Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
FWCC Request for Declaratory Ruling on Partial-Band Licensing of Earth Stations in the Fixed-Satellite Service That Share Terrestrial Spectrum	)	IB Docket No. 00-203 RM-9649
	)	
FWCC Petition for Rulemaking to Set Loading Standards for Earth Stations In the Fixed-Satellite Service that Share Terrestrial Spectrum	)	
	)	
Onsat Petition for Declaratory Order that Blanket Licensing Pursuant to Rule 25.115 (c) is Available for Very Small Aperture Terminal Satellite Network Operations at C-Band	)	SAT-PDR-19990910-00091
	)	
Onsat Petition for Waiver of Rule 25.212(d) to the Extent Necessary to Permit Routine Licensing of 3.7 Meter Transmit and Receive Stations at C-Band	)	
	)	
Ex parte Letter Concerning Deployment of Geostationary Orbit FSS Earth Stations in the Shared Portion of the Ka-Band	)	

COMMENTS OF ONSAT NETWORK COMMUNICATIONS, INC.

ELLEN P. GOODMAN
COVINGTON & BURLING
1201 PENNSYLVANIA AVENUE, NW
WASHINGTON, D.C. 20004
(202) 662-6000

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SUMMARY

While some Americans have the choice between at least two broadband providers, many rural consumers have no affordable or practical broadband options. OnSat Network Communications, Inc. ("OnSat") employs satellite-based hub-and-spoke networks using C-Band capacity to provide these options. Specifically, it has started, and seeks to accelerate, the roll out of high speed broadband interactive service to institutional customers (*e.g.*, public schools, Navajo colleges, and small businesses) in remote areas where fiber or other terrestrial wiring alternatives are extremely expensive. OnSat's efforts to implement this network without undue delay or expense is hampered by antiquated, inefficient, and unnecessary FCC regulations. For this reason, OnSat petitioned the FCC 16 months ago to streamline its C-Band licensing rules so that they afford all C-Band operators bureaucratic efficiencies similar to those enjoyed by Ku-Band operators and at least one C-Band operator. The Notice of Proposed Rulemaking makes some progress in this respect, but does not go far enough.

OnSat uses the C-Band for its Very Small Aperture Terminal ("CSAT") network. Despite having to share spectrum with terrestrial users, CSAT users prefer the technical and cost advantages that C-Band systems offer. CSAT users are currently subject to an extremely burdensome regulatory process which requires that they apply separately for a license for each technically identical earth station in their respective networks (filing the associated fee) and then wait months while each antenna is approved. This process is expensive, lengthy, and largely unnecessary.

The Commission has, both in this Notice of Proposed Rulemaking and in other recent initiatives, recognized the advantages of streamlined licensing procedures for satellite users, and proposes streamlined licensing procedures for CSAT networks that are a vast improvement over the current regulatory scheme. However, the proposed procedures have two central flaws that will continue to hinder and perhaps prevent effective deployment of CSAT networks that provide advanced telecommunications services to remote and underserved areas.

- The proposed rules require a CSAT applicant to wait for 30 days while each pre-coordinated technically identical earth station goes out on public notice. A 30-day public notice period is unnecessary in light of the extensive frequency coordination process that each earth station must undergo, which identifies and addresses all potential interference concerns. The proposed 30-day waiting period is also inconsistent with procedures followed by the Commission for Ku-Band VSAT systems generally and for one CSAT licensee on an *ad hoc* basis. The Commission should allow each individual remote antenna in a CSAT system to become operational upon completion of the frequency coordination process, with the CSAT applicant merely notifying the Commission that the antenna has become operational.

- The proposed rules seek to enforce a strict limit on the bandwidth available to CSAT applicants seeking to use the streamlined procedures. The proposed 20 MHz limitation would make it impossible to operate most CSAT networks as they would be deprived of the flexibility necessary to operate their inherently unpredictable satellite networks.

OnSat has already agreed to an 88% reduction in licensed bandwidth. The Notice's proposals would further reduce the licensed bandwidth by a factor of three, notwithstanding the recognition that earth stations simply cannot operate without spectrum flexibility. The Commission should instead adopt a more flexible approach that allows CSAT applicants to apply for a particular amount of bandwidth based on the needs of their particular network. This would give CSAT networks the flexibility needed in both network design and operation, and would not prejudice terrestrial users in any way.

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<u>COMMENTS OF ONSAT NETWORK COMMUNICATIONS, INC.</u>

OnSat Network Communications, Inc. ("OnSat") files these Comments in response to the Commission's *Notice of Proposed Rulemaking* in the above-captioned matter ("*Notice*"). While the Commission has taken substantial and necessary strides in this proceeding to rationalize the licensing of C-Band earth stations and remove unnecessary regulatory obstacles to the roll-out of satellite broadband services, some of the *Notice's* specific proposals do not achieve the stated

goals. That is, they do not conform the general licensing process for C-Band networks to the process that has been implemented on an *ad hoc* basis for at least one C-Band licensee or generally for Ku-Band licensees. Nor do they clearly set forth the minimal frequency requirements for any C-Band network — requirements which are technically sustainable and practically necessary. OnSat urges the Commission, when it adopts a C-Band streamlined licensing regime, to correct these problems so that the intent to ease licensing restrictions is realized and C-Band licensees can more efficiently provide broadband services to underserved populations.

I. Introduction

OnSat provides interactive broadband services (at up to 6 Mbps) to rural schools, libraries, small businesses, and other institutions. It does this using an innovative data caching system that speeds communications and a network of C-Band earth stations and satellite links that is extremely reliable and relatively inexpensive for the user. Among the customers that OnSat serves are students and residents on Navajo land in Arizona, public schools in rural Wyoming, and remote, rural villages in Honduras.[1] Remote areas such as these continue to lag behind in access to advanced internet service, and most customers in remote rural and tribal areas have no other options for such service.[2]

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[1] *See* Letter from Richard B. Newbert, President & CEO, OnSat Financial Services, Inc., to William E. Kennard, Chairman, FCC (Oct. 10, 2000), CC Docket No. 98-146, 1–3 (describing the rural and tribal areas that OnSat serves and the effect that internet access is having in these remote communities), attached as Attachment C; *see also* Comments of OnSat in WT Docket No. 99-266 (Nov. 4, 1999), at 2–3; News Release, *OnSat Inaugurates Wireless Internet System in Honduras*, Oct. 27, 2000, *available at* <http://www.onsat.net/usa/www/press/oct272000.html>.

[2] *See* OnSat Petition at 5–8; *see also In re Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, Second Report*, FCC 00-290, CC Docket No. 98-146, ¶¶ 220–24 (rel. Aug. 21, 2000) ("*Section 706*
(continued…)

In September 1999, OnSat petitioned the Commission to remove unnecessary regulatory barriers that prevent broadband service providers from effectively using the C-Band for more economical and better service to under-served, particularly rural, areas.[3] Specifically, OnSat asked the Commission to approve streamlined C-Band licensing to permit the commercial roll out of C-Band networks, consistent with C-Band operators' responsibility to coordinate with terrestrial users. OnSat's experience, which is typical, was that the existing licensing procedures delayed the introduction of service for up to seven months from the date a prospective licensee submitted an application to operate at a particular site. In addition, under the existing procedures, each site in a network must be applied for individually and be subject to a separate public notice period and application fee.[4] It is this petition, in part, that prompted issuance of the *Notice*, which incorporates some of OnSat's recommendations.

Over the past year, OnSat has worked with International Bureau staff to try to bring OnSat's service to the public more expeditiously and without the costly bureaucratic delays that

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Second Report") (stating that rural areas and tribal territories continue to lag behind the country at large in access to advanced telecommunications services); *id.* ¶ 88 (showing that high speed service availability rises dramatically with population density and that many sparsely populated areas do not have high speed internet services); National Telecommunications and Information Administration, *Falling Through the Net: Toward Digital Inclusion*, Oct. 2000 ("*Falling Through the Net*"), at 41, *available at* <http://www.ntia.doc.gov> (indicating that only 7.3% of households in rural areas have high speed internet access); Rusty Graham, *Small-Time Connections*, tele.com, Oct. 30, 2000, *available at* <http://www.teledotcom.com/article/TEL20001031S0003> (dismissing the prospects for broadband services in extremely rural areas because most carriers find the economics of laying fiber network in sparsely populated areas unworkable); David Plotnikoff, *Telecom Act Endangers Subsidies for Rural Service*, San Jose Mercury News, Oct. 30, 2000 (indicating that rural areas continue to lag behind in access to broadband services, and that Indian reservations continue to lag behind even in access to basic services).

[3] OnSat Petition for Declaratory Order and Waiver and Request for Expedited Action, File No. SAT-PDR-19990910-00091, Public Notice, Report No. SAT-00026 (rel. Sept. 23, 1999) ("OnSat Petition").

