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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

AUG 17 1990

Federal Communications Commission
Office of the Secretary

In the Matter of)
)
Application of STARSYS, INC. For)
Authority to Construct a)
Low-Earth Orbit Communications)
Satellite to be Stationed in an)
Inclined Non-Geostationary Orbit)
)
)

File No. 33-DSS-P-90(24)

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Domestic Facilities Division
Satellite Radio Branch

COMMENTS OF ORBITAL COMMUNICATIONS CORPORATION

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August 17, 1990

SUMMARY

ORBCOMM had filed its rulemaking petition and application to construct a low-Earth orbiting satellite system some two months prior to the Starsys application. ORBCOMM thus agrees that there is a need for the services that can be provided over such a satellite system. Based on the information in the Starsys application presently before the Commission, however, Starsys is not qualified legally, technically or financially to construct or operate such a system.

As an entity indirectly owned by aliens, Starsys is not legally qualified to be a Commission licensee. Starsys' attempts to evade the foreign ownership limits of Section 310 of the Communications Act are without merit. Starsys cannot simply declare itself a private carrier unilaterally, and its proposed operations are inconsistent with private carriage. Nor should the Commission accept Starsys' attempt to label the 5% minority shareholder as controlling, merely because it nominally has the right to elect three of the five Directors. Starsys' French parents retain 95% ownership, and they will continue to have de jure and de facto control.

Starsys also has failed to demonstrate that it is technically qualified to construct and operate the proposed satellite system. Starsys' reliance on inherited technical expertise is belied by the serious design flaws in its satellite system: spread spectrum in the frequencies being requested by Starsys is unworkable, impractical and relatively inefficient; Starsys' proposed random distribution scheme will lead to gaps in

coverage and unreliability; and Starsys' proposed use of polled access will not work with 10 to 20 million subscribers, many of whom are expected to rely on the service for emergency communications. Finally, Starsys failed to provide any meaningful financial information, and its claim that it will be able to underwrite the cost of construction through the pre-selling of capacity lacks credibility.

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File No. 33-DSS-P-90(24)

COMMENTS OF ORBITAL COMMUNICATIONS CORPORATION

Orbital Communications Corporation ("ORBCOMM"), a wholly-owned subsidiary of Orbital Sciences Corporation ("OSC"), by its attorneys, hereby submits comments on the application of Starsys, Inc. ("Starsys") to construct its proposed low Earth orbiting satellite system.^{1/} ORBCOMM was formed by its parent company to enter the mobile satellite services business. Founded in 1982, OSC is one of the country's leading commercial space technology companies. It is engaged in design, manufacturing, testing and operation of space launch vehicles and suborbital tracking and data systems.

On February 28, 1990, more than two months prior to the Starsys application, ORBCOMM submitted to the Commission a

^{1/} Application of STARSYS, INC. For Authority to Construct a Low Earth Orbit Communications Satellite to be Stationed in an Inclined Non-Geostationary Orbit, File No. 33-DSS-P-90(24), Public Notice Report No. DS-982, DA 90-918, released July 16, 1990.

petition for amendment of Section 2.106 of the rules to establish a mobile satellite service using low-Earth orbit satellites and an application for authority to construct a satellite system.^{2/} As ORBCOMM has indicated in response to earlier comments of Starsys on the ORBCOMM petition for rulemaking, ORBCOMM is not seeking to be an exclusive low-Earth orbit satellite services licensee; ORBCOMM welcomes competition, so long as the additional service providers are qualified, and do not interfere with ORBCOMM or operate in different spectrum.^{3/} As ORBCOMM demonstrates below, however, Starsys is not qualified legally, technically or financially, and therefore its application should be dismissed.^{4/}

I. As a Foreign-Owned Entity, Starsys Is Not Legally Qualified to be a Commission Licensee

Section 310 of the Communications Act restricts the alien ownership or control of Commission licensees.^{5/} ORBCOMM

^{2/} Orbital Communications Corporation, RM No. 7334, Public Notice Report No. 1814, April 4, 1990; Orbital Communications Corporation, File No. 22-DSS-MP-90(20), Public Notice Report No. DS-953, April 11, 1990.

