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

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Received

FEB 28 1995

In the Matter of Application of)
)
FINAL ANALYSIS COMMUNICATIONS)
SERVICES, INC.)
)
For Authority to Construct, Launch, and)
Operate a Non-Voice, Non-Geostationary)
Mobile Satellite System in the 137-138 MHz,)
148-150 MHz, and 400-401 MHz Bands)

File No. 25-SAT-P/LA-95

To: Chief, Common Carrier Bureau

COMMENTS OF
VOLUNTEERS IN TECHNICAL ASSISTANCE

Volunteers in Technical Assistance, Inc. ("VITA"), by its attorneys, hereby submits comments with respect to the application of Final Analysis Communications Services, Inc. ("FACS") for authority to construct, launch, and operate a non-voice, non-geostationary mobile satellite ("Little LEO") system, filed November 16, 1994. Because VITA holds a pioneer's preference, it is incumbent upon FACS to demonstrate that its proposed system is not mutually exclusive with that of VITA.¹ In this case, FACS has failed to meet this standard: The FACS application raises a substantial issue regarding potential harmful interference from the FACS system to VITA's uplinks.

In its application, FACS proposes to uplink in the 148.905-149.9 MHz band.² This band overlaps the 90 kHz segment of spectrum, 149.81-149.9 MHz, in which VITA has requested authority to uplink. Nonetheless, FACS posits that "interference with other users in this band will be avoided by use of the Scanning

¹ See 47 C.F.R. § 1.402(d).

² See FACS Application at III-5 (FACS proposes to expand its uplink band on January 1, 1997, to 148.905-150.05 MHz).

Telemetry Activity Receiver System ("STARS") [which is] similar to ORBCOMM's dynamic channel assignment system..."³ Both the STARS and the ORBCOMM system attempt to avoid interference by scanning within a given operational bandwidth for open channels on which to transmit.

As VITA has noted on a number of occasions, ORBCOMM has not shown that its system can adequately protect against harmful interference to VITA's uplinks.⁴ Indeed, this issue is the subject of a petition for reconsideration pending before the Commission.⁵ For precisely the same reasons stated in that petition and elsewhere (see attached pleadings), additional information is needed to evaluate whether FACS's STARS likewise can prevent harmful interference to VITA's uplinks. Until these frequency coordination issues are resolved, the Commission should refrain from issuing a final decision on the FACS application.

Respectfully submitted,

/s/ Joseph A. Godles

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February 24, 1995

³ Id.

⁴ See, e.g., Orbital Communications Corp., Comments of VITA, File Nos. 22-DSS-MP-90(20), 9-DSS-LA-94, 10-DSS-Amend-94 (filed May 5, 1994) (attached); id. VITA Consolidated Reply at 14-16 (filed July 12, 1994) (attached).

⁵ See Orbital Communications Corp., Petition for Reconsideration, File Nos. 22-DSS-MP-90(20), 9-DSS-LA-94, 10-DSS-Amend-94 (filed Nov. 28, 1994) (attached).

VITA COMMENTS

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

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In the Matter of)
)
ORBITAL COMMUNICATIONS) File Nos. 22-DSS-MP-90(20)
CORPORATION) 9-DSS-LA-94
) 10-DSS-AMEND-94
Application for Authority to Construct a)
Low-Earth Orbit Mobile-Satellite System)

To: Chief, Common Carrier Bureau

COMMENTS

Volunteers in Technical Assistance, Inc. ("VITA"), by its attorneys, hereby submits comments with respect to the amendment filed December 22, 1993 by Orbital Communications Corporation ("Orbcomm"). These comments reiterate the interference concerns that VITA initially raised in its amendment, filed on April 25, 1994 (the "VITA Amendment").¹

In its amendment, Orbcomm states that "[t]he DCAAS system will cause the Orbcomm uplinks to avoid the VITA 90 kHz band segment when it is in operation."² Based on VITA's preliminary review of Orbcomm's amendment, there is a serious question whether Orbcomm's DCAAS system will, in fact, be able to avoid VITA's operations in the 90 kHz segment, and whether the DCAAS system will allow for future expansion by VITA in other portions of the allocated bands. See VITA Amendment, Exhibit C, pp. 37-38 (copy attached). Further information is required to determine what measures may be appropriate to protect VITA's operations and to follow for future system growth.

