March 23, 2004

BY ELECTRONIC DELIVERY

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Written Ex Parte Presentation
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, IB Docket No. 00-248

Dear Ms. Dortch:

Recently, representatives of the satellite industry were invited to meet with representatives of the Commission's International Bureau to discuss issues in the above-referenced proceeding. That meeting occurred on February 10, 2004. As a result of that discussion and at the invitation of the Bureau, the Satellite Industry Association (SIA),[1] which was represented at the meeting, seeks to clarify its position on several of the issues raised in the above-referenced proceeding and during the meeting and reiterate its position on others. The issues SIA addresses below include: (1) the technical showing to satisfy §25.220 for antenna gain that exceeds the envelope in §25.209 at off-axis angles between 1.5° and 1.8°; (2) the regulation for an antenna that exceeds the envelope in §25.209 at off-axis angles greater than 1.8°; (3) random access techniques utilizing contention protocols; (4) reduction of power to meet off-axis e.i.r.p. levels of routine licensed antennas;

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[1] SIA Executive Members include: The Boeing Company; Globalstar, L.P.; Hughes Network Systems, Inc.; ICO Global Communications; Intelsat; Iridium Satellite LLC, Lockheed Martin Corp.; Loral Space & Communications Ltd.; Mobile Satellite Ventures; Northrop Grumman Corporation; PanAmSat Corporation; SES-Americom and Verestar Inc. SIA's Associate Members include Eutelsat Inc., Inmarsat Ltd., and New Skies Satellites Inc.

(5) construction completion requirements for satellite mobile earth stations; and
(6) VSAT renewals and construction and completion requirements.

As a preliminary matter, SIA notes that in its licensing proposal in the Commission's Part 25 earth station licensing proceeding, as clarified herein, SIA sought to address licensing of traditional C-band and Ku-band FSS earth stations.[2] Application of the licensing provisions included in the SIA proposal to other kinds of Ku-band and C-band systems, including earth stations on board vessels (ESVs) and Aeronautical Mobile-Satellite Service (AMSS) earth stations, was not contemplated by the SIA proposal, as further clarified herein.

Items for Clarification and/or Reiteration:

Antenna Gain that Exceeds the Envelope in §25.209 at Off-Axis Angles Between 1.5° and 1.8°

Ku-band FSS earth stations operating with an antenna that exceeds the antenna gain pattern set forth in §25.209 at an off-axis angle between 1.5° and 1.8° should be subject to the conditions expressed in proposed §25.220(d)(2).[3] An outline for the evaluation of the technical showing that would satisfactorily demonstrate that the pointing error requirement is met is given in the attached Annex.

Antenna Gain that Exceeds the Envelope in §25.209 at Off-Axis Angles Greater Than 1.8°

SIA's licensing proposal included new §25.220(d)(1).[4] This section covers Ku- band FSS earth stations operating with an antenna gain envelope that exceeds the antenna gain pattern set forth in §25.209 at off axis angles greater than 1.8°.[5] In particular, coordination with adjacent satellite operators within 6° is required for all such earth stations.

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[2] *See generally* SIA Comments, IB Docket No. 00-248 (filed March 10, 2003).

[3] *See id.* at App. A, p 23.

[4] *See id.* at App. A, p 22.

[5] For C-band antennas, the relevant starting angle is 1.7°.

Contention Protocols and CDMA

SIA believes that access techniques using contention protocols (such as Aloha) do not need to be regulated. In the event that the Commission decides to regulate access techniques using contention protocols (such as Aloha), it should grandfather existing equipment employing this technology and adopt SIA's alternative proposed rule.[6]

With respect to the CDMA multiple access technique, the SIA proposal is contained in §25.134 of the filed comments. For example, the maximum input power spectral density of a digital modulated carrier should not exceed -14-10Log(N), where N is the maximum number of co-frequency simultaneous transmitting earth stations in the same satellite receiving beam.

Reduction of Power to Meet Off-Axis EIRP Standard for Routine Licensed Antennas

In the case of non-conforming transmit earth station antennas in the C-band and the Ku-band having sidelobe levels exceeding the 29-25log(theta) standard, it is theoretically possible to bring the off-axis EIRP spectral density towards the adjacent satellite into compliance with the standard by reducing the transmit input power density. Absent coordination with adjacent satellite operators, however, SIA opposes licensing C-band and Ku-band FSS antennas on the basis of power density reduction. In these cases, the licensee would refer to §25.220(c) as proposed by SIA. Routine licensing of these earth stations would encourage the use of poorly designed antennas. As proposed by SIA, C-band and Ku-band FSS earth station operations should be coordinated on a case-by-case basis and receive concurrence from adjacent licensees so that such use would be monitored and potential increases in interference may be managed.