[4] *See id.* at 3–4.

have deterred C-Band operators in the past.[5] While OnSat appreciates the Commission's efforts to expeditiously process its earth station applications under the existing licensing processes, the fact is that until C-Band operators are able simply to notify the Commission of remote sites (all coordinated with terrestrial users) without having to wait for authorization before operating each remote, the C-Band will not be a realistic option for broadband networks. It would be a terrible disservice to the country, and particularly to the rural and tribal lands that OnSat serves, to allow formal licensing requirements that are unjustified by technical necessity to obstruct the more efficient exploitation of scarce spectrum and orbital slots. Moreover, such a decision would run counter to the efforts the Commission is making generally to do away with rules that unduly burden both the agency and regulated entities.[6]

The proposed blanket application procedures for C-Band satellite ("CSAT") networks are a step in the right direction in advancing both the deregulatory and access goals of the Commission.[7] However, the proposal has two central flaws that will inhibit, if not prevent, the

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[5] *See, e.g.*, Letter from Ellen P. Goodman, Attorney for OnSat Communications Network, Inc., to Magalie Roman Salas, Secretary, FCC, File No. SAT-PDR-19990910-00091 (Feb. 10, 2000); Fee Waiver Request Submitted by OnSat (Aug. 24, 2000) ("OnSat Fee Waiver Request"); Radio Station Authorization for Red Mesa, AZ, File No. SES-LIC-20000801-01226, granted Oct. 13, 2000, call sign E000369 ("Red Mesa Authorization").

[6] *See, e.g.*, *In re 2000 Biennial Regulatory Review — Streamlining and Other Revisions of Part 25 of the Commission's Rules Governing the Licensing of, and Spectrum Usage by, Satellite Network Earth Stations and Space Stations, Notice of Proposed Rulemaking*, FCC 00-435, IB Docket No. 00-248, ¶ 7 (rel. Dec. 14, 2000); *Commission Launches Earth Station Streamlining Initiative*, Public Notice, DA-1259 (rel. June 25, 1999); *see also* Michael K. Powell, Commissioner, FCC, *The Great Digital Broadband Migration*, Remarks before the Progress & Freedom Foundation, Washington, DC, Dec. 8, 2000 (stressing the need for the Commission to place greater reliance on deregulatory initiatives, accelerate regulatory procedures, and rationalize the regulatory structure so that different technologies are treated equally).

[7] The Commission is well aware of the so-called "digital divide." Despite the rapid growth of communications networks and end-users of Internet access services, there remains a gap in the availability to different groups of such advanced technology. Rural Americans continue to lag behind in access to the Internet, particularly the increasingly-important high-speed access that many advanced (continued…)

effective deployment of CSAT networks that provide advanced telecommunications services to rural customers.

- First, the Commission should allow CSAT applicants to begin operating remote antenna sites once frequency coordination is complete (and thus all interference concerns have been resolved) rather than either requiring authorization for each individual antenna (as the Commission now does) or requiring a licensee to withhold service pending the lapse of an unnecessary and redundant public notice period for each site (as the *Notice* proposes). The Commission has accepted a simple notification of multiple coordinated and technically identical C-Band antennas in the past and should, out of principles of fairness and regulatory efficiency, implement such a process more broadly.

- Second, the Commission should ensure that CSAT networks can realistically be implemented by licensing network earth stations for less than the full-band/full-arc (C-Band earth stations have customarily been licensed for the full allocated 500 MHz and the full satellite arc) to which they are entitled under existing rules, but enough of the band and the arc to support a functional network. Rather than adopt a fixed maximum bandwidth for CSAT networks (that will only be appropriate for some, but not all, networks), the Commission should adopt a maximum bandwidth (perhaps 250 MHz), but allocate less bandwidth depending on the requirements of the network. In OnSat's case, the minimum bandwidth necessary for successful network operations is 60 MHz. The *Notice* recognizes that even a 60 MHz restriction raises serious problems for earth stations that are vulnerable to transponder or satellite failure, over-use, and interference, and therefore need frequency flexibility.[8] The 20 MHz restriction proposed in the *Notice* would put an end to most CSAT networks and is not necessary to protect the interests of terrestrial users.

Internet applications require. *See* National Telecommunications and Information Administration, *Falling Through the Net*, at 24, 41; *see also supra* note 2. The Commission has, for example, noted the need for improving communications services to Native American populations living on tribal lands — a clear example of a group of rural Americans that lacks access to advanced telecommunications facilities. *See In re Extending Wireless Telecommunications Services to Tribal Lands, Report and Order and Further Notice of Proposed Rulemaking*, FCC 00-209, WT Docket No. 99-266, ¶¶ 8–14 (rel. June 30, 2000), (noting the continued low level of availability of communications services to the remote and sparsely populated tribal lands, and the potential of satellite technology as a "cost-effective means to serve [these] communities").

[8] *Notice* ¶ 38.

II. The Commission Properly Recognizes the Importance Of Streamlined Licensing Procedures For Pre-Coordinated CSAT Networks, But Proposes Insufficient Remedies

A. Streamlined CSAT Licensing Procedures Reduce Regulatory Barriers To The Provision Of Broadband Services

We commend the Commission for recognizing that a streamlined blanket application procedure for CSAT networks is at long last due.[9] Such procedures will lessen administrative burdens (in terms of cost and time) for both CSAT applicants and the Commission, and will go a long way toward ensuring that advanced communications services are available to rural customers in a timely and affordable manner. Streamlined blanket licensing procedures are also consistent with the Commission's treatment of Ku-Band networks,[10] with its *ad hoc* treatment of select C-Band networks,[11] and its recent deregulatory initiatives.[12]

CSAT systems, like VSAT systems that are currently operational in the Ku-Band under blanket licenses, are networks of technically identical earth stations that communicate with a hub station.[13] This so-called "hub and spoke" configuration allows these systems to operate at a lower cost than other satellite or terrestrial systems. In comparison with terrestrial systems, satellite networks can be deployed more rapidly and more easily — particularly in areas with rough terrain or remote areas where facilities are too widely dispersed to lay cable or string

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[9] *See Notice* ¶ 82.

[10] 47 C.F.R. §§ 25.115(c), 25.134; *In re Routine Licensing of Large Networks of Small Antenna Earth Stations Operating in the 12/14 GHz Frequency Bands, Declaratory Order, available in* 1986 WL 291567 (rel. Apr. 9, 1986) ("*VSAT Order*").

[11] *In re GTE Spacenet Corporation Streamlined Licensing Procedures for 4/6 GHz Earth Stations, Order and Authorization*, 7 FCC Rcd 5217 (1992) ("*GTE Spacenet Order*").

[12] *See supra* note 6.

[13] The primary difference between CSAT systems and VSAT systems is that CSAT systems operate in the C-Band, a band which they share spectrum with terrestrial fixed services ("FS") on a co-primary basis. *See Notice* ¶ 82.

wires.[14] In comparison with Ku-Band VSAT networks, CSAT networks have technical and cost advantages.[15] For example, C-Band spectrum, unlike Ku-Band spectrum, can provide 99.99 percent signal availability, which communications engineers consider desirable for reliable reception and efficient downloading in a high-speed data network.[16] The reliability differential is due largely to the fact that Ku-Band spectrum is more susceptible to rain fade than is C-Band spectrum.[17] In addition, C-Band transponder capacity is cheaper to lease because the satellites are less powerful and therefore smaller.[18] These advantages make CSAT networks more practical for under-served and poorer rural and tribal areas.[19]

Given these advantages, why have CSAT networks not proliferated? The main obstacle has been the Commission's rules. Most enterprises would rather use the congested and

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[14] Peter S. Goodman, *Dishing Up a New Link to the Internet*, Washington Post, Nov. 6, 2000, at A1 (describing one satellite company's service to customers on the Havasupai Indian reservation at the bottom of the Grand Canyon, a "two hour drive and an eight-mile walk from anything resembling a town," that had never even received radio signals); *see also* Graham, *supra* note 2 ; Amy C. Cosper, *VSATs Find Their Voice: When Terrestrial Infrastructure Falls Short*, Global Telephony (Sept. 1997); Amy C. Cosper & James M. Glifford, VSAT Holdouts, 21 Satellite Communications 26 (1997).

[15] *See* OnSat Petition at 11–13.

[16] *See id.* at 11.

[17] *See id.* at 11–12; *see also Don't Count C-Band Satellite TV Business Out Yet, Users Say*, Communications Daily, at 4 (Apr. 30, 1999) ("[R]ain fade attenuation doesn't affect C-Band signals, as it does higher frequencies, yet it offers some digital compression capabilities . . . ."). In order to overcome the rain fade in the Ku-Band while maintaining 99.99 percent signal availability, a satellite operator would either have to use larger antennas for a higher gain (which results in higher costs and other problems such as land use concerns) or extract more power from a satellite transponder (which results in higher recurring costs). OnSat Petition at 12.

[18] *See Don't Count C-Band Satellite TV Business Out Yet, Users Say*, *supra* note 17 ("C-Band satellites are less expensive to build, require lower power for operations, and come in a more 'tried-and-true' package.").

[19] CSAT networks have the added advantage of better geographical coverage than Ku-Band networks. The C-Band provides for off-shore coverage, allowing OnSat to provide high-speed internet service to the Virgin Islands and Honduras using the same satellites it uses for domestic service. These economies of scale reduce the cost of providing service to all users of OnSat's services.

sometimes technically inferior Ku-Band simply because the licensing process is easier. To some extent C-Band will always be more difficult to use because use must be coordinated with terrestrial users, but this proceeding should be used to reduce the imbalance in the licensing process for Ku-Band and C-Band and to remove unnecessary regulatory control over technological choices.

