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PRIVATELY-OWNED COMMERCIAL TELECOMMUNICATIONS SATELLITES: LICENSING AND REGULATION BY THE FEDERAL COMMUNICATIONS COMMISSION

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INTRODUCTION

Nearly two decades have passed since the Federal Communications Commission ("FCC" or "Commission") issued the first telecommunications satellite authorization.¹ Responding to a request by the American Broadcasting Company in 1965 for permission to operate a satellite for the purpose of distributing television programming to affiliate TV stations,² and subsequent applications from others, the Commission, in 1970, issued a policy statement which paved the way for individual authorizations of privately-owned satellites.³ Thus began the history of telecommunications satellite licensing which, since then, has seen construction and operating authorizations issued for several generations of satellites.⁴

Today, eight private United States companies operate about thirty telecommunications satellites. These satellites have two major applications: (1) distributing television programming to cable operators,⁵ local television stations,⁶ or "backyard dishes"; and (2) relaying communications between corporate headquarters and field offices, which are equipped with very small

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1. Western Union Telegraph Co., 38 F.C.C.2d 1197 (1973).

2. The application was submitted on September 21, 1965. See Establishment of Domestic Communication-Satellite Facilities by Nongovernmental Entities, Report and Order, 22 F.C.C.2d 86, app. B, at 108 (1970) ("*Domsat I*") (describing the application).

3. 47 U.S.C. §§ 151-152 (1988).

4. The first "generation" was authorized in 1973, the second in 1980, and the third in 1988. Commercial geostationary telecommunications satellites have a design life of approximately ten years. Groups of satellite applications also were granted in 1983 and 1985.

5. For example, Home Box Office ("HBO") uses satellites to distribute programming to cable operators. HBO owns transponders on satellites owned and operated by others. A transponder is the part of a satellite which receives, shifts in frequency, amplifies, and retransmits a radio signal to the ground receiving station. Satellites generally have up to twenty-four transponders.

6. Television networks and public broadcasting companies use satellites for distribution of television programming to local television stations around the country.

aperture terminals ("VSATs").⁷

The United States private telecommunications satellite industry is unique in the world. The political and institutional frameworks in this country have allowed for, and even encouraged, the development of private industry to provide telecommunications services and to engage in space operations. In most countries, these activities are government monopolies. In contrast, the conducive regulatory climate created by the FCC has contributed significantly to the success of the United States satellite industry.

I. BACKGROUND

A. FCC Jurisdiction Over Satellites

The FCC licenses and regulates satellites pursuant to the Communications Act of 1934,⁸ as amended, as part of its jurisdiction over radio stations. According to Sections 1 and 2 of the Communications Act, the Commission was created for the purpose of regulating "all interstate and foreign communication by wire or radio . . . which originates and/or is received within the United States . . . [as well as to license and regulate] all radio stations. . . ."⁹ When first faced with the issue of its authority over satellites in 1970, the Commission determined that satellites meet the definition of "radio station" as used in the Communications Act, and thus come within its jurisdiction.¹⁰ The fact that a satellite is located in space, the Commission noted, was irrelevant. The deciding factor is whether communications originate and/or are received within the United States.

The Commission advanced three additional arguments in support of its authority to regulate satellites.¹¹ First, the Commission noted that it is empowered, under Section 303(g) of the Communications Act,¹² to "study new uses for radio, provide for experimental uses of frequencies, and generally encourage the larger and more effective use of radio in the public interest."¹³ Second, the Commission referred to the fact that the courts uniformly have construed the Communications Act as "granting broad powers to the Commission which do not depend on a specific reference to the particular service, technology or practice in the statute."¹⁴ Third, the Commission cited cases

7. Approximately one hundred companies have installed VSAT networks for intracorporate communications.

8. 47 U.S.C. §§ 151-613.

9. *Id.* §§ 151-152.

10. *Id.* § 153(k). A radio station is defined as a "station equipped to engage in radio communication or radio transmission of energy." *Id.* Radio communication means the "transmission by radio of writing, signs, signals, pictures, and sounds of all kinds, including all instrumentalities, facilities, apparatus, and services. . . ." *Id.* § 153(b).

11. *Domsat I*, 22 F.C.C.2d, app. C, at 129.

12. 47 U.S.C. § 303(g).