¹ VITA respectfully requests leave to file these comments outside of the normal comment period. VITA's request is supported by good cause, because VITA's comments are based on its findings in the recently-filed VITA Amendment. The amendment conformed VITA's technical proposal to the new rules for the "little LEO" service. Moreover, these comments bear upon Orbcomm's ongoing obligation to engage in frequency coordination with VITA. See 47 C.F.R. § 25.142(b)(3).

² Technical Description at 29.

VITA therefore requests that Orbcomm submit further information about the DCAAS system and describe in greater detail what measures will be employed to avoid interference to VITA. Absent satisfactory confirmation of Orbcomm's ability to protect VITA's operations, VITA requests, at a minimum, that Orbcomm's operations not be permitted in the 90 kHz segment which VITA initially intends to use for uplink transmissions.³

Respectfully submitted,

VOLUNTEERS IN TECHNICAL
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³ As the Commission is aware, VITA was awarded a pioneer's preference in the proceeding allocating frequencies to the little LEO service. Accordingly, VITA's application takes precedence over applications that are mutually exclusive because they would cause harmful interference to VITA's proposed system. See 47 C.F.R. § 1.402(d).

VITA CONSOLIDATED REPLY, pp. 14-16

further noted that "VITA's efforts have advanced the authorization of the new service ... that will provide reliable, low-cost data communications between ground stations located around the world." In addition, as the Commission pointed out in awarding a preference, no party contested the grant of a pioneer's preference to VITA.¹⁶

Contrary to the implications of ORBCOMM, VITA's preference award was based solely on its pioneering efforts in designing and developing prototype LEO technology, not upon its non-commercial activities. In granting a preference award to VITA, the Commission expressly relied upon VITA's developmental work, including the design and construction of a satellite packet radio package incorporating prototype technology that was launched in 1984, and did not mention its non-commercial status as a factor.¹⁷

B. THE OTHER APPLICANTS HAVE FAILED TO DEMONSTRATE THEIR ABILITY TO COEXIST WITH VITASAT WITHOUT CAUSING OBJECTIONABLE INTERFERENCE

The pioneer's preference rules state that pioneer's preference holders are not subject to competing applications. 47 C.F.R. § 1.402(d). It is incumbent upon ORBCOMM and STARSYS, therefore, to demonstrate that their systems will not interfere with VITA's system. For reasons that are discussed below, ORBCOMM and STARSYS have not provided this assurance.

1. ORBCOMM

On May 5, 1994, VITA filed comments with respect to ORBCOMM's amendment in which it raised a serious concern as to whether ORBCOMM's DCAAS system will, in fact, be able to avoid VITA's operations in the 90 KHz band segment and whether the DCAAS system will allow for future expansion by VITA in other portions of the allocated bands.¹⁸ VITA asked ORBCOMM to submit further information about the DCAAS system and to describe in greater detail what measures will be employed to avoid interference to VITA. Absent satisfactory confirmation of ORBCOMM's ability to protect VITA's operations, VITA requested, at a minimum, that ORBCOMM's

¹⁶ This fact distinguishes VITA's pioneer's preference from the preferences that initially were awarded, but the Commission still has under review, in the personal communications services.

¹⁷ See Report and Order in ET Docket No. 91-280, 8 FCC Rcd at 1817.

¹⁸ Indeed, ORBCOMM raised similar concerns in its comments in ET Docket No. 91-280 where it argued that VITA's different operating requirements cannot be readily accommodated by DCAAS system. See 8 FCC Rcd at 1816.

operations not be permitted in the 90 KHz segment which VITA initially intends to use for uplink transmissions.¹⁹ In its response to VITA's comments, ORBCOMM did not address VITA's legitimate concerns and merely sought to challenge the comments as untimely.