^{3/} See generally ORBCOMM Rulemaking Comments, May 22, 1990 at pp. 7-9.

^{4/} Despite the summary nature of Starsys' "market analysis," ORBCOMM does agree with the bottom line conclusion -- there is a substantial need for the types of low-cost, two-way data communications and position determination services that low-Earth orbiting satellite systems can provide.

^{5/} Section 310 (b) provides:

(continued...)

believes that Starsys does not conform to those limitations, so that Starsys would not be qualified to be a Commission licensee. Starsys refused to answer the relevant questions on its Form 430, so ORBCOMM does not know to what extent Starsys' officers or directors are aliens contrary to Section 310 (b)(3).^{6/} ORBCOMM believes, however, that Starsys is 95% owned by North American CLS, in turn a wholly-owned subsidiary of the French company

5/(...continued)

No broadcast or common carrier or aeronautical en route or aeronautical fixed radio station license shall be granted to or held by --

- (1) any alien or the representative of any alien;
- (2) any corporation organized under the laws of any foreign government;
- (3) any corporation of which any officer or director is an alien or of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country;
- (4) any corporation directly or indirectly controlled by any other corporation of which any officer or more than one-fourth of the directors are aliens, or of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof, or by any corporation organized under the laws of a foreign country, if the Commission finds that the public interest will be served by the refusal or revocation of such license.

6/ Starsys' reference to the irrelevance of that information for separate international satellite systems is unavailing. In the case of separate international satellite systems, operation as a common carrier is prohibited. As detailed below, Starsys' attempt to unilaterally declare itself a private carrier (so as to avoid the restrictions of § 310) should be rejected by the Commission.

Collecte Localisation Satellites, which is owned 55% by CNES (the French Space Agency), 15% by INFREMER (the French Institute for Research of the Sea) and 30% by French banks. Given this 95% indirect alien ownership (a majority of which is held by a foreign governmental agency), as well as the unanswered questions as to the degree of control by a foreign government, Starsys would appear to be unqualified as a Commission licensee under Section 310 (b)(3) and (4), and perhaps Section 310 (a) as well.^{7/} Such foreign ownership concerns are particularly acute in this case, in view of the Commission's expressed concern with the refusal of the French government to authorize U.S. separate satellite systems to operate more broadly in France.^{8/}

Starsys appears to have been aware of the alien ownership disqualification problem, and attempts in two ways to structure its operations in a manner that would avoid this defect. First, Starsys classifies itself as a private carrier. Second, Starsys created two classes of equity as a means of giving "control" to the five percent minority shareholder. The Commission should reject both of these thinly-veiled attempts to avoid the limitations of Section 310 of the Communications Act.

^{7/} Section 310 (a) provides:

The station license required under this Act shall not be granted to or held by any foreign government or the representative thereof.

^{8/} E.g., TRT/FTC Communications, Inc., 5 FCC Rcd 3853, 3854 (1990) ("Notwithstanding this action, we here reiterate our continuing concern with PAS' inability to gain further entry to the French market.").

Starsys Cannot Evade the Limitations of
Section 310 by Claiming to Be a Private Carrier

Starsys asserts that it meets the test for private carriage, claiming that it will not hold itself out to serve the public indiscriminately. The test in the telecommunications field for distinguishing private carriers from common carriers was enunciated by the court in NARUC I.^{9/} While one of the prongs of the NARUC I definition of a common carrier depends on the actual or proposed operations of the carrier, Starsys ignores the first part of the Court's two-part analysis:

In making this determination, we must inquire, first, whether there will be any legal compulsion thus to serve indifferently, and if not, second, whether there are reasons implicit in the nature of . . . operations to expect an indifferent holding out to the . . . public.^{10/}

Under the NARUC I standard, the Commission should initially decide whether the public interest would be better served by requiring these important services to be offered on a nondiscriminatory basis under common carriage; Starsys cannot unilaterally make that determination.^{11/}

^{9/} NARUC v. FCC, 525 F.2d 630 (D.C. Cir. 1976).