13. *Domsat I*, 22 F.C.C.2d, app. C, at 129.

14. *Id.* The Commission cited *Nat'l Broadcasting Co. v. United States*, 319 U.S. 190, 217-19 (1943).

which have held that the "public interest" standard, a test the Commission is mandated to apply in all licensing and rulemaking decisions, has been interpreted as leaving "wide discretion and [calling] for imaginative interpretation."¹⁵

B. *The Federal Communications Commission*

The FCC is an independent regulatory agency established by Congress in 1934.¹⁶ It is composed of five commissioners appointed by the President of the United States with the advice and consent of the Senate.¹⁷ One commissioner is designated by the President as Chairman.¹⁸ Only three of the five commissioners can be members of the same political party.¹⁹ Normally, one commissioner is appointed or reappointed each year for a term of five years.²⁰ The terms are staggered to limit political control.

The Commission is divided into bureaus and branches,²¹ and maintains a large support staff. The staff undertakes the preparatory work leading up to formal Commission decisions, and, in cases of less importance, makes decisions pursuant to delegated authority.²² The Common Carrier Bureau (particularly the Satellite Radio Branch), a branch of the Common Carrier Bureau, prepares decisions for the Commission concerning the licensing of most types of satellites,²³ while the Bureau as a whole often decides, for example, requests for modifications or assignment of a satellite license.

C. *The Satellite's Location in Space*

All commercial telecommunications satellites in operation today are geostationary, which means they occupy a position in a circular orbit 36,000 kilometers from the earth in the plane of the earth's equator. In this orbit, a satellite appears stationary vis-a-vis the earth since its period of revolution is equal to the period of the earth's rotation.²⁴

15. *Domsat I*, 22 F.C.C.2d, app. C, at 129. The Commission cited *FCC v. RCA Communications, Inc.*, 346 U.S. 86, 90 (1953).

16. Subchapter I of the Communications Act, 47 U.S.C. § 151 (1988) provides that "[f]or the purpose of regulating interstate and foreign commerce in communication by wire or radio . . . there is created a commission to be known as the 'Federal Communications Commission'"

17. 47 U.S.C. § 154(a).

18. *Id.*

19. *Id.* § 154(b)(5).

20. 47 C.F.R. § 0.1 (1989).

21. Common Carrier Bureau, Mass Media Bureau, and Private Radio Bureau. The Satellite Radio Branch of the Common Carrier Bureau is most actively involved in satellite licensing.

22. 47 U.S.C. § 155(c).

23. Direct broadcasting satellites are the exception. They are handled by the Mass Media Bureau.

24. See The International Telecommunications Union ("ITU") (Radio Regulations) Final Acts, World Administrative Radio Conference ("WARC") Geneva, 1979 [hereinafter Final Acts, WARC 1979] at art. I (defining a geostationary satellite as "[a] geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth."

Recently, however, for the first time, several private companies²⁵ have sought FCC authorization to establish low-earth orbit²⁶ satellite systems to provide a variety of mobile communications and radio-determination satellite services. The companies were motivated largely by the high cost of launching satellites all the way to geostationary orbit²⁷ as well as the increasing saturation of that particularly attractive orbit. One major disadvantage posed by low-earth orbits is that these satellites do not remain stationary relative to the earth, and consequently, a larger number²⁸ of satellites are required to service the same area served by one geostationary satellite.²⁹ Nonetheless, this development may signal a new trend towards using low-earth orbit, rather than the geostationary orbit, for commercial satellite operations. The Commission has not yet acted on these applications.

D. Regulatory Classification of Commercial Telecommunications Satellites

For regulatory purposes, the FCC distinguishes between five classes of commercial telecommunications satellites: domestic fixed-satellites,³⁰ international fixed-satellites ("separate systems"),³¹ direct broadcasting satellites,³²

A geosynchronous satellite is defined as "[a]n Earth satellite whose period of revolution is equal to the period of rotation of the Earth about its axis." *Id.* (emphasis in original). See *infra* note 81.

25. These companies include Orbital Communication, Inc., a subsidiary of Orbital Sciences Corporation, an entrepreneurial start-up commercial space company located in Fair Oaks, Virginia, Starsys, Inc., an affiliate of North American C.L.S., Inc. of Landover, Maryland, and Motorola.