Construction Completion Requirements For Satellite Mobile Earth Stations

In its initial Notice of Proposed Rulemaking (NPRM) in this proceeding, the Commission discussed issues concerning blanket-licensed satellite mobile earth station terminals (METs). It proposed revising Section 25.133(a) of its rules to require MET licensees only to bring their networks of earth stations into operation within a year and revising Section 25.133(b) to require MET licensees to certify that they have brought their networks of earth stations into operation within a year of

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[6] *See id.* at 18-19.

receiving their licenses.[7] The Commission also proposed that, if a MET licensee has not brought all the earth stations permitted by its license into operation at the time of renewal, it would renew the license only for those earth stations that have been brought into operation.[8]

In its Reply Comments, SIA supported the comments of Globalstar USA, Inc. and Globalstar, L.P. (collectively Globalstar) and urged that the Commission not apply any rule requiring an MET licensee to bring all authorized terminals into use within one year of license grant.[9] While SIA does not believe there should be any one year requirement for METs covered by a blanket license, it does recognize that the Commission's proposal to look to the commencement of operations of the networks rather than all METs is preferable to any construction of the existing rule that might be inadvertently interpreted to require the total number of METs covered by a blanket license to be constructed within one year.

With respect to the Commission's proposal to reduce the number of METs at renewal if all METs covered by a blanket license are not constructed by that time, in its Reply Comments, SIA joined Globalstar, Motient Corp. and Astrolink in opposing this proposal. Such a requirement is inconsistent with the concept of the blanket license as adopted for Mobile-Satellite Service (MSS) systems and recently addressed in the Commission's Second Report and Order in IB Docket No. 99-67, in which it is clear that the blanket license is intended to cover not only METs operated by users located within the United States and receiving service in the United States, but also is intended to cover technically compatible METS temporarily brought into the United States by roaming users. Thus, MET licensees of global MSS systems can never construct or deploy in the United States the total number of METs in their U.S. blanket licenses; because they must assume that an indeterminable number of technically compatible roaming METs may be brought into the United States by visiting non-U.S. users at any time.

The NPRM also invited comments on whether there is any need to review the number of terminals brought into operation at various points in the license term.

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[7] *See 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 (rel. Dec. 14, 2000) at ¶ 46.

[8] *Id.*

[9] *See* SIA Reply Comments, IB Docket No. 00-248 (filed May 7, 2001).

Specifically, the Commission asked: (i) whether MET licensees should be required to file periodic reports stating the number of terminals in use; (ii) whether MET licensees should be required to bring a certain percentage of their authorized terminals into use within a certain time after they receive their licenses; and (iii) if so, what percentage would be reasonable and what time period would be appropriate. In its Reply Comments, SIA again joined Globalstar and Astrolink in opposing the adoption of all three reporting and implementation requirements.

It is not clear from the NPRM what the Commission sought to gain from such requirements, but SIA can see no use or need for them. For global MSS systems, the number of terminals that have been deployed in the United States at any point in the license term will not tell the Commission how many METs are actually located in and/or in use in the United States at any given time or where they are being used, which may have been the rationale behind this area of inquiry. Nevertheless, all the Commission needs to know about the METs associated with any system it knows by the fact that the MET blanket licensee is legally responsible for operation of the METs that it directly or indirectly authorizes. In this regard, the only streamlining or modification the Commission should adopt is one that would facilitate or streamline the process by which the MET licensee can, when it deems necessary, increase or decrease the number of METs covered by its blanket license.

VSAT Renewals and Construction Completion Requirements

In the Notice of Proposed Rulemaking ("NPRM"), the Commission proposed in §25.134(d) that a VSAT licensee must follow the procedures proposed in new §25.121(e)(3) in renewing its license.[10] The proposed new §25.121(e)(3) provides that if a VSAT licensee does not bring all its licensed VSAT units into operation by the time of renewal, it will be limited in its renewal license to the number of VSATs actually deployed at the time of its renewal application, and subsequent modification applications to add VSAT units will require prior authorization by the Commission.[11] The SIA has urged that the Commission abandon this proposal because it is impractical, will increase the burden on both VSAT operators and the Commission's staff, and could delay the availability of services to new customers.[12]

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[10] NPRM, app. B, Section 25.134(d).

[11] NPRM, app. B, Section 25.121(e)(3).