^{10/} NARUC I, 525 F.2d at 642. Accord, Pacific Telecom Cable, 2 FCC Rcd 2686, 2687 (1987). Cf., Satellite Transmission and Reception Specialist Company and Transmission Operator Provided Systems, Inc., DA 90-927, released July 13, 1990 (FCC examined the operations of the applicant in rejecting its claim that it was providing non-common carrier services, and held that the § 310 (b) limitations applied).

^{11/} E.g., Transnational Telecom, Ltd., 5 FCC Rcd 598, 599 (1990).

In this regard, Starsys' reliance on the Commission's decisions to allow the sale of some satellite transponders under private carriage is misplaced. In making that determination, the Commission assesses the continued availability of capacity on a common carrier basis.^{12/} In contrast, under the Starsys' proposal all of the capacity would be allocated to private carriage. Moreover, given the nature of the safety and emergency communications that Starsys claims it will provide, potentially discriminatory private carriage is inconsistent with such offerings. Under these circumstances, there should be a "legal compulsion to serve the public indiscriminately."

Starsys also fails to meet the second prong of NARUC I, since there are "reasons implicit in the nature of the proposed operations" that are inconsistent with private carriage. As mentioned above, critical emergency services are proposed by Starsys. Such services are inconsistent with the Starsys proposal to sell service only through intermediaries and only in units of one million transmissions. For example, if an intermediary (such as the National Park Service) purchases only a single one million transmission unit, which proves inadequate to last throughout the end of the year, will Starsys block rescue calls through the National Park Service that occur later in the year after its quota has been consumed? According to the Starsys

^{12/} E.g., Martin Marietta Communications Systems, Inc., 60 RR 2d 779, 781 (1986) ("we find that we may fulfill our public interest obligations by determining that granting a particular application [for transponder sales] will not unduly reduce the availability of satellite transponders offered on a common carrier basis").

Application in regard to such services, "a maximum number of messages per year will be identified through agreement with user." Starsys Application at II-28.^{13/}

In addition, there are numerous instances of statements in the Starsys application that are inconsistent with its claim that its role will be limited to offering service only to a small number of intermediaries: Starsys apparently will control the prices and pricing structure for the end user services (e.g., Application at I-1, I-5 and VII-58); Starsys will provide the interface with end users and non-subscribers who want to connect with subscribers (e.g., Application at I-4 and VII-51); there will be between 10 and 20 million customers managed by Starsys (e.g., Application at I-1 and VII-57).^{14/} Given these accounts of its proposed operations, Starsys' claim to be merely a private carrier providing service on a "wholesale" basis to a limited number of "retail" intermediaries would appear to be nothing more than an attempt to evade the strictures of Section 310 of the Communications Act.

^{13/} There are likely few such intermediaries that can afford the luxury of purchasing in advance sufficient capacity to ensure that they will have an adequate number of transmission units to meet their planned and unplanned needs.

^{14/} See also Application at VII-57:

Performance monitoring within the U.S. mainly deals with system usage and traffic load. With 10 to 20 million captured users, the traffic load could alter the performance of specific applications. Actions will have to be taken either on the system design or on marketing policy or tariff structure.

Starsys Cannot Evade the Limitations of
Section 310 by Asserting Control by the
Five Percent Minority Shareholder

Starsys also attempts to skirt Section 310 by creating two classes of stock, so that the five percent minority shareholder nominally has the power to elect a majority of the directors of Starsys. First, as the Articles of Incorporation make clear, the French parents (CLS through NACLS) still retain 95% of the voting power for all votes other than electing the Board of Directors. Second, the restrictions in Section 310 prohibit aliens from owning more than a prescribed percentage of common carrier licensees, whether or not there is "control."^{15/} Moreover, in addition to retaining de jure control by reason of the Articles of Incorporation voting powers, the fact that the French parents apparently were able freely to substitute a new U.S. "controlling" minority owner (replacing MARCOR, Inc. with ST Systems Corporation) is strong evidence that the French parents retain de facto control, notwithstanding any claims that the five percent minority owner "controls" Starsys.