26. Low-earth orbits refer to a non-specified variety of different orbits about or below 1,000 kilometers in altitude.

27. It costs about \$90 million to launch an average size satellite to geostationary orbit. A launch to low-earth orbit costs about \$10 million. Note, however, that the telecommunications satellites contemplated for low-earth orbit are so-called "lightsats" which weigh a fraction of those used in geostationary orbit.

28. See, e.g., Starsys, Inc., *supra* note 25, which proposes a constellation of twenty-four satellites. Motorola plans a system of seventy-seven satellites.

29. A geostationary satellite radiates signals in a beam, i.e., it covers approximately one-third of the earth's surface. Three geostationary satellites cover the entire earth except for the polar regions. Coverage of the polar regions cannot be obtained from geostationary orbit—low-earth orbit satellites in polar orbits are required.

30. A fixed-satellite is a satellite that is used for the provision of fixed-satellite service. Fixed-satellite service is defined in the Commission's rules as "[a] radiocommunication service between earth stations at a specified fixed point when one or more satellites are used. . . ." 47 C.F.R. § 2.1. *Domestic* fixed-satellite service denotes that the satellite signals originate and are received within the United States.

31. See *id.* (explaining a fixed-satellite). An international fixed-satellite is a satellite intended to facilitate communications between the United States and foreign countries. The Commission refers to these satellites as "separate systems" because they are owned and operated by United States companies as opposed to the International Telecommunications Satellite Organization ("Intelsat"), which traditionally has provided international satellite communications between the United States and foreign countries.

32. A direct broadcast satellite is used to provide broadcasting-satellite service. Broadcasting-satellite service is defined in the Commission's rules as "[a] radiocommunication service in which signals transmitted or retransmitted by [satellite] are intended for direct reception by the general public." *Id.*

radiodetermination satellites,³³ and mobile satellites.³⁴ The distinctions are based on the kinds of services provided, as well as the radio frequency bands employed by the satellites.

Fixed-satellites are used for voice, data, and video communications between earth stations at fixed points, either in a point-to-point³⁵ or a point-to-multi-point³⁶ mode. Communications may be two-way or one-way. Domestic fixed satellites are used for communications within the United States,³⁷ international fixed-satellites for communications to and from foreign countries. The international fixed-satellites are referred to by the Commission as "separate systems" because they are separate from the satellites owned and operated by the International Telecommunications Satellite Organization ("Intelsat") which, until 1985, had a virtual monopoly on all international satellite communications.³⁸

Direct broadcast satellites are intended to distribute television programming or other information *directly* to individual households equipped with relatively small and independent receiving antennas. In contrast to fixed-satellites, which also can be and are used to distribute television programming and information directly to individual households, direct broadcast satellites transmit signals with very high power which permits the use of tiny receiving dishes.³⁹ Larger inch dishes are used to receive fixed-satellite signals.

Mobile satellites are intended to transmit voice, data, and video communications to and from mobile earth stations on land, aboard ships at sea, and aboard

33. A radiodetermination satellite is one that provides radiodetermination satellite service. Radiodetermination satellite service is defined in the Commission's rules as "[a] radiocommunication service for the purpose of radiodetermination involving the use of one or more [satellites]." 47 C.F.R. § 2.1. Radiodetermination is "[t]he determination of the position, velocity, and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of radio waves." *Id.*

34. A mobile satellite is used to provide mobile satellite service. Mobile satellite service is defined as "[a] radiocommunication service: (1) Between mobile earth stations and one or more [satellites], or between [satellites] used by this service; or (2) Between mobile earth stations by means of one or more [satellites]." *Id.*

35. From one earth station to another earth station.

36. From one earth station to two or more earth stations.

37. Domestic fixed-satellites may, subject to additional authorization, be used for so-called transborder service, i.e., satellite communications service to neighboring countries such as Canada, Mexico, and the Caribbean. Transborder Satellite Video Services, 88 F.C.C.2d 258 (1981). *See also* Communications Satellite Corp. v. FCC, 836 F.2d 623 (D.C. Cir. 1988) (vacating the FCC's decision authorizing two-way service to Jamaica).

38. *See* Agreement Relating to the International Telecommunications Satellite Organization, "Intelsat," Aug. 20, 1971, 23 U.S.T. 3813, T.I.A.S. No. 7532 [hereinafter Intelsat] (describing Intelsat's function and structure). Intelsat, an international organization with more than one-hundred member-states and operates approximately fifteen satellites on a commercial, non-profit basis. It was established in 1946 as an interim organization and in 1971 as a definitive organization.