B. The Proposed Rules Allowing Streamlined CSAT Licensing Should Create Equivalent Licensing Schemes Within And Across Frequency Bands

Current licensing practice allows for blanket licensing of "hub and spoke" systems in the Ku-Band (VSAT systems).[20] VSAT applicants submit a lead application which describes the network, a Form 312 for each large hub station, and a Form 312 for each representative type of earth station antenna to be used in the VSAT network.[21] Once the application is granted (following Commission review and a public notice period), VSAT applicants are merely required to specify, on a yearly basis, the number of earth station antennas actually constructed.[22]

By contrast, an entity like OnSat that wants to establish a CSAT network must apply for each individual antenna separately, submit a separate filing fee of $2,035 for each antenna, and then wait while each antenna is processed, put out on public notice, and then authorized.[23] It is both impractical and expensive to apply individually for licenses for each earth station and to wait between two and seven months for approval of each site.[24] The administrative burden of

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[20] *See VSAT Order*; *see also* 47 C.F.R. §§ 25.115(c), 25.134.

[21] *VSAT Order* ¶ 20.

[22] *Id.* ¶ 23.

[23] *See* OnSat Fee Waiver Request at 3; *see also* Federal Communications Commission, *International and Satellite Services Fee Filing Guide*, at 9 (Sept. 2000).

[24] OnSat has been permitted to file a lead application, followed by a modification to that application that adds technically identical earth stations. *See In re OnSat Petition for Waiver to Permit Routine Licensing of 3.7 Meter Transmit and Receive Stations at C-Band, Order*, DA 00-263, File No. SAT-PDR-
(continued…)

today's individualized application process falls on both the Commission and the license applicant, and impedes the timely and cost-effective deployment of advanced communications services through diverse means to diverse populations. By contrast, streamlined licensing of CSAT earth stations would reduce administrative and financial burdens and would thereby further the Commission's goal of rapid deployment of advanced telecommunications to rural Americans and consumers in tribal areas.[25]

This stark difference in the licensing of VSAT and CSAT antennas is not reflected in or justified by technical differences between the two systems. VSAT and CSAT hub and spoke antenna systems are identical in their configuration and operation, except for the frequency bands in which they operate.[26] The only relevant difference between VSAT and CSAT systems for purposes of the licensing process is that CSAT systems must share the C-Band with terrestrial fixed service ("FS") systems on a co-primary basis — a difference the rules currently, and the *Notice* would in the future, accommodate by requiring prior frequency coordination of CSAT earth station antennas.[27] The Commission should therefore adopt rules for CSAT antenna

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19990910-00091, ¶ 9 (rel. Dec. 14, 2000). However, more than four months after its filing of a fee waiver request, there has still been no ruling on the fees appropriate for these filings (creating continuing uncertainty in the process), and OnSat must still await FCC authorization for each remote site following a public notice period.

[25] *See* 47 U.S.C. § 157; *Section 706 Second Report* ¶ 267 (indicating the Commission's commitment to ensuring that advanced services become available to all Americans, and that present-day market forces may not ensure that rural Americans will receive such services); Attachment C (describing the ways in which companies like OnSat could help meet the Commission's goals outlined in the *Section 706 Second Report* if regulatory barriers were removed); *see also Section 706 Second Report* ¶ 267 (indicating that the Commission would "review existing regulations and licensing policies for satellite and wireless systems that share spectrum bands" to meet the above-stated goal).

[26] *See Notice* ¶ 84; *VSAT Order* at n.15. To the extent that differences in C-Band power levels and dish sizes might create more interference, this interference must be mitigated in the frequency coordination process to which all CSAT antennas are subjected.

[27] *See* 47 C.F.R. § 25.203; *Notice* ¶¶ 89, 94.

licensing that are roughly equivalent to the blanket licensing provisions for VSAT systems in the Ku-Band, with the sole exception of a prior frequency coordination requirement. CSAT licensing should partake of the same efficiencies as VSAT licensing. The *Notice* proposes to go some of the way towards this goal,[28] but stops short of proposing the necessary correction to the current problem (see below). Specifically, the CSAT licensing rules must allow operators to activate remote antennas once they have been coordinated and notified, without the delay of a public notice period for each antenna — a period that is not required for other earth station operation[29] and is redundant with the coordination process.[30]

III. Once The Lead CSAT Application Specifying A Number Of Technically Identical Earth Stations Has Been Granted, The FCC Should Allow Individual Earth Stations To Operate Immediately Upon Notification Of Frequency Coordination

A. The Notice's Proposed Streamlined CSAT Licensing Procedures Do Not Accord With More Favorable FCC Treatment of Particular CSAT Licensees

The Commission has already recognized the importance of streamlined licensing procedures for CSAT systems. It allows one user, GTE Spacenet,[31] to operate under a blanket license for technically identical earth stations in a C-Band hub and spoke system.[32] The Commission granted GTE Spacenet a lead license that covered a specified number of technically

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[28] *Notice* ¶ 89.

[29] *See VSAT Order* ¶¶ 19, 23 (permitting VSAT operators to notify the Commission of the remote antennas actually constructed on a yearly basis). As discussed in Part III below, the notice period is not required of VSAT earth stations, CSAT earth stations under the provisions applied to GTE Spacenet on an *ad hoc* basis, and receive-only antennas.

[30] See Part III.B below, which describes how the frequency coordination process notifies all parties that may be interfered with by the proposed earth station, which makes a further public notice period unnecessary.

[31] GTE Spacenet's CSAT network is now owned and operated by Spacenet, Inc., a wholly-owned subsidiary of Gilat Satellite Networks, Inc. *See* <http://www.spacenet.com/tools/media/report.stm>. For simplicity, these Comments continue to refer to GTE Spacenet since it is mentioned in the Order issued by the FCC that applied streamlined licensing provisions to a CSAT network. *See GTE Spacenet Order*.

identical earth stations, required it to complete frequency coordination for each individual station before it became operational, and required it to do nothing more than notify the Commission on a monthly basis of the number of earth stations brought into service, without undergoing a public notice or approval period for each antenna.[33] As the Commission recognized at the time, "implementation of these procedures will reduce administrative burdens on both the applicant and the Commission and will ensure that service is provided to the public in a more timely fashion."[34]

The proposed rules purport to extend the streamlined licensing procedures followed by GTE Spacenet to all CSAT applicants.[35] However, the proposed CSAT licensing procedures differ significantly from those applied to GTE Spacenet. The proposed rules would not only require CSAT applicants to file a frequency coordination notification for each individual earth station, but would then require them to wait for at least 30 days before placing the earth station into operation while the coordination notification is put out on public notice.[36] This 30-day public notice period is inconsistent with the procedures followed by GTE Spacenet and the procedures that apply to VSAT networks.[37]

The *Notice* does not provide an explanation for the difference between the licensing procedures followed on an *ad hoc* basis by GTE Spacenet and the procedures outlined in the proposed rules. The technical differences between CSAT systems such as OnSat's and GTE

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[32] *GTE Spacenet Order* ¶¶ 6–7; *Notice* ¶ 85.

[33] *See GTE Spacenet Order* ¶¶ 3–5.

[34] *Id.* ¶ 4.

[35] *Notice* ¶ 87.

[36] *Id.* ¶ 89.

[37] *See VSAT Order* ¶¶ 19–23.

Spacenet's system are not relevant to the application process and do not justify a difference in licensing procedures. GTE Spacenet operates a spread spectrum system and thus operates at lower average power levels than does a system like OnSat's.[38] However, both systems still require frequency coordination of each individual antenna with terrestrial users, and any difficulties posed by OnSat's higher power levels will be reflected in and resolved through the frequency coordination process. GTE Spacenet also uses slightly smaller antennas (1.2 or 1.4 meters in diameter) than the 3.7 meter antennas used by OnSat. Larger antennas are *less likely* to cause unacceptable interference[39] and, regardless, any interference-related concerns must be resolved during frequency coordination. At 3.7 meters, OnSat's antennas do not pose significant environmental or FAA-related concerns.[40] In short, there is no technical reason why CSAT applicants such as OnSat should not benefit from the streamlined procedures that GTE Spacenet enjoys, and any difference in procedures would result in inconsistent and unequal treatment of different CSAT users.

B. A Notice Period For CSAT Antennas Is Unnecessary

Even if the Commission had not already made this determination for GTE Spacenet, it should conclude here that the proposed 30-day public notice period for each individual earth

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[38] *See In re Equatorial Communication Services Request for Permission to Operate a Limited Number of Earth Terminal Antennas that are not in Conformance with the Sidelobe Requirements of 47 C.F.R. § 25.209*, 2 FCC Rcd 4153, ¶ 4 (rel. July 10, 1987) (Equatorial Communications Company was the predecessor to GTE Spacenet).

[39] *In re 2000 Biennial Regulatory Review — Streamlining and Other Revisions of Part 25 of the Commission's Rules Governing the Licensing of, and Spectrum Usage by, Satellite Network Earth Stations and Space Stations, Notice of Proposed Rulemaking*, FCC 00-435, IB Docket No. 00-248, ¶ 7 (rel. Dec. 14, 2000) ("[S]maller antennas produce wider transmission beams, which, in turn, create more potential interference to adjacent satellite operations.").

