin Islands. Contrary to Motorola's contention, the Ellipsat application does provide information about its capabilities in this regard. As clearly stated, during the Ellipso I phase, service will be available to these domestic offshore points, but that coverage will be intermittent. Ellipso II will, of course, enhance the coverage. It should be noted that low orbit systems do not discriminate among geographical areas in longitude, and therefore locations like Hawaii, Puerto Rico and the Virgin Islands which are on similar latitudes to locations in the U.S. will experience similar coverage to those locations in the U.S.

Specific Milestones. Although Motorola claims that Ellipsat has omitted specific milestones, it is readily apparent that significant milestones for the system have been included. (See Ellipso I Application at 32 and individual satellite applications). While it is true that Ellipsat did not include separate dates for issuance of an RFP, selection of a contractor or execution of a construction contract, these dates were all subsumed within the November 1991 date for commencement of construction. As noted, Ellipso I will be implemented on an expedited basis, with construction beginning within two months of Commission authorization. Obviously, selection of a contractor,

financing and execution of a contract would all have to occur before construction commenced. In fact, Ellipsat is presently in discussions with several qualified spacecraft manufacturers in order to be able to commence spacecraft construction expeditiously.

Financial Statements. Contrary to Motorola's claim, Ellipsat did submit a current balance sheet and operating statement in its application. These financial statements were necessarily of a pro forma nature, and were as detailed as possible given the fact that Ellipsat was then a newly formed corporation. Ellipsat made clear that it proposed to rely on debt and equity financing, not on existing assets, to demonstrate its financial qualifications. A more detailed balance sheet and operating statement were submitted as Appendix E to the Ellipso II Application.

Marketing Data for Non-Common Carriers. Motorola claims that Ellipsat's application is devoid of the marketing data required of non-common carriers. Motorola's point is indiscernible. If Motorola's argument is that Ellipsat is required to demonstrate the availability of sufficient common carrier satellite services to the public -- the showing required of domestic fixed satellite applicants who propose to operate as a non-common carrier under established Commission policies⁸¹ -- then this argument is patently frivolous. This requirement is

⁸¹ See Domestic Fixed-Satellite Transponder Sales, 90 F.C.C.2d 1238, 52 R.R.2d 79 (1982).

totally inapplicable to RDSS applicants for the reason that the FCC has designated use of the RDSS bands on a non-common carrier basis.⁸² Ellipsat indicated that it would comply with the current regulatory approach (see Ellipso I Application at 36), but would also be willing and able to operate as a non-dominant common carrier if the Commission should so require.

Space Station Coverage Contours. Contrary to Motorola's claims, space station coverage contours for the satellite system were included in the Ellipso application (page 7).

Saturation Power Flux Density. Ellipsat provided power flux density information. The system does not operate at saturation so saturation power flux density is irrelevant here.

Electrical Energy System Description. The electrical energy system description is provided in Exhibit I to the individual satellite applications.

TT&C. Again, contrary to Motorola's claims, Ellipsat does in fact describe the system's TT&C functions. See Ellipso I Application at 30-31. Ellipsat's TT&C uses well-established techniques for routine command monitoring, spacecraft temperature, power subsystems status and attitude control subsystem. In contrast to systems like Motorola's, which propose a separate band for TT&C, Ellipsat has proposed to provide TT&C within the system's communications band. Ellipsat specifically

⁸² See RDSS Licensing Order, 104 F.C.C.2d 650, 60 R.R.2d 298 (1986).

stated that it was willing to be flexible and to operate in whatever bands the Commission might designate for TT&C functions.

MOTOROLA(0261)

EXHIBIT B

ITR Group, Inc.

June 3, 1991

Ellipsat Corporation
2420 K Street, N.W.
Washington, D.C. 20037

Gentlemen:

On November 5, 1990, Ellipsat Corporation filed an application for authorization to construct and operate ELLIPSO, an elliptical orbit satellite system, with the Federal Communications Commission. I understand that Ellipsat will be filing a second application on June 3, 1991 for authorization to construct and operate eighteen additional ELLIPSO satellites. We have reviewed both of these applications. In order to assist Ellipsat Corporation in demonstrating its financial qualifications to construct, launch and operate the ELLIPSO system, we are supplying this letter to be associated with the Company's June 3, 1991 filing.

The ITR Group, Inc. is an investment and merger acquisition group specializing in the communications industry. We have extensive experience in arranging debt and equity financing for communications and high technology ventures. For example, the ITR Group has negotiated acquisitions as large as \$900 million.