39. A direct broadcast satellite owned by the British Broadcasting Satellite Corporation is in operation in the United Kingdom. It provides television programming to homes equipped with small receiving dishes. A private Luxembourg company provides television programming via a domestic-fixed satellite to homes equipped with somewhat larger receiving dishes, as well as to cable operators for retransmission to homes that have had cable installed.

aircraft.⁴⁰ Radiodetermination satellites are intended to provide navigation and position-location information to users on land, at sea, and in the air.

All telecommunications satellites operated by United States companies today are fixed-satellites. Pan American Satellite Company⁴¹ operates a satellite for international communications, and seven other companies operate satellites for domestic communications.⁴² Although several companies have received FCC authorization to establish direct broadcasting, radiodetermination, and mobile satellite systems, none have been launched.⁴³

The classification of a particular satellite operation within one of the above categories has important regulatory implications. Specifically, different criteria for approval of application, and in some cases, different processing procedures, apply to the various categories.⁴⁴

II. THE REQUIREMENTS FOR LICENSING AND REGULATION

The United States is under an international obligation to authorize or license, and to supervise space operations by private sector parties under its jurisdiction.⁴⁵ To comply with this obligation, the United States requires satellite operators within its jurisdiction to obtain a license from the FCC.

A. International Obligation

Private satellite operations are permitted as a matter of international law, provided they are authorized and supervised by a nation-state. Article VI of the Outer Space Treaty⁴⁶ provides that "[t]he activities of non-governmental entities in outer space . . . shall require authorization and continuing supervision by the appropriate State party to the Treaty." However, the Outer Space Treaty

40. The International Maritime Satellite Organization ("Inmarsat") operates a global mobile communications satellite system for ship-to-shore and shore-to-ship communications. Inmarsat amended its charter in order to provide aeronautical and land mobile satellite services as well. Currently its aeronautical mobile services are in the trial phase.

41. Pan American Satellite Company ("PanAmSat") was one of six applicants to be authorized in 1985 and 1986 to operate satellites for international communications. So far, only PanAmSat has implemented its plans.

42. These companies include: Hughes Communications, Inc. of El Segundo, California; GE American of Princeton, New Jersey; American Satellite Company of Rockville, Maryland; Communications Satellite Corporation of Washington, D.C.; and GTE Spacenet of McLean, Virginia.

43. The Commission has authorized several companies to provide direct broadcasting. The United States Satellite Broadcasting Company, Inc. and Hughes Communications appear to be the two companies with the most advanced plans. The Commission authorized several radiodetermination satellite systems, but only Geostar Corporation of Washington, D.C. is pursuing its plans. American Mobile Satellite Corporation of Washington, D.C. is the only mobile satellite licensee. It is unlikely that any of these companies will launch their satellites prior to 1993.

44. See *infra* Part III of this Article (discussing FCC criteria for licensing).

45. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347, 610 U.N.T.S. 205.

46. *Id.*

provides no guidelines on the kind of authorization and supervision that is contemplated. For example, is a full-fledged regulatory regime required, or will a more rudimentary legal framework suffice? Countries have interpreted Article VI to mean that it is up to each spacefaring nation to determine how to implement its obligation to authorize and supervise private space activities. In other words, each country may decide for itself what kind of licensing and regulatory requirements to impose on private sector parties.

Of the few countries that have adopted legal frameworks for space ventures, all, with the exception of the United States, have promulgated only very general licensing provisions which apply equally to all kinds of space activities.⁴⁷ The United States has adopted three separate, detailed regulatory regimes for private launch vehicles, remote-sensing satellites, and telecommunications satellites, respectively.⁴⁸

The regulatory regime for private telecommunications satellites consists of the Communications Act of 1934⁴⁹ and its implementing regulations,⁵⁰ the Communications Satellite Act of 1962,⁵¹ and a series of policy statements which have not yet attained the formal status of regulations. It is a dynamic regulatory regime. New rules must be added and old ones constantly amended in response to proposals by private companies to implement innovative satellite technology.