[40] *See VSAT Order* at n.19 (stating that licensing antennas less than 30 feet in diameter is a minor action with respect to environmental processing, and that FAA notification is not routinely required if the antenna height is less than 6.1 m).

station antenna in a CSAT system is unnecessary in light of the publication of the lead application and the requirement that each individual earth station antenna undergo frequency coordination. The *Notice* proposes that the lead CSAT application include a description of the hub station, a Form 312 Schedule B for each representative type of small earth station antenna that is part of the network, a specified number of such small antennas, and the spectrum to be used for communication channels.[41] This lead application will be put on public notice, which gives all interested parties the opportunity to comment on the CSAT application, including the spectrum and orbital slots to be used, the design of the antennas, and the potential impact of the network. Once the lead application is granted, however, there is no need for the specifics of each individual antenna to go on public notice.

To the extent that the Commission is concerned about potential interference of CSAT networks with terrestrial FS systems, the requirement of prior frequency coordination completely addresses this concern. As the *Notice* observes, an earth station applicant "must select sites and frequencies [so] as to minimize the possibility of harmful interference [to terrestrial services and] . . ., prior to filing with the Commission, must coordinate its proposed frequency usage with existing terrestrial users and with applicants that have filed for terrestrial station authorizations."[42] Frequency coordination is conducted by recognized third-party professionals with no interest in the outcome of the process. In Attachment A, Ken Ryan of Comsearch, a leading commercial provider of frequency coordination services, describes how comprehensive

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[41] *Notice* ¶ 89.

[42] *Notice* ¶ 17 (footnotes omitted). The frequency coordination procedures for earth stations are outlined in the Commission's rules at 47 C.F.R. § 25.203.

and exacting the coordination process is.[43] The independent frequency coordinators use extensive databases of all FS licensees and applicants to identify all potential sources of interference.[44] They then notify all terrestrial and other spectrum users within the coordination contour of the proposed earth station antenna of the interference study results.[45] Parties that are potentially affected by interference from the proposed earth station have the opportunity to perform their own tests and raise any interference-related concerns that they have.[46] The frequency coordination process is complete only after all parties' concerns have been satisfactorily addressed.[47]

Thus, any concerns that existing terrestrial FS users have regarding possible interference would be addressed by the frequency coordination process and/or by the license terms for the

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[43] Statement of Ken Ryan, Comsearch, Attachment A ("Ryan Statement").

[44] *See id.* ¶ 3.

[45] *See id.* ¶ 4.

[46] *See id.* ¶¶ 4–5.

[47] *See id.* ¶¶ 5–6. The frequency coordination process is also described by Comsearch on its website:

> The first step is interference analysis. This is normally a computer study of the interference aspects of a site with inputs from terrain databases and often augmented by some field verification of interference levels. The purpose of this phase is to identify all potential interference sources and to find reasons that the problem should not affect operation or to determine methods to mitigate the interference.
>
> Once a site is cleared, that is, all potential interference problems have been resolved to the satisfaction of the user and the affected parties, the frequency coordination notice is issued. Technical data on the proposed operation of the earth station is sent to users of terrestrial microwave within the coordination contour of the earth station. Each of these microwave users makes an independent study and calculates interference involving their facilities. If they find cases of potential interference from the proposed earth station, they report their objections.
>
> The earth station applicant or his frequency coordinator must reply to any objections raised, present arguments as to why no interference will result, convince the user of this, and finally get him to state, in writing, that he agrees with your analysis.
>
> Once all the carriers agree no interference will result from the operation of the earth station, a FCC application can be filed.

Comsearch, *Fundamentals of Earth Station Frequency Coordination*, 2, *available at* <http://www.comsearch.com/articles/es_coordination_guide.pdf>.

technically identical antenna approved in the lead application process. At best, the 30-day public comment period results in an unnecessary delay in bringing each earth station antenna into service; at worse, it allows other users of the C-Band spectrum to slow the deployment of the CSAT systems by raising issues that were already raised (or should have been raised) in the extensive frequency coordination process.

To the extent that the Commission is concerned with issues other than interference in proposing a public notice period for coordinated CSAT earth stations (*e.g.*, environmental and aesthetic concerns), these concerns have not justified public notice periods in analogous circumstances and do not justify the administrative delay here. Remote antennas used in CSAT systems are typically located at a licensee's or customer's premises and are small enough to render extra-interference concerns insignificant.[48] The fact that the licensing of antennas smaller than 30 feet in diameter (OnSat's remote antennas are 3.7 meters, or approximately 12 feet, in diameter) is considered a minor action with respect to environmental processing is reflected in VSAT licensing, which the Commission recognizes does not implicate environmental concerns.[49] Whatever environmental or aesthetic concerns there may be are equally present for many earth stations, such as VSAT remote antennas, receive-only antennas (which may be erected without even notice to the FCC), and GTE Spacenet's CSAT remote antennas. In all these other cases, the Commission has concluded that whatever concerns the public might have are not sufficiently important to merit a public notice period.[50] Since any non-interference

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[48] *Cf. VSAT Order* at n.9 ("These proposed antennas are small and are generally located at a licensee's or customer's premises and thus do not raise environmental or FAA coordination concerns.").

[49] *See id.* at nn.9, 19.

[50] *See, e.g., GTE Spacenet Order* ¶ 4 ("A monthly report of the new stations will be sufficient for Commission monitoring and for public notice.").

concerns are related primarily to the size of the antenna, there is no reason to have different public notice procedures (*i.e.*, the proposed 30-day notice period requirement) for CSAT systems and other systems that use small remote earth station antennas. The Commission should be consistent across and within services with respect to the need for a public notice period and refrain from imposing a 30-day public notice period for CSAT applicants.[51]

The requirement of a 30-day pubic notice period before a coordinated earth station is allowed to operate is also inconsistent with the conditional authorization procedures available to terrestrial FS users.[52] Under these procedures, a terrestrial FS applicant operating in the C-Band may operate a proposed antenna while its application is pending, provided that it has completed the frequency coordination process, the proposed antenna is smaller than 6.1 meters (so as to not pose FAA concerns), and the applicant has determined that the antenna will not have a significant impact on the environment as outlined in the Commission's rules.[53] The availability of conditional authorization to C-Band FS applicants suggests that C-Band Fixed-Satellite Service ("FSS") users should not be required to wait during a 30-day public notice period once they follow similar requirements (prior frequency coordination and ensuring there are no FAA or significant environmental concerns posed by the proposed antenna). While there are differences

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[51] As it did when it established the licensing procedures for VSAT systems and GTE Spacenet's CSAT network, the Commission has the authority to decline to impose a public notice period for each individual earth station antenna in a CSAT "hub and spoke" network. In the proposed rules, the lead application for a CSAT system that includes information on hub antennas, each representative type of remote antenna, and network characteristics and configuration, will be subject to a 30-day public notice period, consistent with 47 U.S.C. § 309(b). However, the notification that an individual earth station antenna (that was approved in the lead application) has become operational is a minor amendment to a license and thus not subject to the statutory 30-day notice period. *See* 47 U.S.C. § 309(c); *see also* 47 C.F.R. § 25.151(a) (stating that a public notice period is only required for major modifications to a license).

[52] *See* 47 C.F.R. § 101.31(b).

[53] *See id.* There are several other requirements that are not germane to this proceeding.

between FS and FSS systems, they are not relevant to the 30-day notice period. This difference in licensing procedures (a 30-day notice period for CSAT applicants and no notice period for C-Band FS applicants) unnecessarily and unfairly favors one communications technology over another.

C. A Notice Period For CSAT Antennas Is Unduly Burdensome

The 30-day public notice period is more than simply unnecessary; it imposes a significant hardship on CSAT applicants that already must endure an often protracted frequency coordination process while their customers wait for service. At present, OnSat performs site surveys during the negotiation of a contract with a potential customer. Once a contract with a new customer is signed, OnSat begins the frequency coordination process (using Comsearch) within 2–3 days. At $3,000–$4,000 for each site coordination, a company cannot be expected to undertake this expense before it has a contract. The frequency coordination process typically takes between 30 and 45 days, although it may take as little as 1–2 weeks if there are no potential interference problems and, consequently, no parties to respond to the proposed antenna (which is not so uncommon given the remote areas that OnSat serves).[54] The proposed 30-day public notice period adds more than a month to what is already a 3–8 week delay before OnSat can begin providing the service for which a customer has contracted. Where OnSat's customers (particularly schools and libraries in remote areas) have no other broadband alternatives, the impact of these lengthy delays is loss of service for months into the school year. Where OnSat's customers have other options, OnSat has the problem of sustaining a customer base in the face of these delays and the customers often are put to the choice of a more expensive and less reliable

[54] *See* Statement of Sidney M. Skjei, P.E., Attachment B ("Skjei Statement"), ¶ 7.

broadband service that is immediately available or a better service for which they must wait. This is a choice that customers should not have to make and a choice that services like OnSat's are unlikely to survive.[55] While OnSat expects, and its customers allow for, some delay before an antenna becomes operational, the addition of the 30-day waiting period because of redundant public notice is the straw that breaks the camel's back.