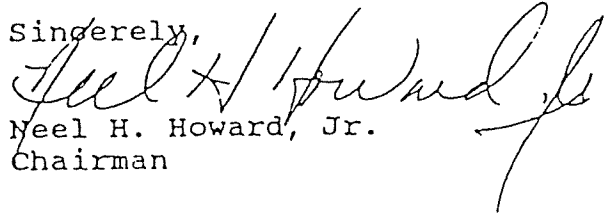
Based upon our review of the ELLIPSO applications, and our expertise and knowledge of financial markets, we believe that, should Ellipsat obtain authorization for the proposed satellite system, a financing package in an amount sufficient to construct, launch and operate Ellipsat's proposed satellite system can be successfully arranged. ITR Group is prepared to ensure that all financial goals are met through a variety of financial instruments, including equity and debt.

ITR Group represents and is presently engaged in discussions with large financial institutions, investment bankers and other investors relating to financing of the ELLIPSOTM system. Based on these discussions, additional letters further reflecting the availability of sufficient debt and/or equity funding to finance

Ellipsat Corporation
June 3, 1991
Page 2

construction, launch and operation of the system for one year are expected to be submitted shortly.

Sincerely,

A handwritten signature in cursive script, appearing to read "Neel H. Howard, Jr.", written in dark ink.

Neel H. Howard, Jr.
Chairman



2001 M. Street, N.W.
Washington, DC 20036

Telephone 202 467 3000
Telex 440477 PMMDCUI

Telecopier 202 223 2199

March 1, 1991

Dr. David Castiel
Chief Executive Officer
Ellipsat Corporation
2420 K Street, N.W.
Washington, DC 20037

Dear David:

Thank you for your acceptance of our February 1, 1991 proposal to provide professional accounting and consulting services for Ellipsat Corporation. We are most pleased to have Ellipsat Corporation as a formal client of the Firm as you initiate your entry into this most exciting industry.

We are prepared to begin work immediately in helping you secure and assess strategic financing arrangements, define and validate market capture strategies, and review internal controls and financial records to support the Company's future financial performance.

A non-disclosure agreement to protect your proprietary information has been reviewed, executed, and is now in effect. Accordingly we have initiated review of your current business plan and supporting data.

We look forward to meeting with you at your convenience to begin our work. Please feel free to contact me or Miss Amanda Clark to address your needs. Miss. Clark will manage our audit support services for Ellipsat.

Again, we welcome you as a client of KPMG Peat Marwick.

Very truly yours,

KPMG Peat Marwick

A handwritten signature in cursive script that reads 'Francis A. DiBello'.

Francis A. DiBello, Partner

FAD/nac



AFFIDAVIT

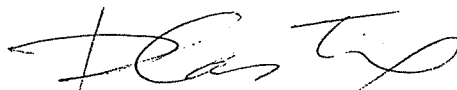
I, David Castiel, being duly sworn, hereby declare and state as follows:

1. I am the Chairman and Chief Executive Officer of Ellipsat Corporation.

2. I have reviewed the foregoing "Opposition of Ellipsat Corporation to Petitions and Reply to Comments" ("Opposition").

3. I have either prepared or supervised the preparation of the engineering and technical information contained in the Opposition.

4. All of the facts contained in the foregoing Opposition except those as to which official notice may be taken, are true and correct to the best of my knowledge, information and belief.



David Castiel

DISTRICT OF COLUMBIA, ss:

I, Nancy Duhon, a Notary Public in and for the District of Columbia, do hereby state that on this 3rd day of July, 1991, David Castiel personally appeared before me and attested that the above information is true and correct to the best of his knowledge and belief.

[SEAL]



Notary Public

My commission expires:

NANCY DUHON
NOTARY PUBLIC DISTRICT OF COLUMBIA
My Commission Expires January 1, 1993

CERTIFICATE OF SERVICE

I, Jayumari Perdu, hereby certify that I caused to be mailed via first-class, postage pre-paid mail on this 3rd day of July, 1991, a true copy of the foregoing Opposition of Ellipsat Corporation to Petitions and Reply To Comments to:

Veronica Haggart
Vice President and Director of Regulatory Affairs
Government Relations
Motorola, Inc.
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Washington, D.C. 20005

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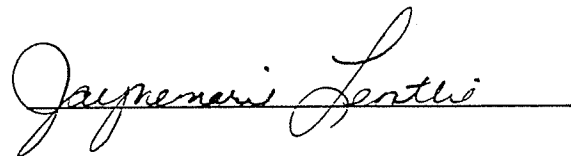
Henry M. Rivera
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Robert L. Riemer
Senior Program Officer
National Academy of Sciences
National Research Council
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

A handwritten signature in cursive script, reading "Jaymenari Lentli", is written over a horizontal line.

cert.svc (0261)