B. Domestic Licensing Requirement and the Public Interest

The licensing requirement for private telecommunications satellites is set forth in Title III of the Communications Act.⁵² Section 301 provides that "[n]o person shall use or operate any apparatus for the transmission of energy or communications . . . except under and in accordance with this chapter and with a license in that behalf granted under the provisions of this chapter."⁵³

Before a company can acquire a license to operate a satellite, a construction permit must be obtained. Section 319(a) of the Communications Act provides that "[n]o license shall be issued under the authority of this chapter for the operation of any station unless a permit for its construction has been granted by the Commission."⁵⁴ This means that no company may begin construction of a

47. See, e.g., the United Kingdom Outer Space Act of 1986, 1 Current L. Stat. Annot. 38-1 § 1 (1986) (outlining the licensing regime of the United Kingdom).

48. See Commercial Space Launch Act of 1984, 49 U.S.C. app. § 2601 (1988) (discussing launch vehicles). See also Land Remote-Sensing Commercialization Act of 1984, 15 U.S.C. § 4201 (1988) (discussing remote-sensing satellites); Communications Act of 1934, 47 U.S.C. § 151 and Communications Satellite Act of 1962, 47 U.S.C. § 701 (discussing telecommunications satellites).

49. 47 U.S.C. §§ 151-613.

50. 47 C.F.R. pts. 25 & 100 apply specifically to satellite licensing; other sections of the C.F.R. apply equally to satellite licensing and related matters.

51. 47 U.S.C. § 701.

52. This is the same part of the Act that deals with the licensing and regulation of radios.

53. 47 U.S.C. § 301.

54. *Id.* § 319(a).

satellite before a permit has been issued.⁵⁵ A construction permit is required so the FCC will not be presented with a *fait accompli*, i.e., an already constructed radio station (satellite) for which the denial of an operating license would waste a million dollar investment.

A satellite construction permit, as well as an operating license, can only be obtained through a written application to the FCC,⁵⁶ wherein the applicant requests authority to construct, launch, and operate the proposed satellite(s). Upon receipt of the application, the FCC determines whether the applicant meets the criteria for licensing⁵⁷ and whether the public interest will be served by its approval.⁵⁸ In making that determination, the FCC will look at such factors as the benefit the public will derive from the proposed satellite service, i.e., whether the public will enjoy lower costs and a greater choice of services.

Since the inception of satellite licensing, the FCC has adhered to a deregulatory policy—a policy of promoting competition among satellite operators and imposing only a minimum of technical design standards and service restrictions.⁵⁹ The Commission has decided that this approach best serves the "public interest"—the standard the Commission is mandated to apply in licensing and decision-making.⁶⁰ The rationale is that the marketplace is better suited than the Commission to determine how many satellite operators and what kinds of satellite services the public needs.

III. CRITERIA FOR LICENSING

In order to obtain an operating license, a satellite applicant must meet certain legal, financial, and technical qualification requirements, and the proposed satellite(s) must satisfy the Commission's technical design and performance standards.⁶¹ Pursuant to section 308(b) of the Communications Act, a satellite applicant is required to submit the necessary information in the application to demonstrate that the Commission's criteria are satisfied.⁶²

A. Legal Qualifications

Legal qualifications refer to the character and citizenship of the applicant-company and the persons controlling it. The Commission determines whether the applicant, its directors, or its officers have been: (1) convicted of a felony;

55. See *id.* § 319(d) (stating that a waiver may be obtained pursuant to this section).

56. *Id.* § 308(a).

57. Licensing criteria is described in Part III of this Article, *infra*.

58. 47 U.S.C. § 309(a).

59. See *Domsat I*, 22 F.C.C.2d, app. D, at 133-39 (discussing the Commission's approach to the technical requirements of satellites).

60. *Id.*

61. See 47 U.S.C. § 303(l)(1) (providing that the Commission has the authority to adopt such standards pursuant to this section).

62. *Id.* § 308(b).

(2) adjudged guilty of unlawfully monopolizing radio communications; or (3) engaging in another unfair method of competition. Moreover, special restrictions apply to foreign ownership of a satellite(s).⁶³

B. Financial Qualifications

Financial qualifications refer to the applicant's ability to finance the construction, launch, and operation of the proposed satellite system, either by internal funds or from outside sources.⁶⁴ Generally, a standard⁶⁵ geostationary satellite costs about \$90 million⁶⁶ to build. The launch price is approximately \$80 million.⁶⁷ Launch insurance, to cover the risk of loss or damage to the satellite during the launch, currently costs close to a 20% premium rate.