In summary, although the proposed rules purport to adopt the streamlined licensing procedures previously established for GTE Spacenet on an *ad hoc* basis, they fall short of actually doing so in that they require a 30-day public notice period for each individual earth station antenna before it can become operational. This 30-day waiting period is unnecessary in light of the extensive frequency coordination process and merely adds another layer of administrative burdens on both the Commission and the applicant, further delaying the introduction of advanced communications service to under-served areas. The Commission should not impose a 30-day waiting period on CSAT applicants for each remote antenna and should instead allow these antennas to become operational once the frequency coordination process is complete, with the CSAT applicant notifying the Commission of the coordinated earth stations on a monthly basis.[56]

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[55] OnSat estimates that it loses up to $200 a day in revenue each day an antenna is not operational because it is waiting for authorization. The lost revenue does not include the non-quantifiable losses in potential customers who do not sign on because of the delay and in credibility with existing customers waiting for the service for which they contracted. The lost revenue also does not include the cost of financing the hardware over the period between the installation of an antenna and when it finally becomes operational (since OnSat does not receive final payment until that point).

[56] This is the process followed by GTE Spacenet. *GTE Spacenet Order* ¶ 7.

IV. The Commission Should Not Adopt A Specific Limit On Spectrum Use By CSAT Systems And Should Instead Accommodate Different Network Designs By Permitting CSAT Applicants To Apply For Bandwidth Based On Their Particular Network

C-Band earth stations have traditionally been licensed for as much of the satellite arc and as much of the 500 MHz band that could be coordinated with terrestrial FS users.[57] The purpose of this "full-band/full-arc" operation is to give satellite operators and users the flexibility to switch satellites and transponders and to coordinate for different frequency bands in different earth station locations.[58] Attachment B is a statement from Sidney M. Skjei, P.E., President of Skjei Telecom, Inc. (a technical consulting company), which outlines the importance of spectrum flexibility for satellite networks. Satellite service is inherently short-lived and unstable and satellite system operators have no assurance that they will continue to have access to the necessary capacity at a given angle and frequency from one year to the next. Full-band/full-arc licensing thus recognizes the practical difficulties faced by satellite operators and allows them to adapt to changing operational requirements.[59]

Despite these realities, OnSat has acknowledged the potential problems facing the FS community and, after negotiations with the Fixed Wireless Communications Coalition, requested a single block of 60 MHz over 3 orbital slots.[60] The 60 MHz is the minimum necessary to give

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[57] *See Notice* ¶ 40; *In re American Satellite Corp., Memorandum Opinion and Authorization*, 722 FCC 2d 750, 754 (1978).

[58] *See Notice* ¶ 40; *American Satellite Corp.*, 72 FCC 2d at 754 (1978) (outlining importance of full-band/full-arc licensing); *Establishment of Domestic Communications-Satellite Facilities by Nongovernmental Entities, Report and Order*, 22 FCC 2d 86, 102 (1970).

[59] *See Notice* ¶¶ 38–40. The *Notice* recognizes the practical difficulties faced by FSS operators by rejecting a proposal to limit FSS users to a bandwidth of twice their "actual need." *Notice* ¶ 42.

[60] *See* Letter from Ellen P. Goodman, Attorney for OnSat Communications Network, Inc., to Magalie Roman Salas, Secretary, FCC, File No. SAT-PDR-19990910-00091 (Feb. 10, 2000). The cited letter (continued…)

OnSat the operational flexibility it needs. The requested 60 MHz represents an 88% reduction in the amount of spectrum that OnSat could expect to be licensed under the ordinary C-Band licensing procedures, and, together with the associated reduction in satellite arc usage, results in significantly less operational flexibility for CSAT operators.[61]

The proposed rules appear to suggest that a CSAT applicant should be limited to a total of 20 MHz over three orbital slots, rather than 20 MHz at each of three orbital slots for a total of 60 MHz.[62] OnSat objects to this proposal on two grounds. First, as applied to OnSat, 20 MHz is insufficient to provide the necessary flexibility to change antenna orientation and frequencies to function with different satellites and transponders and operate at many different sites, thereby ensuring continuous and robust service to our network customers.[63] Second, and more fundamentally, OnSat does not believe that the Commission should adopt a one-size-fits-all approach to CSAT networks as each network may be designed differently. Rather, the Commission should limit spectrum use as a function of the network requirements.

A. An Undue Restriction On CSAT Spectrum Use Will Make CSAT Networks Impractical And The Administrative Process Unworkable

Strangely, the *Notice* recognizes the flexibility needs of earth station operators and declines to propose an unduly limited "actual spectrum need" requirement on earth station

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states that "OnSat agrees to coordinate only 20 MHz at three different orbital slots in connection with a streamlined, VSAT application." *Id.* at 2.

[61] OnSat applied and was authorized for 60 MHz over 3 orbital slots for its Red Mesa, AZ, earth station antenna. *See* Red Mesa Authorization.

[62] *See Notice* ¶¶ 14, 93. The proposed language for 47 C.F.R. § 25.115(c)(2)(i) states that "lead applications shall . . . identify a maximum of 20 MHz of spectrum to be used for communications channels." *Id.* at App. C. The *Notice* cites a letter from OnSat's counsel as the basis of the 20 MHz limitation. *Id.* at n.17. However, in OnSat's view, the agreed-to limitation amounts to a total of 60 MHz (a different 20 MHz over each of three different orbital slots or 60 MHz total), as reflected in OnSat's lead CSAT application which has been granted. *See* Red Mesa Authorization.

licensees (the FS community has proposed that C-Band earth station licensees be limited to a bandwidth of two times "actual need").[64] And yet, the *Notice* proposes a limitation for CSAT networks that assumes away operational problems that are highlighted elsewhere in the *Notice.*

The Statement of Sidney Skjei, Attachment B, describes the difficulties OnSat has faced in attempting to coordinate remote earth station antennas in a CSAT system even for 60 MHz. OnSat was able to coordinate its remote antenna in Red Mesa, AZ, for a total of 60 MHz.[65] When it tried to coordinate these same frequencies at another location, it was able to coordinate only 55 MHz and had to drop 5 MHz.[66] If any single antenna in the network is authorized for less than 60 MHz, the practical effect is that the entire network can only operate using less than 60 MHz.[67] OnSat has had to reduce the spectrum its network uses from 60 MHz to 55 MHz after attempting to coordinate just three antennas — the hub and two remotes. As additional remote antennas are added to the network, it is highly likely that the entire network will have to use significantly less than 60 MHz.[68] Thus, a 20 MHz limitation on spectrum usage would be impractical and extremely burdensome, and would make it almost impossible for OnSat to continue operations as it continues to add remote antennas.[69]

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[63] *See* Skjei Statement ¶¶ 6, 8.

[64] *See Notice* ¶¶ 35–42.

[65] *See* Skjei Statement ¶ 4.

[66] *See id.*

[67] *See id.* ¶ 4.

[68] *See id.* ¶ 5.

[69] *See id.* ¶ 8.

Imposing an unrealistic limitation on CSAT spectrum use would result in a greater administrative burden for both the CSAT applicant and the Commission.[70] At present, the FS/FSS frequency sharing in the C-Band makes the frequency coordination process time-consuming and expensive — a typical frequency coordination takes 30–45 days and costs $3,000–$4,000.[71] By unduly restricting the spectrum use of CSAT operators, the Commission would increase the likelihood that a CSAT user would not be able to use its assigned band once satellite communications conditions change and sites are added to the network. This would result in the CSAT user having to reapply for a license for a different frequency band — meaning a new application for its hub and its lead or other antennas. Ultimately, there would be no guarantee that the licensee would not find itself in the same predicament a few months later. Such an outcome would impose a prohibitively large expense (both in terms of time spent waiting for a license and new application fees) on CSAT users, and a large administrative burden on the Commission.[72]

B. Spectrum Limitations For CSAT Networks Should Not Be Absolute, But Network-Specific

The Commission should not adopt specific one-size-fits-all limits on spectrum use by CSAT system operators. OnSat agreed to use a total of 60 MHz based on the specifics of its network, not on CSAT systems generally. Other CSAT systems may very well require different amounts of spectrum (less or more) depending upon the number of users they plan to serve.[73] In

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[70] *See id.* ¶ 7.

[71] *See id.*

[72] *See id.*

[73] *Cf. Notice* ¶ 93 ("We seek comment on whether CSAT networks can be designed and implemented within these limitations.").

this age of increasing bandwidth needs, a fixed spectrum use limit denies CSAT applicants the flexibility required to design networks of different sizes and capabilities.

The Commission should instead adopt a principle of licensing CSAT networks based on a specific network's spectrum needs, giving it the needed flexibility to switch satellites or transponders, up to a maximum amount of spectrum (perhaps 250 MHz).[74] This would ensure that these networks can realistically be implemented given the operational flexibility required by satellite operators.[75] A limitation of 20 MHz would make it impossible for OnSat or most other broadband systems to take advantage of the proposed streamlined licensing procedures and would likely increase the administrative burden on both the Commission and the applicant.[76] However, a 20 MHz limitation might be appropriate for narrowband networks. By the same token, some networks may need more than the 60 MHz OnSat needs to function. In keeping with the Commission's desire to support flexible spectrum use and network designs, it ought not arbitrarily impose a fixed spectrum usage amount for all CSAT networks and certainly it ought not impose the unjustified and unrealistic cap of 20 MHz.

