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July 29, 2009

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Call Sign E080100: Applications of Row 44, Inc. for

Authority to Operate up to 1,000 Technically-Identical Aeronautical-Mobile Satellite Service Transmit/Receive Earth Stations Aboard Commercial and Private Aircraft, FCC File Nos. SES-LIC-20080508-00570; SES-AMD-20080619-00826; SES-AMD-20080819-01074; SES-AMD-20080829-01117; SES-AMD-20090115-00041; SES-AMD-20090416-00501 and

Special Temporary Authority, FCC File Nos. SES-STA-20080711-00928; SES-STA-20090417-00507; SES-STA-20090709-00854.

Ex Parte Presentation

Dear Ms. Dortch:

ViaSat, Inc. ("ViaSat") submits this letter to supplement its prior filings in this proceeding, in which Row 44, Inc. ("Row 44") seeks authority to operate in the aeronautical-mobile satellite service ("AMSS").

ViaSat has identified numerous, unresolved, material questions of fact with respect to Row 44's proposed system, including with respect to Row 44's ability to control transmit power and maintain pointing accuracy.[1] Further, ViaSat has presented for the record an interference analysis demonstrating that Row 44's proposed system would pose an interference threat to adjacent operations, and quantifying this threat.[2] That analysis stands unrefuted.

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1 *See* Letter from John P. Janka to Marlene H. Dortch, at 2-3 and Exh. A (Jun. 23, 2009) ("ViaSat June 23 Letter"); Letter from John P. Janka to Marlene H. Dortch, Att. (Jun. 26, 2009) ("ViaSat June 26 Letter").

2 More specifically, ViaSat has demonstrated that: (i) even if Row 44's antennas were mispointed by only 0.2 degrees, and otherwise operated precisely as Row 44 intends, Row 44's non-conforming services would cause at least a 10.2 percent $\Delta T/T$ increase into

In contrast, despite numerous opportunities, Row 44 has failed to produce data sufficient to demonstrate that its system would operate in a manner consistent with a two-degree operating environment, and without causing harmful interference into adjacent operations. The data that Row 44 has produced are either irrelevant or inherently unreliable given the methodological deficiencies in Row 44's "testing," which ViaSat has documented extensively.[3]

ViaSat therefore has urged the Bureau to refrain from granting Row 44's application until Row 44 produces data sufficient to validate its technical claims and resolve the material questions of fact on the record. Indeed, ViaSat has explained that this is the only course of action consistent with the Communications Act, the Administrative Procedures Act, and judicial precedent.[4] Should the Bureau act *notwithstanding* the unresolved, material questions of fact on the record, ViaSat respectfully requests that the Bureau impose the following conditions on Row 44:

1. **The Bureau should preclude Row 44 from operating with a pointing error in excess of 0.2 degrees.**

ViaSat has noted that Row 44's in-flight testing failed to observe system operations with between 0.2 and 0.5 degrees of mispointing.[5] More specifically, Row 44's test setup forced its system to shut down with only 0.2 degrees of mispointing, even though the Row 44 system is designed to operate in a "real world" setting with up to 0.5 degrees of mispointing. This is a critical flaw because, as ViaSat's interference analysis demonstrates, Row 44's operations could cause significant levels of harmful interference with between 0.2 and 0.5 degrees of mispointing.

While Row 44 asserts that there is no discrepancy because Row 44 has "designed its system to cease transmissions at ±0.2° peak detected mispoint,"[6] this assertion simply cannot be squared with Row 44's current description of its own network. Nevertheless, in order to reconcile the discrepancies between the scope of Row 44's "testing" and proposed operations, the Bureau should affirmatively preclude Row 44 from operating with a pointing error in excess of 0.2 degrees.

VSAT networks on adjacent satellites; and (ii) taking into account the more likely operating conditions described by ViaSat, those services would cause at least an 89.3 percent ΔT/T increase into VSAT networks on adjacent satellites. *See* Letter from John P. Janka to Marlene H. Dortch (Dec. 8, 2008).

3 *See* ViaSat June 23 Letter at 8-16; ViaSat June 26 Letter, Att. at 4-11.

4 *See* Letter from John P. Janka to Marlene H. Dortch (Jun. 30, 2009).

5 *See* ViaSat June 23 Letter at 11-12; ViaSat June 26 Letter, Att. at 9.

6 *See* Letter from David S. Keir to Marlene H. Dortch, at 5 (Jul. 10, 2009).

2. The Bureau should require Row 44 to log critical data.

As noted above, ViaSat has presented record evidence demonstrating that Row 44's proposed system could cause harmful interference into adjacent operations. While Row 44 disputes this claim, even Row 44 accepts that any authorized operations should be on a non-interference basis. As such, should the Bureau authorize Row 44 to operate, the ability to accurately identify any interference from Row 44's proposed system would be critical.