Financial qualification requirements vary from one category of satellite service to another. Qualifications are extremely strict in the domestic fixed-satellite service because the Commission uses financial criteria as a threshold means of limiting the number of applicants. Faced with the prospect of the number of applicants exceeding the number of available orbital locations and associated radio frequencies, the Commission, in 1983, began imposing strict financial criteria.⁶⁸ Accordingly, in the fixed-satellite service, applicants must demon-

63. *Id.* § 310(a). Additional restrictions apply if the satellite operator is classified as a broadcaster or a common carrier. *Id.* § 310(b). See *Orion Satellite Corp.*, 5 F.C.C. Rcd. 4937, 4939 (1990) (holding that "a limited partnership arrangement with foreign equity investment is acceptable as a financing vehicle in this case, and Orion can hold the license, so long as Orion [a United States entity] maintains full control of the satellite system."). Orion will not receive final authority to construct, launch, and operate its satellite system, however, until it provides "its final documentation and financial showing consistent with that decision." *Id.* at 4939.

64. This is an observation made by the Authors.

65. A standard commercial geostationary telecommunications satellite has twenty-four transponders. See generally *supra* note 5 (defining transponders). The largest commercial telecommunications satellites launched are the Intelsat VI series. These satellites have the capability to transmit 120,000 simultaneous telephone calls and three television channels.

66. The major commercial satellite manufacturers include GE Astro, Space Division, of Princeton, New Jersey; Hughes Space and Communications Group of El Segundo, California; and Ford Aerospace, Space Systems Division of Palo Alto, California.

67. The major United States launch companies for geostationary satellites are Martin Marietta, Astronautics Group of Denver, Colorado; General Dynamics Corporation, Space Systems Division of San Diego, California; and McDonnell Douglas Astronautics Company of Huntington Beach, California. Ariespace of Evry, France is the major foreign launch services provider.

68. The Commission began to scrutinize the applicants' financial qualifications in 1983 when, for the first time, it had on file applications from three entrepreneurial start-up companies which had been set up solely for the purpose of operating satellite systems. Prior to that time, all applicants had been large, well-established companies, or subsidiaries thereof, with ample internal funds to finance construction, launch, and operation of a satellite system. The Commission suspected that the three start-up companies had filed speculative applications—to capture an orbital location which had become a scarce resource—and doubted that they would be able to raise the necessary funds to construct, launch, and operate satellites. Consequently, these companies received authorizations on condition that they obtain financing within a specified period of time. None met the condition, and their authorizations were declared null and void. This episode convinced the Commission that, since the number of orbital locations is limited, it would have to adopt strict financial standards as criteria for satellite licensing to prevent licensees from laying claim to orbital locations they cannot use due to lack of financing. See *Licensing of Space Stations in the Domestic Fixed-Satellite Service and Related Revisions of Part 25 of the Rules and Regulations, Report and Order*, 54 Rad. Reg. 2d (P&F) 577

strate *current* financial ability to "proceed expeditiously with the construction, launch and/or operation of each proposed [satellite] facility immediately upon grant of the requested authorization."⁶⁹ In practice, only large, well-established companies with sufficient internal capital to finance (or secure loans to finance) a satellite system can meet these stringent financial requirements. In general, entrepreneurial start-up companies are not able to obtain the funds needed at the time of the application to meet the test of "current financial capability."

Less stringent financial requirements apply to applicants for other satellite services⁷⁰ simply because private companies have not shown the same degree of interest in providing these kinds of services, and consequently, there has been no need to limit the number of applicants on an orbit/spectrum availability basis. Nevertheless, the Commission does require a showing of some measure of financial readiness to avoid speculative applications. For example, an applicant in the radiodetermination satellite⁷¹ service must demonstrate "financial preparedness" to assume the costs and liabilities of constructing and launching the proposed satellite system and operating it for one year.⁷²

The "financial preparedness" test is easier to meet than the "current financial capability" test applied to fixed-satellite service. This more lenient financial scrutiny allowed Geostar Corporation, an entrepreneurial start-up company, to obtain a license and proceed with plans to launch a radiodetermination satellite system in 1993.⁷³

Applicants in the direct broadcast satellite service⁷⁴ are not subject to any initial financial scrutiny. A conditional construction permit will be granted requiring the applicant to proceed with "due diligence" toward establishing the satellite system.⁷⁵ The applicant must obtain sufficient financing to (1) begin construction or complete contracting for construction of the satellite within one year, and (2) place the satellite in operation within six years of the grant of the initial construction permit.⁷⁶ The first requirement is applied strictly, while the

(1983) (proposing strict financial standards for satellite applicants). *See also* 47 C.F.R. § 25.391(c) (implementing the financial qualification criteria).