[12] Reply Comments of the SIA, IB Docket 00-248, filed May 7, 2001 at 16 ("SIA Reply Comments"); *Ex parte* presentation of the SIA, IB Docket 00-248, filed

VSAT operators are in the process of launching new, satellite-based networks, which depend on the installation of large numbers of sub-meter satellite earth stations. Thus, VSAT operators require authority to deploy a relatively large number of VSAT terminals to provide service to new customers within a few days of receiving an order for service. In this environment, market demand directly controls the number of VSAT units. Automatically limiting the number of authorized VSATs to those already in operation would seriously impair the operator's ability to grow its business after renewal. Upon license renewal, the licensee would lose authorization for any terminal that had not yet been deployed. The licensee then would be required to submit requests for Special Temporary Authority and modification applications to deploy the very same terminals that the Commission had previously authorized. Thus, the Commission's proposal would require the submission of unnecessarily duplicative applications to recover authority that had already been granted, and would result in an administrative burden for the Commission and adverse business implications that are not justified by any regulatory considerations.[13]

The very purpose of the Commission's blanket licensing policy is to permit flexibility and system growth, to reduce administrative overhead for both the Commission and the licensee, and to prevent regulatory delays. Limiting renewals to the number of installed VSATs would defeat the main purpose of the policy and restrict the flexibility it has brought to licensees.

The need for flexibility and system growth for blanket-licensed earth stations is not limited to the Ku-band. With regard to the Ka-band, it is impractical to constrict the operations of these nascent networks. As stated above, the Commission's proposed §25.121(e)(3) will create unnecessary administrative burdens both for the Commission and the licensee in the form of duplicative requests for Special Temporary Authority and additional modification applications. Thus, SIA proposes to delete the second sentence of the proposed §25.121(e)(3) that limits renewals to the number of deployed VSATs.

In this same regard, the SIA would like to propose a clarification to the Commission's Rules in §25.133(a). This section states that construction of, "an earth station", must be completed and the station must be brought into regular

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December 11, 2001 at 31-32 ("SIA 2001 *Ex parte*"); *Ex parte* presentation of the SIA, IB Docket 00-248, filed June 5, 2003 at 21 ("SIA 2003 *Ex parte*").

[13] *Id.*

operation within 12 months from the date of the license grant except as may be otherwise determined by the Commission for any particular application.[14] In the Commission's 1996 Streamlining Order, the Commission revised its licensing rules for VSAT networks to permit VSAT blanket licensees to complete construction over the course of their license term.[15] Thus, consistent with SIA's position with respect to renewals of VSAT licenses, SIA requests that the Commission clarify §25.133(a) to expressly provide that VSAT licensees have the full license term to complete construction of their networks, including any renewals thereof.
SIA appreciated the Bureau's invitation to discuss the issues raised in its efforts to streamline its licensing processes. Please consider the above information together with the comments and reply comments submitted in the above-referenced proceeding.

Should any questions arise concerning this matter, please contact the undersigned.

Respectfully submitted,

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14 *See* Section 25.133(a).

15 Streamlining the Commission's Rules and Regulations for Satellite Application and Licensing Procedures, IB Docket 95-117, released December 16, 1996, adopted October 29, 1996 at 26.

ANNEX

Outline for the Evaluation of the Technical Showing

1. Introduction

At a meeting on 10 February 2004 between the Commission and representatives of the satellite industry, the Commission requested guidance as to how technical showings should be evaluated by the Commission before being placed on public notice. The material in this annex is to assist the Commission in developing guidelines for the evaluation of technical showings provided by applicants. From the material presented below, the Commission should be able to verify if the necessary material is included in the showing and be able to provide an assessment of the applicability of the stated procedure in meeting the required pointing accuracy.

For this purpose, two common methods by which small antennas are aligned with the satellite are described and then for each method a checklist of items that should be verified in a technical showing is provided below.

2. Common alignment methods

2.1 Co-frequency pointing using the receive frequency.

Under this method, an installer selects an existing carrier on the same satellite and polarization upon which the earth station will operate. First, the polarization angle is set by either rotating the reflector or feed assembly (varies depending on antenna type), until the signal is maximized. Next, a coarse pointing is done by the installer by moving the reflector in both azimuth and elevation until the signal is further maximized.

To ensure that the maximum value is indeed the main lobe and not a side lobe, it is common practice to move the antenna slightly in elevation (both up and down) in order to measure the height of the next peak. If both adjacent peaks are of lesser value then the peak used in the original measurement is indeed the antenna main lobe. This procedure is then repeated in the azimuth plane in order to measure the peaks to the right and left.

Once the main lobe has been identified, the next step consists of a fine pointing of the antenna. First, the peak signal level is measured on a spectrum analyzer or power meter. The antenna is then moved slightly upward until the signal is

reduced by 3[1] dB and the elevation angle is then measured on the antenna mount. The antenna is then moved downward past the peak until the signal is again reduced by 3 dB. The center point between the two angles is the elevation angle to which the antenna is set. The process is then repeated on the azimuth plane.

2.2 Hub measured cross polarization isolation

In this method, the coarse pointing is done using the receive frequency as is described in the first two paragraphs of section 2.1 above.