In its June 20, 1994 comments, ORBCOMM again fails to respond to the substance of VITA's concerns and accuses VITA of a "failure to engage in... good faith coordination." VITA stands willing to engage in whatever dialogue may be necessary to coordinate system operations. Only ORBCOMM, however, has the technical information within its possession to establish whether there is a solution to the interference concerns that VITA has identified. VITA cannot coordinate in a vacuum.

Contrary to ORBCOMM's assertion, VITA has not changed its planned operation of its satellites in any way that might affect ORBCOMM's ability to share the band.²⁰ In the August 1992 joint comments, ORBCOMM indicated that it would avoid interference with VITA's system by detecting and avoiding VITA's uplink transmissions. After reviewing ORBCOMM's amendment, and undertaking its own thorough system review following adoption of final rules, VITA had serious doubts as to whether ORBCOMM's system would be able to protect VITA without employing certain protective measures. The interference concerns and the measures that VITA would find acceptable were described in VITA's April 25, 1994 amendment (Exhibit C, Section Q).

ORBCOMM to the contrary notwithstanding, VITA's expression of its interference concerns is timely now that all parties have submitted conforming amendments and the Commission has adopted final technical rules for the NVNG MSS. ORBCOMM cannot claim to be surprised by VITA's objections to the DCAAS system and its ability to share with VITA.

As ORBCOMM is well aware, the ORBCOMM DCAAS creates the likelihood of data packet collisions to VITA's operations. It is presumed that the DCAAS band scan only dwells on a given frequency for a short number of milliseconds, so it is quite likely that the ORBCOMM DCAAS would not detect the short packets that are part of the VITA communications protocol and would continue to jam the VITA uplink for

¹⁹ Comments, FCC File Nos. 22-DSS-MP-90(2), et al., filed May 5, 1994.

²⁰ Indeed, VITA has decreased its required spectrum by reducing the number of uplink channels from three to two.

extended periods, if not continuously. Since the ORBCOMM DCAAS creates the likelihood of data packet collisions, a detailed analysis is required to determine statistically how many collisions will occur and whether some guidelines might be established as to what statistical percentage of collisions might be acceptable to VITA. VITA has suggested that one alternative would be for ORBCOMM to program its satellites not to use VITA's 90 KHz segment while in mutual visibility (*i.e.*, the ORBCOMM footprint overlaps) with the VITA satellites. This could be readily achieved at minimal cost to ORBCOMM through use of appropriate software.

To date, ORBCOMM has failed to address VITA's concerns. VITA therefore renews its request that ORBCOMM provide an interference analysis and a review of proposed solutions which shows that ORBCOMM will prevent interference to VITA's packet data communications. In its amendment, VITA identified several options that it would find acceptable. These are: (1) exclusive use of the upper 90 KHz segment by VITA; (2) ORBCOMM's agreement not to use the 90 KHz segment when the footprints of the VITA and ORBCOMM satellites overlap; or (3) shared use of the entire 148-149.9 MHz band by VITA to allow for a statistically acceptable number of packet collisions.²¹

2. STARSYS

In its Opposition, STARSYS calls upon VITA to revise its technical proposal "to conform with the sharing accommodation previously reached among the parties."²² VITA is well aware that the parties formulated a proposal in August 1992 (nearly two years ago) that was intended primarily to resolve the mutual exclusivity that might exist between ORBCOMM and STARSYS. It has always been VITA's understanding and expectation that the proposed accommodation would be reevaluated by the parties following adoption of the final rules.

When the Commission adopted final rules in November 1993, it rejected VITA's request that applicants be provided with flexibility in system design in order to allow a licensee to choose, as its service develops, the number of satellites that most effectively and efficiently reaches its intended customer base.²³ The Commission also decided that

²¹ See VITA Amendment, Exhibit C, Section Q at 38.

²² Opposition to Amendment at iv.