69. 47 C.F.R. § 25.391(b).

70. *See supra* notes 28-31 and accompanying text.

71. *See supra* note 33 and accompanying text.

72. Amendment of the Commission's Rules to Allocate Spectrum for, and to Establish Other Rules and Policies Pertaining to, Radio-determination Satellite Service, Second Report and Order, 51 Fed. Reg. 18,444 §§ 22-26 (May 20, 1986).

73. Geostar Corporation currently provides interim radiodetermination satellite service by means of a radiodetermination equipment "package" placed on a domestic fixed-satellite owned and operated by GTE Spacenet Corporation. Geostar plans to launch its own satellites in 1993.

74. *See supra* note 32 and accompanying text.

75. 47 C.F.R. § 100.19(b). *See also* Inquiry into the Development of Regulatory Policy in Regard to Direct Broadcast Satellites for the Period following the 1983 Regional Administrative Radio Conference, Report and Order, 90 F.C.C.2d 676, 719 (1982) (proposing the "due diligence" rule).

76. 47 C.F.R. § 100.19(b).

latter requirement is applied more leniently.⁷⁷

Applicants for separate systems are subject to a two-stage financial qualification test. In the first stage, a conditional construction permit is granted upon submission of basic information concerning the cost of construction, launch, and operation of the proposed satellite system, as well as the sources of financing. A conditional construction permit does not allow a company to begin constructing the satellite, rather it allows the company to secure the necessary international approvals. In the second stage, the applicant must show "current financial capability" to construct, launch, and operate the satellite system for one year. Only when such a showing is made can the applicant proceed with construction of the satellite.

C. Technical Qualifications, Satellite Design, and Performance Standards

Satellite design and performance standards refer to technical requirements concerning the design and performance of the satellite. The FCC requires applicants demonstrate that they are technically capable of operating the proposed satellite system. Normally, this requirement is satisfied by hiring qualified personnel.

The Commission has always applied a "minimalist" approach to technical regulation. It imposes only those standards required to comply with international law,⁷⁸ and to maximize spectral efficiency and the use of the geostationary orbit.⁷⁹ Giving individual satellite owners wide latitude in determining their satellite designs, the Commission reasons, encourages technological innovation which, in turn, benefits the public.

An example of technical regulation imposed by the FCC to increase the number of satellite operators that can be accommodated in the geostationary orbit is the requirement that domestic fixed-satellites be compatible with two-degree spacing.⁸⁰ Satellites and associated ground equipment must be designed and operated in a manner so as not to interfere with the operations of adjacent satellites spaced two degrees away in the orbit.

As a matter of international law, the International Telecommunication Union ("ITU"), an international organization charged with coordinating the use of the radio frequencies by its member states to prevent harmful interference, imposes certain technical restraints on the satellite's design and operation. For example,

77. United States Satellite Broadcasting Co., Inc., Memorandum Opinion and Order, 3 F.C.C. Rcd. 6858 (1988); RCA American Communications, Inc., Memorandum Opinion and Order, 62 Rad. Reg. 2d (P&F) 554 (1987).

78. Establishment of Satellite Systems Providing International Communications, Report and Order, 101 F.C.C.2d 1046 para. 235 (1985).

79. First, a company must obtain an operating agreement with a foreign government permitting the company to transmit satellite signals to, and receive satellite signals from, foreign territories. Second, it must meet the requirements necessary for coordination with Intelsat under Article XIV(d) of the Intelsat Agreement. Intelsat, *supra* note 38, art. XIV(d).