Following the coarse adjustment, the installer calls into a hub station and begins transmitting an unmodulated carrier on a frequency where the hub can monitor both the co-polarized and cross-polarized signal on the same satellite. The antenna or feed is first rotated until the cross-polarization isolation (XPI) is maximized. Then the antenna is moved slightly in the elevation plane until the XPI is further maximized. Next, the process is repeated in the azimuth plane and once this is complete, all adjustment screws or bolts are secured to their permanent setting. The final step is to measure the XPI once the antenna pointing process above is complete and to compare the result to a threshold value as derived below. If the station XPI exceeds the threshold, the station can be commissioned.

The threshold value is derived by using the earth station transmit antenna pattern such as in the example shown below. In this example, the antenna gain pattern meets the 29-25 log (Theta) mask at 1.6 degrees. This requires that the antenna pointing error must be no more than 0.4 degrees in order to meet the 2 – X rule. From the example antenna gain pattern below, the necessary XPI at 0.4 degrees is 31.3 dB (length of red lines). If the satellite antenna has an XPI of 30 dB, the measured XPI at the hub should be at least of 24.5 dB.

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[1] Other, larger values can be used in this procedure, so long as the same value is measured on both sides of the boresight.

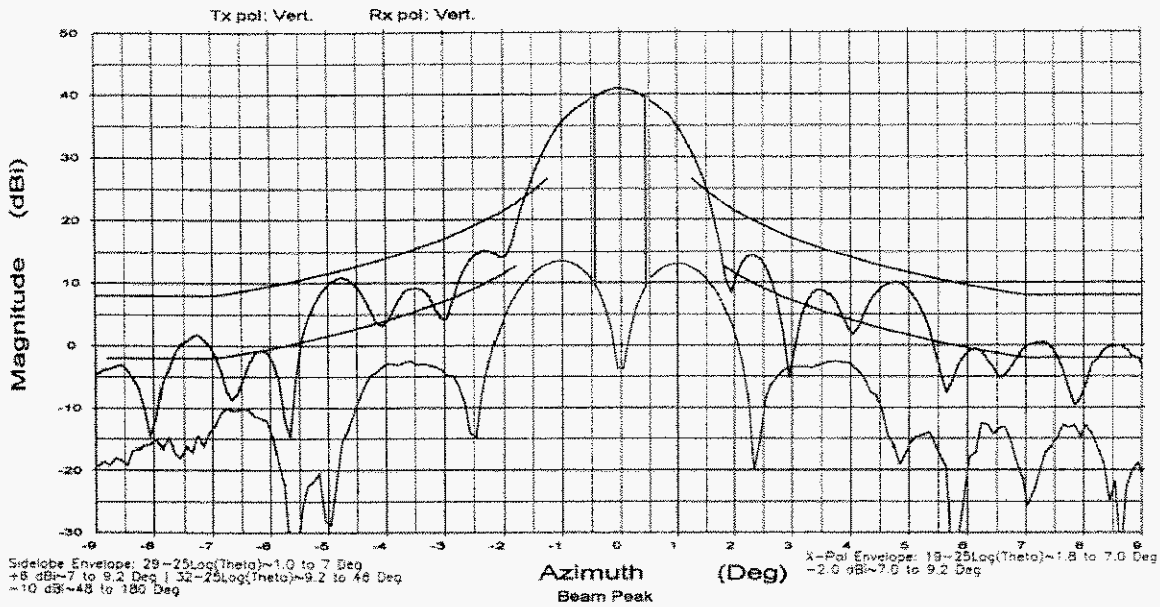

Figure 1 – Cross-polarization Isolation

3. Check List for Technical Showing

3.1 Co-frequency pointing.

Under this pointing method, the following items should be included and verified in the technical showing:

a. Representative co-polarization gain pattern of the earth station antenna for both transmit and receive frequency bands. The pattern from §25.209 should be superimposed on the figure.

b. The angular precision in azimuth and elevation of the antenna mount need to be provided. The symmetry of the main lobe needs to be taken into account in the alignment procedure. The angular adjustment precision in azimuth and elevation of the antenna mount needs to be provided. If vernier screw mounts are used, the turning ratio (degrees azimuth per turn) for both azimuth and elevation plane shall be provided.

3.2 Hub measured cross polarization isolation

Under this pointing method, the following items should be included and verified in the technical showing:

a. Representative antenna pattern of the earth station containing both the co-polarization and the cross-polarization patterns on the same diagram. This diagram should indicate the angle at which the measured gain pattern meets 25.209 and indicate the XPI for that angle.

b. The XPI of the satellite if available. If not, a value of 30 dB can be assumed.

c. A calculation of the minimum XPI as measured at the hub will ensure that the pointing requirement is met.

d. A statement from the applicant that the earth stations will not be commissioned unless the value of (c) is measured at the hub.