In sum, Starsys' attempts to evade Section 310 are to no avail -- Starsys is 95% owned and controlled by aliens, and Starsys cannot claim an exemption as a private carrier because it

^{15/} Request for Declaratory Ruling Concerning the Citizenship Requirements of Sections 310 (b) (3) and (4) of the Communications Act, 103 FCC 2d 511 (1985) at nn. 32 and 37. Cf., La Star Cellular Telephone Company, FCC 90-187, released May 31, 1990 at n. 12 ("the Commission examines the terms of any financial arrangement, since 'one of the most powerful and effective methods of control of any business . . . is the control of its finances.'").

meets neither of the NARUC I tests. Thus, Starsys is not legally qualified to be a licensee.

II. Starsys Failed to Demonstrate that It Is Technically Qualified to Construct and Operate Its Proposed Satellite System

Starsys claims that it is technically qualified to construct and operate its low-Earth orbit satellite as a result of its experience with the Argos system.^{16/} Based on design flaws in the satellite system proposed in the Starsys application, however, ORBCOMM concludes that Starsys is not technically qualified to design and operate a highly complex low-Earth orbit satellite system. ORBCOMM has elsewhere detailed the problems with the Starsys proposal to use spread spectrum in the requested frequencies: it cannot provide reliable service due to unavoidable "jamming" by current users, it would be spectrally

^{16/} Starsys variously (and often) refers to the decade-long LEO operating experience of "Applicant" and "Applicant's Affiliates". Since the "Applicant" did not come into existence until two days before its application was filed, presumably Starsys is referring to the experience of CLS and NACLS, which have provided limited, one-way service for research activities over the Argos transponders on satellites launched and operated by the National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA). Starsys greatly exaggerates the amount and relevance of this experience, e.g., Application at VI-2, referring to over 13,000 user terminals registered, without disclosing that the vast majority were relatively simple transmitters used for wildlife tracking or data transmission, and that a maximum of only around 2,000 were active at any one time.

inefficient when compared to ORBCOMM, and it would drive up the cost of the subscriber terminals.^{17/}

A second defect in the Starsys satellite system design is the proposal to randomly distribute the satellites in low-Earth orbit. Without station keeping, the satellites will precess, resulting in extensive orbit overlap and interference.^{18/} This in turn will create gaps in coverage and unreliability of the service, calling into question the ability of Starsys to provide the proposed emergency and other critical services as promised.

A third flaw in the design of the Starsys satellite system is the dependency on polling as the sole method of communicating with the user terminals. While such a method may work well when the subscriber universe is limited to 2,000 devices tracking wildlife or transmitting data, polled access will not work with 10 to 20 million subscribers (many of whom

^{17/} Comments of ORBCOMM on the Starsys Petition for Rulemaking, July 19, 1990 at pp. 3-10.

^{18/} Starsys does not propose to incorporate orbit control capabilities in its spacecraft in order to reduce the spacecraft and operational costs. Application at V-3. Such a precession problem is not a mere theoretical possibility; it has been observed with respect to the U.S. Navy low-Earth orbit navigation satellite system (Transit). Starsys may be aware of this problem, in light of its statement that one role of the processing, analysis and control centers is to "manage conflicts in case of several spacecraft in the field of view." Application at VII-21.

will depend on their user terminals for emergency communications).^{19/}

These serious design flaws in the proposed Starsys satellite system undermine the Starsys claim to be technically qualified. The limited experience of Starsys' French owners is simply inadequate to demonstrate that Starsys has the technical capabilities to construct and operate the proposed low-Earth orbit satellite system.

^{19/} Starsys indicates that the outbound capacity of each of the 24 satellites is equivalent to four 9600 bps channels (38,400 bps). Assuming all of this capacity were used on a particular spacecraft to poll 20 million subscribers (without redundant polling and no retries), it would still require approximately 23 hours for the spacecraft to poll each terminal one time. The actual situation is more complex than sequential polling, however, and since the location of every subscriber is not known (and thus repeats must be made), and because not every terminal will respond on the first try, the concept of polling each of 20 million subscriber terminals is totally impractical. Moreover, even if all of the capacity of all 24 of the spacecraft could somehow be used to poll the subscribers (which it cannot), the nearly one hour required to poll the users one time would be unacceptable. Indeed, even under Starsys' more pessimistic view of 10 million subscriber terminals, the delays would be intolerable for emergency communications, a principal service of the Starsys system.