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[74] OnSat does not propose that an applicant have to demonstrate its predicted need. As the Commission notes, such a demonstration would be extremely difficult and impractical to implement. *Notice* ¶ 41. Rather, the applicant should describe the services it expects to offer and seek a particular amount of bandwidth in its lead application. Any party (or Commission staff) that thinks the bandwidth is too great can raise objections.

[75] *See Notice* ¶¶ 38, 40.

[76] Of perhaps greater concern would be a situation in which the Commission restricted a network that required 20 MHz to coordinating that bandwidth and no more, and the satellite providing service failed. The network operator would probably NOT be able to find the same 20 MHz available on another satellite unless it had paid a high reservation fee in advance (often 50% of the monthly price of the bandwidth). The network operator would then have to cease all operations until it performed an "emergency re-frequency coordination" for every single antenna in its network. This could result in significant outage, expense, and labor, and the network could still end up with unwanted interference.

V. The Commission Should Allow CSAT Network Service Wherever Frequency Coordination Allows The Installation Of Earth Stations

The Commission has requested comments on whether its rules should limit CSAT service to rural areas or whether it should allow CSAT network service wherever frequency coordination allows the installation of an earth station.[77] The Commission should follow the latter approach. While OnSat's current business plans center around rural areas which are currently underserved by more "traditional" telecommunications services, the latter approach would not foreclose CSAT operators like OnSat from expanding their business models in the future. Such an expansion, should it happen, would only serve to lower costs for rural customers as a result of economies of scale. As a practical matter, of course, the frequency coordination process will ensure that CSAT systems will develop primarily in rural areas. However, by permitting CSAT systems to operate wherever frequency coordination will permit, the Commission will avoid the complicated question of defining rural areas and ensure that no area that could benefit from CSAT service will be denied such service.

* * *

For the foregoing reasons, OnSat urges the Commission to modify the *Notice's* proposals with respect to CSAT networks to further rationalize the regulatory scheme for satellite networks, reduce the unnecessary burdens for enterprises like OnSat that seek to provide broadband service where no comparable service is now available, and comply with the Commission's own past precedents on streamlined licensing and C-band regulatory relief.

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[77] *Notice* ¶ 95.

Respectfully submitted,

ONSAT NETWORK COMMUNICATIONS, INC.

ELLEN P. GOODMAN
COVINGTON & BURLING
1201 PENNSYLVANIA AVENUE, NW
WASHINGTON, D.C. 20004
(202) 662-6000

Its Attorney

January 8, 2001

ATTACHMENT A

STATEMENT OF KEN RYAN, COMSEARCH

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STATEMENT OF KEN RYAN, COMSEARCH

1. My name is Ken Ryan. I am the Director of Satellite Engineering Services at Comsearch. Comsearch is part of Allen Telecom, a consortium of telecommunications companies, and specializes in RF engineering for terrestrial, satellite, and mobile telecommunications systems.

2. Comsearch has been a leader in the spectrum management industry for over 23 years. Over the years, Comsearch has performed over 100,000 frequency coordination studies for over 5,000 clients. Comsearch works with the FCC and actively participates in industry groups such as the National Spectrum Managers Association (NSMA) and the Telecommunications Industry Association (TIA) to develop rules, industry recommendations, and standards to promote efficient use of the radio spectrum.

3. While conducting a frequency coordination for a particular earth station, Comsearch identifies all potential sources of interference. It does this by using a combination of databases — that include detailed information on terrestrial point-to-point microwave systems, earth station antenna patterns, microwave radio specifications, and terrain data — and on-site radio frequency interference measurements. Comsearch has a full-time dedicated staff of six technicians that maintain and update our databases on a routine, daily basis, and is recognized as the industry leader in maintaining the most complete, accurate, and up-to-date database information.

4. Comsearch then issues a frequency coordination notice and sends it to all terrestrial microwave and other spectrum users within the coordination contour of the earth station. The notice includes technical information on the proposed operation of the earth station that allows each microwave and other spectrum user to conduct its own study and interference calculations involving its facilities.

5. The next step in the frequency coordination process is for terrestrial users that identify potential interference problems from the proposed earth station to report their objections. Comsearch, on behalf of the earth station applicant, responds to any objections raised. Comsearch either presents arguments as to why no interference will occur or it works with the terrestrial user and the earth station applicant to resolve (e.g., through terrain shielding, repositioning of the earth station, and other methods) any potential interference problems to the satisfaction of all affected parties. We eventually obtain written statements from each terrestrial user stating that it agrees with Comsearch's analysis that there is no interference problem or that the problem has been resolved.

6. Once all users agree that no interference will result from the operation of the earth station, the frequency coordination is complete and the earth station owner files its FCC license application.

7. In this manner, the frequency coordination process identifies all parties potentially affected by interference involving the proposed earth station, gives them an opportunity to raise objections, and actually resolves interference problems before any application is presented to the FCC.

Ken Ryan
Director of Satellite Engineering Services
Comsearch
2002 Edmund Halley Drive
Reston, VA 20191
kryan@comsearch.com

January 8, 2001

ATTACHMENT B

STATEMENT OF SIDNEY M. SKJEI, P.E.

ATTACHMENT B

STATEMENT OF SIDNEY M. SKJEI, P.E.

1. My name is Sidney M. Skjei. I am the President of Skjei Telecom, Inc., a technical consulting company located in Falls Church, VA. I have been involved in the technical licensing of earth stations for over 20 years and have reviewed and certified technical details of applications for hundreds of earth stations and numerous Very Small Aperture Terminal ("VSAT") blanket network licenses.

2. I am a technical consultant for OnSat Network Communications, Inc. ("OnSat") and in that capacity assist OnSat in coordinating its C-Band earth stations and in applying for FCC authorizations. As such, I have personal knowledge of the facts set forth in this statement.

3. OnSat is in the process of installing a network of VSAT-like antennae in the C-Band. OnSat currently has a license to operate a 3.7 meter C-Band earth station antenna in Red Mesa, AZ — the application for this license will serve as the "lead" application for subsequent similarly configured earth stations in OnSat's network. OnSat currently has pending applications to "modify" the lead application to include additional earth stations and is conducting frequency coordination for other stations.

4. For OnSat's Red Mesa, AZ, antenna, we completed frequency coordination for a total of 60 MHz from a restricted orbital arc of 97° to 101° longitude. However, when we tried to coordinate these same frequencies at another location, we were able to economically coordinate only 55 of the 60 MHz and had to eliminate 5 MHz from the desired spectrum to be used by all stations. As additional stations are licensed, it is likely that local interference conditions will further reduce the available bandwidth for data transmissions. If any single station in the network is authorized for less than 60 MHz, the practical impact is that the entire network is limited to less than 60 MHz of available spectrum. This is because outbound (hub to remote) transmissions are almost always shared to avoid duplication, and inbound (remote to hub) frequencies are often shared to permit multiple access of the available space segment. While it would theoretically be possible to permit different stations in the network to be licensed for different inbound frequencies and share these among several "pools" of inbound frequencies, in practice this turns out to be operationally complex in a dynamic, growing network, and is not consistent with economical, trouble free, and reliable network operation.

5. My experience in general and with OnSat in particular suggests that as operators such as OnSat perform frequency coordination for each additional antenna they bring into operation, there is a real risk that the bandwidth the network can use will be further reduced. OnSat's C-Band VSAT network will likely use significantly less bandwidth than the 60 MHz it is authorized to use in Red Mesa, AZ, as evidenced by the fact that with only a few sites already coordinated, the bandwidth has already been reduced to 55 MHz.

6. In my view, the limitation that a C-Band network and its earth stations operate on no more than 60 MHz and three orbital slots is extremely severe. My experience with satellite transponders and earth stations is that changes in transponder and frequency are necessary in order to respond to satellite failures, satellite replacement, changing interference environments, and the need to economically transition an antenna from one satellite to another or from one service to another. These changes frequently must take place quickly to avoid service disruption and cannot accommodate the time frames required to permit new earth station frequency coordination and license modifications.

7. Any significant reduction in bandwidth made available to C-Band networks would make implementation of a network impractical for a number of reasons. For example, assume the case that only 20 MHz were authorized for a given network. First, as in the OnSat example above, as new earth stations come on line that could not coordinate for precisely the same 20 MHz as the lead station had coordinated, the lead station and all other stations would have to be re-coordinated and their licenses modified for different spectrum utilization. Such a procedure is both time-consuming and expensive for the licensee — frequency coordination typically costs $3000–$4000 and takes 30–45 days to complete (not including any interference resolution). Second, under the FCC's current procedures, each modification would have to be processed by the staff, consuming both additional time and government resources.

8. My experience suggests that a requirement that OnSat be licensed for less than 60 MHz on three orbital slots for its C-Band VSAT network would make it extremely difficult to successfully complete frequency coordination for every antenna in its network that would be sufficient for long term reliable operation. A requirement that OnSat be licensed to use only 20 MHz in the C-Band for its network would very likely make implementing the VSAT network either impossible or prohibitively expensive.