²³ See Report and Order in CC Docket No. 92-76, *supra*, at 8451.

PETITION FOR RECONSIDERATION

FILE COPY

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

Nov 28 '94

FEDERAL COMMUNICATIONS
COMMISSION
SECRETARY

In the Matter of)	
)	
ORBITAL COMMUNICATIONS)	File Nos. 22-DSS-MP-90(20)
CORPORATION)	9-DSS-LA-94
)	10-DSS-AMEND-94
Application for Authority to Construct a)	
Low-Earth Orbit Mobile-Satellite System)	

To: The Commission

PETITION FOR RECONSIDERATION

On October 27, 1994, the Commission released an Order and Authorization (the "Order") granting the application filed by Orbital Communications Corporation ("Orbcomm") for authority to construct, launch, and operate a satellite system in the non-voice, non-geostationary mobile-satellite service (NVNG MSS). Volunteers in Technical Assistance ("VITA"), by its attorneys and pursuant to Section 1.106 of the Commission's Rules, hereby requests reconsideration of the Commission's Order.

As discussed below, the Order does not address evidence provided by VITA demonstrating that Orbcomm is likely to interfere with VITA's NVNG MSS system. Absent resolution of this issue, Orbcomm's system may be mutually exclusive with VITA's, in which case (by virtue of VITA's pioneer's preference), VITA's application should take precedence over Orbcomm's application.

VITA would have preferred that the Commission resolve this issue prior to acting on Orbcomm's application.¹ Now that the Commission

¹ VITA first learned of the possibility that the Commission would act without addressing this interference issue when the Commission released an agenda notice that included Orbcomm's application. On October 17, 1994, VITA filed an Emergency Motion requesting a waiver of the "Sunshine Period" restrictions, and asking that the Commission either remove the Orbcomm item from its agenda, or impose appropriate (footnote continued)

already has granted Orbcomm's application, however, VITA has no interest in delaying matters. Accordingly, rather than requesting that the Commission rescind the Order, VITA simply asks that the Commission condition Orbcomm's authorization on successful frequency coordination with VITA. VITA already has suggested several alternatives for eliminating the interference that Orbcomm is likely to cause and, with Orbcomm's cooperation, the interference issue can be resolved in short order. Without Commission involvement, however, Orbcomm has every incentive to continue to ignore the VITA coordination issue, as it has done to date.

Orbcomm Interference To VITA

There is a substantial likelihood that, absent frequency coordination, Orbcomm's operations will cause destructive interference to VITA's system. VITA demonstrated this interference potential both in VITA's amendment, dated April 25, 1994 (the "Amendment"), and in Comments that VITA filed on May 5, 1994, concerning Orbcomm's amended application. VITA reiterated its concerns in a Consolidated Reply, filed on July 12, 1994. The pertinent portions of VITA's filings are attached to this Motion.

As discussed therein, Orbcomm's Dynamic Channel Activity Assignment System ("DCAAS") does not adequately protect VITA from interference. Orbcomm plans to scan the 148-149.9 MHz band every five seconds and assign uplink frequencies for the next five seconds based on the least used frequencies at that time. Therefore, if just after the Orbcomm satellite sweeps past VITA's frequency band and detects no activity, a VITA ground user begins uplinking information, the Orbcomm satellite will be assigning those no longer "clear" frequencies for up to five seconds, thereby causing interference to the VITA uplink signal. Since VITA's satellite and ground stations operate in a hand shaking "burst" transmission mode, it will be difficult for Orbcomm's infrequent five-second band sweeps to detect VITA's ground station transmissions. Collisions of data packets, therefore, can be expected.

conditions, in light of (among other things) the fact that the Orbcomm interference issue had not been resolved. The Commission denied VITA's waiver request without addressing the merits of VITA's Emergency Motion.