Finally, ORBCOMM observes that Starsys' overly simplistic traffic analysis assumes 100% polling in-bound and out-bound, and extrapolates from hourly message capacity to daily capacity simply by multiplying by 24; there is no evidence that Starsys performed any traffic analysis based on projections of user demand at different times of day in order to calculate busy-hour capacity. Thus, Starsys has greatly overstated its capacity (and efficiency) claims.

III. Starsys Failed to Demonstrate that
It Is Financially Qualified to Construct
and Operate Its Proposed Satellite System

In order to demonstrate that it is financially qualified, an applicant must generally show in detail the costs of constructing and operating its satellite system, and how the applicant will meet those costs.^{20/} Starsys complied with the first requirement, at least facially, by listing its expected costs. ORBCOMM finds some portions of the Starsys cost analysis to be not credible.^{21/} The Commission, however, need not scrutinize the Starsys application at too fine a level of detail at present, because presumably Starsys will amend the financial aspects of its application to comply with the July 16, 1990 Public Notice requirement that applicants provide all information specified in Appendix B of the Space Station Filing Procedures. Likewise, given the virtual absence of information as to how Starsys will meet the costs of construction and operation,^{22/}

^{20/} E.g., Filing of Applications for New Space Stations in the Domestic Fixed-Satellite Service, 93 FCC 2d 1260 (1983) at App. B, ¶ I.

^{21/} For example, ORBCOMM believes that Starsys has underestimated the costs of the user terminals, assuming those terminals operate with the spread spectrum proposal. See ORBCOMM Comments on the Starsys Petition for Rulemaking, July 19, 1990 at p. 9.

^{22/} With respect to the source of financing, Starsys merely asserts that the money:

will come from public and private capital markets, including the major sources of equity, debt and project financing. Applicant believes it will have no problem obtaining the necessary capital in light of its

(continued...)

this required information likely also will be supplemented, and ORBCOMM will address the relevant financial issues at the appropriate time. At present, however, the Starsys application fails to establish that Starsys is financially qualified to construct and operate the proposed satellite system.

Conclusion

The Starsys application presently before the Commission fails to demonstrate that Starsys is qualified to be a Commission licensee. The application is devoid of relevant financial information, and the design flaws in the proposed satellite system undermine Starsys' claims of inherited technical qualification. Moreover, even if Starsys could supplement its application by the September 21st cut-off date to attempt to correct these defects, Starsys' 95% alien ownership conflicts

22/ (...continued)

affiliates' 11-year history of balanced LEO MSS operations.

Starsys Application at VI-5. Starsys did not, however, include any actual financials for itself or its French-owned parents (CLS or North American CLS), presumably the "affiliates" it refers to, nor did Starsys indicate to what extent the "balanced" operations of those entities are the result of direct and indirect government subsidies, including the integration of Argos payloads aboard the National Oceanic and Atmospheric Administration satellites free of charge. Moreover, ORBCOMM observes that the Starsys plan to finance its system simply by pre-selling capacity (Application at VI-4) has been found unacceptable by the Commission in analogous circumstances. Columbia Communications Corporation, 103 FCC 2d 618 (1985), affirmed Columbia Communications Corporation v. FCC, 832 F.2d 189 (D.C. Cir. 1987). Indeed, given the novel nature of commercial low-Earth orbiting mobile satellite services, Starsys' claim that it will be able to pre-sell capacity in million transmission units lacks credibility.

with the limitations incorporated in Section 310 of the Communications Act, rendering Starsys legally unqualified to be a licensee. Therefore, the Commission should dismiss the Starsys application.

Respectfully submitted,




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August 17, 1990

CERTIFICATE OF SERVICE

I, Laura E. Magner hereby certify that on the 19th day of July, 1990, a true copy of the foregoing Comments of Orbital Communications Corporation was mailed, postage prepaid, to Raul Rodriguez, Leventhal, Senter & Lerman, 2000 K Street, N.W., Suite 600, Washington, D.C. 20006-1809, counsel for Starsys, Inc.



Laura E. Magner