80. See *Domsat I*, 22 F.C.C.2d, app. D, at 133-39 (discussing technical requirements of satellites).

the ITU regulations⁸¹ prohibit operators in the fixed-satellite service from engaging in high-power broadcasting,⁸² and require that satellite operators only use those frequencies allocated by the ITU to the particular satellite service in which the operator is authorized.⁸³ The ITU regulations have been implemented in the Commission's rules codified in the Code of Federal Regulations.⁸⁴

IV. GRANT OF APPLICATION AND CONDITION OF LICENSE

Upon receipt of a satellite application submitted by a private company, the FCC determines whether the public interest would be served by granting the application and whether the applicant, and the proposed satellite system meet the qualification requirements and technical specifications set forth in Part III.C of this Article. If the Commission makes a favorable finding, it will proceed to authorize the satellite system.⁸⁵

It is important to note that the Commission authorizes new applicants without regard to possible economic injury to existing satellite operators resulting from increased competition. In fact, the Commission encourages competition among satellite service providers. In the deregulatory environment the Commission has created for telecommunications satellites, competition serves as a substitute for unnecessary regulation.

Applicants in the domestic fixed-satellite service⁸⁶ are subject to a consolidated licensing approach. This means that satellite construction permits and launch and operating licenses are issued concurrently.⁸⁷ A bifurcated licensing process, however, is applied to separate systems⁸⁸ and direct broadcast satellite⁸⁹ services. Here, conditional construction permits are issued initially. Then, upon

81. ITU Radio Regulations, Final Acts, WARC 1979, *supra* note 24, as amended by Final Acts, World Administrative Radio Conference on the Use of Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, Geneva, 1988. The amendments entered into force March 16, 1990. The ITU Radio Regulations are annexed to the International Telecommunications Convention, Nov. 6, 1982, in G. WALLENSTEIN, INTERNATIONAL TELECOMMUNICATIONS AGREEMENTS, Binder *, pt. 3 (1985). The convention was adopted on Nov. 6, 1982 in Nairobi, Kenya. See ITU Radio Regulations, art. 69, para. 1 (1979).

82. From a radio frequency interference perspective, only a finite number of satellites can operate in the geostationary orbit. ITU Radio Regulations, Final Acts, WARC 1979, *supra* note 24, art. 8, § IV, Table of Frequency Allocations at n.836.

83. ITU Radio Regulations, Final Acts, WARC 1979, *supra* note 24, art. 6, § 4. "Administrations of the Members shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations given in this Chapter or the other provisions of these Regulations, except on the express condition that harmful interference shall not be caused to services carried on by stations operating in accordance with the provisions of the Convention and these Regulations." *Id.*

84. 47 C.F.R. pts. 25 & 100.

85. 47 U.S.C. § 309(a).

86. See *supra* note 30.

87. Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service, Memorandum Opinion and Order, 84 F.C.C.2d 584 para. 70 (1981).

88. See *supra* note 31.

89. See *supra* note 32.

showing that the "current financial capability" and "due diligence" tests have been met, construction permits and launch and operating licenses will be granted.⁹⁰

A license to operate a telecommunications satellite involves the right to use a specific orbital location in the geostationary orbit⁹¹ and associated radio frequencies. This right to use is not permanent; it lasts only for the duration of license period, which is at most, ten years.⁹² Orbital locations are assigned within a segment (from 143 to 64 degrees West Longitude) of the orbital arc from which the satellite will cover large areas of the United States.

No restrictions apply on satellite service offerings other than the requirement that the operator conform to broad, general criteria set forth in the ITU's regulations as implemented by the FCC.⁹³ Thus, a variety of satellite services not contemplated at the inception of FCC satellite licensing have been implemented; for example, corporate VSAT networks, distribution to cable operators, and satellite news gathering.

CONCLUSION

Over the past two decades, the FCC has regulated privately-owned telecommunications satellites. It has done so successfully by promoting competition and encouraging growth in what is now a multi-billion dollar industry. While to date, requests for geostationary fixed-satellite authorizations have dominated the FCC satellite licensing agenda, mobile satellites may provide the regulatory focus of the future.

90. See *supra* notes 64 & 68.

91. No specific orbital location can be assigned for low-earth orbit satellites.

92. See 47 U.S.C. § 307(c) (stipulating a maximum licensing period of ten years, except for broadcast stations which are licensed for five years).

93. See 47 C.F.R. §§ 25.201-25.256 (providing technical standards for domestic fixed and radiodetermination satellites).