Despite this demonstrated interference potential, Orbcomm has not coordinated its proposed system in good faith and has not divulged even minimal information about its system, which is required to make a meaningful interference assessment. VITA's interference showing was supported by the certification of VITA's technical consultant, but largely ignored by Orbcomm. Rather, Orbcomm simply questioned whether VITA has a procedural right to have its interference analysis considered by the Commission and asserted, without support, that it "remains confident" that its DCAAS system will preclude harmful interference. See *Opposition of Orbcomm*, filed May 16, 1994; *Comments of Orbcomm on VITA's amended application*, filed June 20, 1994, at 6-7.

VITA's Amendment suggested several alternatives for eliminating the possibility that Orbcomm will interfere with VITA. One possibility would be for VITA to have exclusive use of the 90 kHz segment proposed for VITA in the NVNG MSS negotiated rulemaking. Another approach would be for Orbcomm to refrain from using this 90 kHz segment when the footprints of the Orbcomm and VITA satellites overlap. VITA remains ready, willing, and able to coordinate with Orbcomm on the basis of either alternative.

One of the other solutions previously suggested by VITA was for VITA to have access to the full upper half of the 148 - 149.9 MHz band, rather than being confined to a 90 kHz segment. This would reduce the likelihood of data packet collisions to a statistically acceptable number. VITA has decided not to pursue this alternative for its first two in-orbit satellites, principally because the launch date for VITA's first satellite is fast approaching and amending VITA's two-satellite application to include additional frequencies could inject additional delay. VITA has, however, amended its application to specify a third in-orbit satellite (previously designated as a ground spare) that would have full access to the upper portion of the 148 - 149.9 MHz band. See VITA's amendment, filed on November 16, 1994.²

² At the time VITA filed its Emergency Motion, see n.1, *supra*, VITA believed it might be necessary to have access to the full upper half of the 148 - 149.9 MHz band to resolve frequency coordination issues with the federal government. Since that time, however, the government tentatively agreed (subject to final coordination with IRAC) to permit VITA to operate a maximum of two satellites using the 90 kHz segment reflected in the joint sharing arrangement that was proposed in the NVNG MSS negotiated rulemaking.

Reconsideration is Warranted

In what appears to be an oversight, the Commission's Order does not address the issue of Orbcomm interfering with VITA. The Order is silent on the point and does not acknowledge that VITA raised the issue.

By contrast, when issues arose concerning the compatibility of Orbcomm and Starsys in the 137-138 MHz band, the Commission required the parties to coordinate. The Commission's staff conducted several meetings at which Orbcomm and Starsys were asked to present their respective positions. It is VITA's understanding that the Commission advised the parties that there would have to be a further rulemaking proceeding if the parties could not resolve their differences. After numerous meetings, technical consultations, and filings, Orbcomm and Starsys reached substantial agreement on their coordination issues for the band.

No similar actions have been taken in connection with VITA's interference concerns. Absent resolution of this interference issue, a question remains concerning whether the Orbcomm and VITA applications are mutually exclusive. If there is mutual exclusivity, then VITA's pioneer's preference should be dispositive. The Commission's Rules give precedence to an applicant holding a pioneer's preference *vis a vis* applicants who are mutually exclusive because they would cause harmful interference to the pioneer's preference holder. See 47 C.F.R. § 1.402(d).

Conclusion

In view of the foregoing, it is essential that the Commission condition Orbcomm's authorization on resolution of the Orbcomm interference issue. Orbcomm's application should not have been granted without ensuring that VITA can operate on an interference-free basis.

In light of the fact that the Commission acted notwithstanding the pendency of this issue, however, conditioning Orbcomm's authorization will minimize delay while at the same time ensuring that Orbcomm has an incentive to coordinate with VITA in good faith. Placing a condition on Orbcomm's authorization, moreover, will eliminate the potential for mutual exclusivity that could necessitate invoking the Commission's pioneer's

preference procedures. Accordingly, on reconsideration, Orbcomm's authorization should be appropriately conditioned.

Respectfully submitted,

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November 28, 1994

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Comments of Volunteers in Technical Assistance was sent by first-class mail, postage prepaid, this 24th day of February, 1995, to each of the following:

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