9. The amount of required spectrum that I discuss above is specific to OnSat's network. In designing its network, OnSat decided that it needs to be licensed to use 60 MHz of bandwidth when the network is fully developed. However, a different network that has different goals (in terms of the number of users it is designed to serve and the types of services it offers) may require more or less spectrum.

Sidney M. Skjei, P.E.
President
Skjei Telecom, Inc.
7777 Leesburg Pike, Suite 315N
Falls Church, VA 22043-2403

January 8, 2001

ATTACHMENT C

LETTER FROM

RICHARD B. NEWBERT, PRESIDENT & CEO, ONSAT FINANCIAL SERVICES, INC.

TO

WILLIAM E. KENNARD, CHAIRMAN, FCC

ATTACHMENT C

October 10, 2000

William E. Kennard – Chairman
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

Dear Chairman Kennard:

I read with great interest the Commission's news media release, "FCC Issues Report in the Availability of High-Speed and Advanced Telecommunications Services." Interestingly, and possibly coincidentally, it came just one week after the introduction of H.R. 5069, a bill "to encourage the deployment of broadband telecommunications in rural America, and for other purposes."

Before addressing the specifics of the Commission's report, let me take a moment to reintroduce OnSat Network Communications, Inc. I say reintroduce as David Stephens, Chairman and co-founder of OnSat, has had the opportunity to work directly with you and members of your staff at the FCC relative to OnSat's proposed streamlined application process for bi-directional C-band broadband services, a process that would enable U.S. schools, universities, community centers, libraries and small businesses in under-served areas to obtain affordable and virtually immediate high-speed wireless transmit and receive capabilities upon installation of antennas and transceivers.

OnSat's Commitment to Providing Rural and Other Under-Served Populations with High-Speed Broadband Services.

OnSat was established in 1998 to develop a flexible, customizable and scalable private network providing cost effective, bi-directional, high-speed Internet access, together with a variety of other existing and emerging broadband services, to business customers, schools, community access groups, distance learning institutions, religious organizations and other entities and peoples located in areas which are underserved by traditional wireline and cable technologies or where current terrestrial connectivity is slow and inefficient. Of course, these constituencies to which OnSat is committed include rural America, disadvantaged urban areas in which many low income and minority populations live in large numbers and Native American peoples living within tribal areas and reservations.

The company's Digital Equity Network® takes advantage of both satellite and other wireless local loop technologies together with its sophisticated and proprietary bandwidth management, intelligent caching and Content Shaping® to provide customized solutions to each of the above

markets. If access to power is a problem, OnSat is able to install a point-of-presence powered strictly by solar power. Not surprisingly, OnSat has become a recognized leader in helping to bridge the digital divide and Dave Stephens was an invited speaker and participant at the Department of Commerce's latest conference on the subject.

More specifically related to the constituencies that were the focus of the Commission's report, OnSat recently installed its first wireless point-of-presence in the Navajo nation at Red Mesa, AZ. Over the next two years, OnSat, in partnership with the Gates Foundation which is providing Gateway computers to each site, will bring its high-speed, wireless access to the Internet, distance education, HDTV signals and even telephony services to as many as 125+ additional sites within the Navajo reservation.

Within hours of the equipment of Red Mesa being turned on, Karen Lesher, the Director of Federal Programs in the Center for Program Planning and Implementation of the Red Mesa School District stated, "The increased speed from the new [OnSat] system will make an incredible difference in student access to information through technology."

A similar reaction came after OnSat installed its high-speed, wireless Internet access in the U.S. Virgin Islands. Not only did the cost for Internet access drop dramatically through out the islands, but a leading educator remarked that, "The impact of the [OnSat] Internet access system will bring the people of the Virgin Islands to a position of technological parity with the rest of the United States within a generation!"

In rural Wyoming, at the request of US West, OnSat undertook to bring the Internet and telephony (other than ancient radio telephones) to several communities, one of which was a six hour drive down a dirt road from the nearest [copper] phone lines and, which, if provisioned by US West, would have cost more than $4 million and taken in excess of six months to install. One such town had a total population of less than fifty and a K-12 one-room school serving just eight students. OnSat now delivers higher-speed Internet to that school and its surrounding community than can be found in almost any public or private school in the most affluent and fiber-provisioned regions of America.

OnSat has been active outside the United States as well, where the profile of under-served customers with limited or no broadband, and in some cases even telephony, connectivity mirrors the problems faced by all too many Americans in rural America. In the rural Honduran village of San Ramon, a region plagued by the same lack of access to technology as all too many Native American reservations and very rural communities, within a matter of just a few months after OnSat and the Gates Foundation brought on-line the first solar.net village® three of some 125 youngsters were identified as "geniuses." Had it not been for the introduction of technology, those three children, as well as many of their fellow students, would have never had the opportunity to know of or realize their potential.

Just this week, the President of Honduras will be inaugurating before an international audience another of OnSat's solar.net village® in San Pedro Sula. OnSat has similar initiatives, objectives and commitments around the globe in such countries as China, Brazil, Jamaica, the Philippines,

Vietnam, Australia, Polynesia, Israel, and various other countries throughout Latin America, Africa and Asia.

Another of our company's initiative to assist Native Americans can be found in the Native American junior college system. Within this educational system of some twenty-plus campuses, there is only one individual qualified to teach calculus. Today, because of OnSat's commitment to providing distance education and ability to coordinate and manage the requisite satellite bandwidth, every Wednesday at approximately 3:00 this instructor is able to teach calculus to Native American students across the country from a small room in a simple cinder block building standing between a camera and a white board.

The high-quality education of Indian children is the number one priority of tribal people across the country. Access to dependable, high-speed Internet and other broadband services can have a profoundly positive effect on the ability of Native American business enterprises to successfully compete in an increasingly competitive and technological-driven commercial environment. OnSat is now working closely with both the Bureau of Indian Affairs, the National Indian Business Association and the Native American Program of Harvard University to provide connectivity and content solutions for Indian country.

Comments on the Commission's Report on Availability of High-Speed and Advanced Telecommunications Services.

Based on OnSat's experience in providing high-speed broadband services to under-served areas, I'd like to make the following observations on the FCC's August 3rd report and the accompanying statements of the Commissioners.

1. The profiles of the companies surveyed tended to screen out companies like OnSat, which provide essential backbone services, typically at a wholesale level, as they do not have "250 [subscriber] lines" within any single state. At the same time, however, OnSat is establishing the first of many satellite based broadband systems for Catholic Online, the official web site of the Catholic Church, which has more "eyes" worldwide than AOL. Such companies are making a difference and have much to offer in bridging the digital divide and bringing a wide spectrum of broadband services, as well as telephony capabilities, to the under-served populations with which the FCC is concerned.

2. Delivery speeds of 200Kbps, while perhaps acceptable targets, are significantly below the capabilities now available and can be agonizingly slow when trying to download large files, video clips, and certain other types of digital information. Even DirecTV®, with some 8.7 million subscribers, advertises bi-directional Internet service at 400Kbps. Presently, children in Red Mesa, the USVI and certain rural Wyoming schools enjoy OnSat's even faster and more robust Internet access.

3. Back-haul or user up-link speeds, however, typically need not be anywhere near as fast as the delivery system. In fact, shared 128K lines can frequently provide more bandwidth than many commercial and nearly all non-business users require. The key is intelligent

bandwidth management more than an arbitrary throughput capability, which will grow over time as technologies continue to improve at near "warp speed".

4. The zip code analysis is, at best, a weak indicator of service. First, while 91% of the population lives in the 59% of the zip codes with at least one "high-speed service" line, the overwhelming majority of the population within those zip codes do not, and many can not, enjoy such capabilities due to cost factors and/or the inability or unwillingness of the incumbent CLEC/ILEC and cable companies to provide them.

   An interesting study on the actual availability of high-speed service was conducted in Fulton County, Georgia. A map of the city with its Interstate highways highlighted was overlaid with the existence of fiber lines. There was virtually no fiber beyond the Interstates other than in a few select, "exclusive" neighborhoods … and no minority or socially/economically-disadvantaged neighborhoods were covered! The real question the Commission should be asking is what percentage of the people in those 59% of the zip codes served by high-speed services actually have access to such services. The answer will be very, very few.

   Like a faucet, the amount of data coming out of a tap is limited by the narrowest "pipe" in the system. High-speed broadband services can be brought into neighborhoods, tribal reservations, and other underserved areas but, until high-speed "last mile" solutions become economically viable, individual consumers and small businesses will suffer, although most medium and large businesses and most educational institutions will probably have such access and be able to provide such capabilities.

5. High-speed broadband and telephony services can be brought to all areas of the country in a fairly short time frame. If on assumes that the cable companies, CLECs and ILECs will ultimately string fiber or implement comparable wireless strategies to every business and household, the last mile problem can be solved. Perhaps, economic incentives can be devised (i.e., tax credits) to incentivize companies to accelerate such undertakings.

   Meanwhile, OnSat and other companies with both satellite and terrestrial strategies will not only supply the "last mile" providers with more and faster broadband services but frequently provision "last mile" and "last inch" connectivity as well.

6. With respect to rural, inner city, tribal, Pacific island or suburban schools, as opposed to individual homes, there is no reason that bi-directional, high-speed wireless Internet connectivity, together with a diverse portfolio of other broadband services, including distance education, a variety of video and video-on-demand applications and tele-medicine, can not be provided to nearly every school district in the nation within two years.

To date, efforts to provide Internet access to schools has focused on the rewiring of existing school buildings while there is continuing reliance on conventional wireline/cable delivery systems. Unfortunately, there has not been any serious attempt to substitute faster, less expensive and more rapidly installed wireless systems within schools in lieu of hard-wired solutions such as those OnSat presently provides to hotels, commercial office buildings and hospitals.

Further, while the in-school infrastructure is a critically important piece of the solution, it addresses only the so-called "last 100-yards." What has been missing has been the ability to bring truly high-speed capabilities directly to the school building. Once a single satellite dish is installed within a school district, each individual school within the district can be connected concurrently using inexpensive and proven wireless local loop technologies such as those presently being delivered by OnSat.

Not only are wireless solutions becoming more and more prevalent, they eliminate the need to string fiber or dig trenches which are more expensive, less environmentally friendly and take far longer to implement. Executing such a high-speed Internet strategy can coincide with the present efforts to rewire schools and school classrooms across the nation.

Anecdotal evidence, which can be easily confirmed, suggests that there is a "strong indication that minority customers are particularly vulnerable to not having access to advanced services." However, as there are schools in all communities across America, bringing high-speed Internet and broadband capabilities to individual school buildings will have the parallel effect of bringing such technology to every neighborhood in the country! At that point, there are multitudes of terrestrial and wireless last mile providers who may find it economical to provide low cost delivery systems (wireless, cable and wireline) to those not presently served.

7. If E-Rate funds were made directly available to companies providing the high-speed connectivity, as opposed to requiring local school districts to apply for and then direct the funds, a nationwide roll-out of high-speed connectivity could be significantly accelerated.

   Companies like OnSat that install a high-speed point-of-presence, as well as "last 100-yard" connectivity, at a schools or other small to medium-size commercial enterprises not only provide for broadband access to the particular school or business, but create additional value. For example:

   a) Proprietary, intelligent caching technologies can minimize download speeds and time which, in turn, significantly increases usable bandwidth capacity and materially reduces access/usage costs.

b) School districts that take full advantage of their [satellite or other] points-of-presence they can, "market" their unused bandwidth on a revenue-sharing basis, thereby enabling a service provider like OnSat to provide free Internet access/usage to individual schools and possibly other community institutions such a public libraries.

c) Finally, the filtering of content is a critical issue for most school districts and libraries. OnSat has pioneered the concept of Content Shaping®, enabling affinity groups, including local school districts to define certain types of information they both want delivered and screened out. For example, nearly all schools are anxious to prevent access to pornography, hate sites and/or music videos within the school's local area network. At the same time, individual school teachers, as they develop their course curricula, may want to have information relating to the areas they will be teaching identified and downloaded, without their having to spend hours searching the net for such data. Content Shaping® provides a tool to concurrently solve both problems.

Finally, there are creative schemes to further employ school district points-of-presence as sources of revenue-generation … potentially enabling the districts and schools within such districts to obtain and enjoy the benefits of high-speed broadband connectivity at a net zero cost.

With respect to the several individual statements that accompanied the report, I'd like to offer the following thoughts.

1. I agree with your observation that the zip code analysis provides far too rosy a picture of high-speed services penetration.

2. Many CLECs, ILECs and cable companies have a conscientious strategy to steer clear of rural, tribal and inner city markets, as it is economically unprofitable for them. OnSat, on the other hand, believes that it is economically viable for it to serve these important markets and that only by doing so can it "do well by doing good."

3. Commissioner Ness points out, E-Rate funding can play an important role in accelerating the process of broadband penetration. As founder and Senior Vice President of a privately-held financial institution which provided millions of dollars in interim financing to companies involved with the E-Rate program, I have had first-hand exposure to some of the inefficiencies of the S&L program as well as the sometimes inflated costs charged for the limited infrastructures being provided.

   I firmly believe the E-Rate program can be improved and streamlined, incentivizing faster deployment of more robust technologies to schools and libraries nationwide and generally at lower costs than have been experienced in the past.

4. Spectrum scarcity is rapidly becoming the mantra for many and has evolved into brokerage exchanges for excess bandwidth, as noted last week in an article in *The Wall Street Journal*. However, there are other answers, including more intelligent management of existing bandwidth, an area in which OnSat continues to pioneer new technologies.

5. While there are concerns about commitments to wireless strategies, they will be essential to solving the digital divide in many rural areas. Interestingly, however, and one need only open any newspaper and scan the ads for web-based wireless phones and PDAs to appreciate that wireless technologies will be an increasingly important piece of the future of information delivery! Stringing fiber will remain time-consuming, expensive and potentially environmentally unfriendly.

6. When Commissioner Furchtgott-Roth notes that "the vast majority of small business and residential customers today … choose not to subscribe to advanced services", several issues must be taken into consideration. First, in most locales, including the vast majority of small industrial parks within the 59% of zip codes with "at least one" subscriber, a company can't get a DSL or other high-speed line today or, in many cases, for months. Second, high-speed lines remain prohibitively expensive for the vast majority of the nation's consumer population.

   With commercial and consumer demand for increasingly content-rich web pages growing exponentially, the requirement for high-speed broadband capability will continue to grow at an ever accelerating rate throughout the next decade. The key is identifying companies, like OnSat, who are able and willing to provide reasonably-priced end-to-end connectivity, sooner rather than later.

7. When OnSat provides high-speed services, it is able to deliver far more than just Internet access. In addition, distance education, tele-medicine, digital television, streaming video, video conferencing and video-on-demand, telephony and Voice over Internet Protocol (VoIP) many other broadband services can be delivered through the same "pipes" as they become available. If economical and accessible, the vast majority of potential users are likely to sign up.

8. Adopting the "let nature take its course" approach runs the risk of the digital divide becoming a far greater impediment to the ability of all Americans, particularly those most at risk, to enjoy an equal opportunity to take full advantage of the unparalleled educational and economic opportunities currently available. Meanwhile, there is virtually no "down side" to a more aggressive posture on the part of the FCC and other governmental agencies to remove regulatory barriers to companies like OnSat that seek to provide broadband services to neglected areas.

9. To Commissioner Tristani's point, broadband services <u>must</u> reach all Americans, regardless of where they live or work.

VI. Comments on H.R. 5069

Finally, let me make a few comments relative to H.R. 5069.

1. Not surprisingly, the "Findings" in Title I of the bill mirror to a large extent those that emerged from the FCC report.

2. Accelerating the delivery of broadband services to rural communities, Native American reservations and other underserved areas, with the concurrent capability to deliver distance education, will enhance the ability to identify, train and employ workers in such areas who can play a role in the implementation and subsequent operational management of such capabilities.

3. As a sidebar, OnSat was selected as the exclusive satellite provider for the National Telephone Cooperative of America (NTCA). Accordingly, our company is already playing a role with rural ILECs to deliver higher speed broadband services to just the type of communities the bill targets.

   Many of these ILECs can also play an important role in the envisioned build out.

4. The House should consider whether certain of the grant monies would be most effectively spent if they bypassed complex and costly bureaucracies and were directly payable to private sector companies that make material infrastructure contributions to under-served populations.

   For example, of the contemplated 5-year $3 billion appropriation, direct grants could be made to companies who are providing rural and reservation communities with broadband access as well as the to those companies providing "last mile", "last 100-yard" and "last inch" access. Properly managed, the Schools and Libraries Division which has administered much other E-Rate money could get "more bang for the buck" and make their dollars go farther.

Clearly, OnSat can not, nor can any company, however large, solve all of the many technological, business and operational issues to bring parity to everyone. However, OnSat can, and will play a key role in accelerating the delivery of new technologies to the forgotten middle and under-classes across our nation and around the world.

I believe that the goals of the FCC and those of the sponsors of H.R. 5069 can be achieved both in a shorter time frame than contemplated and with capabilities which are far in excess of the relatively conservative benchmarks outlined.

To that end, we would like to extend a cordial invitation to you, your fellow FCC commissioners and the sponsors of H.R. 5069 to visit with us at our Salt Lake City headquarters and see, first hand, what we have achieved and can deliver in response to your collective and vitally important

objectives. OnSat would be honored to provide testimony before the FCC and/or the House committees that will be holding hearings on H.R. 5069.

I appreciate your having endured this rather lengthy letter. However, we at OnSat believe we can prevent the digital divide from becoming the chasm to which Commissioner Ness refers, and that we have a moral obligation to do so!

Very cordially,

Richard B. Newbert
President and CEO
OnSat Financial Services, Inc.

Cc: Commissioner Susan Ness
Commissioner Michael Powell
Commissioner Harold Furchtgott-Roth
Commissioner Gloria Tristani
The Honorable Gregory Rhode
Mark S. Schnieder, Office of Commissioner Ness
Peter A. Tenhula, Office of Commissioner Powell
Bryan Tramont, Office of Commissioner Furchgott-Roth
Adam Krinski, Office of Commissioner Tristani
Ari Fitzgerald, Esq., Legal Advisor to the Office of the Chairman
Donald Abelson, International Bureau
Richard B. Engelman, International Bureau
Ronald Repasi, International Bureau
Thomas S. Tycz, International Bureau
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