Existing interference location systems are not able to track the locations of mobile transmitters. Further, Row 44's AMSS terminals would be operated in a transient and intermittent fashion, making them particularly difficult to locate. As such, a data logging requirement is critical, and would be the most effective way to identify and resolve incidents of interference from Row 44's proposed system. Data logging is standard industry practice. Notably, in the ESV context, the Commission requires Ku-band hub operators to have the capability to track and maintain certain data, including terminal locations, for potential review in the event interference issues arise.[7]

Accordingly, the Bureau should impose a data logging condition on any license granted to Row 44, requiring it to log, with respect to each operating terminal, data including: (i) location (latitude, longitude, altitude); (ii) aircraft attitude (pitch, yaw, roll); (iii) operating frequency; (iv) occupied bandwidth; (v) data rate; (vi) EIRP; and (vii) point of communication. Row 44 should be required to record data at least once every 2 minutes, and every 30 seconds whenever an aircraft roll angle is greater than 10 degrees.

3. The Bureau should require Row 44 to file a report with the Bureau one year after commencing commercial operations.

The Bureau should require Row 44 to file a report with the Bureau one year after commencing commercial operations, addressing installed equipment configurations, EIRP compliance, pointing accuracy compliance, and compliance with assigned bandwidth/emission designators, and including a table of reported interference events. Such a condition would allow the Bureau and potentially affected users of the Ku band, such as ViaSat, to verify that Row 44's network actually complies with the Commission's rules when its user terminals are deployed and are operating on a widespread commercial basis.

The Commission has regularly imposed a reporting condition on AMSS licensees. For example, the Commission required Boeing to "submit a report . . . includ[ing] test results and a description of any design modifications or operational procedures necessary" to ensure that Boeing's operations were consistent with a two-degree spacing environment, and addressing,

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[7] *See Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in the 5925-6425 MHz/3700-4200 MHz Bands and 14.0-14.5 GHz/11.7-12.2 GHz Bands*, Report and Order, 20 FCC Rcd 674, at ¶ 112 (2005).

among other things, antenna pointing issues.[8] The Commission imposed a similar condition on ARINC, and specifically found that "[d]ata obtained after ARINC has had an opportunity to expand commercial operation pursuant to this authorization . . . would be more useful than data on operation to date on the limited basis previously allowed."[9] The Commission again imposed a reporting condition on ViaSat in granting its AMSS license.[10]

A similar reporting condition is warranted in Row 44's case. Row 44's operations have the potential to cause harmful interference, and previous operations and "testing" are insufficient to ascertain the scope of possible interference resulting from wide deployment in commercial operations. Accordingly, the Bureau should require Row 44 to provide the requisite operational data by filing, one year after commencing commercial operation, a report on its system's performance during that time period. Doing so would allow both the Bureau and other potentially affected users of the Ku band to evaluate the impact of Row 44's system during the initial phase of commercial service.

4. The Bureau should require Row 44 to maintain a suitable margin to ensure compliance with the Commission's off-axis EIRP density mask.

ViaSat has explained previously that the link budgets provided by Row 44 simply do not support the power levels at which Row 44 proposes to operate (10 watts), and that Row 44 instead would need to operate at higher power levels (12.5 watts) in order to close its links.[11] ViaSat also has provided graphs showing that, at these higher power levels, Row 44's proposed system would not comply with the Commission's off-axis EIRP density mask when mispointed.[12] Notably, Row 44's power amplifier has sufficient "overhead" to permit operations at this higher power level, and it would be natural to use that extra power when an aircraft moves through a part of the satellite coverage area with low performance.

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8 *The Boeing Company; Application for Blanket Authority to Operate Up to Eight Hundred Technically Identical Transmit and Receive Mobile Earth Stations Aboard Aircraft in the 14.0-14.5 GHz and 11.7-12.2 GHz Frequency Bands*, Order and Authorization, 16 FCC Rcd 22645, at ¶ 19 (2001).

9 *ARINC Incorporated, Application for Blanket Authority for Operation of Up to One Thousand Technically Identical Ku-Band Transmit/Receive Airborne Mobile Stations Aboard Aircraft Operating in the United States and Adjacent Waters*, 20 FCC Rcd 7553, at ¶ 56 (2005) ("*ARINC Order*").

10 *ViaSat, Inc., Application for Blanket Authority for Operation of 1,000 Technically Identical Ku-Band Aircraft Earth Stations in the United States and Over Territorial Waters*, Order and Authorization, 22 FCC Rcd 19964, at ¶ 28 (2007).

11 *See* ViaSat Reply to Opposition to Supplement to Petition to Deny, Technical Annex at 1-5 (Nov. 4, 2008).

12 *Id.* at 3-5.

Row 44 has never explained how its proposed system would control uplink power within the 10-watt limit so as to maintain off-axis EIRP density within acceptable limits and mitigate the threat of harmful interference. Moreover, Row 44 has never conducted testing to establish the EIRP stability of its system (*i.e.*, the extent to which the transmit power level of its system changes over time as the aircraft moves through the different coverage areas of the different spacecraft with which Row 44's user terminals communicate). Further, as explained by ViaSat in any number of filings, Row 44 has failed to demonstrate its ability to maintain a pointing accuracy of 0.2 degrees, in a manner consistent with Section 25.222(a)(6) of the Commission's rules.[13]

In light of the uncertainty surrounding Row 44's ability to control its uplink power and maintain its antenna pointing accuracy, and in order to ensure compliance with the Commission's mask even when Row 44's system mispoints, the Bureau should require Row 44 to maintain a 3 dB margin under the Commission's off-axis EIRP density mask. Such a condition would be consistent with those previously imposed on AMSS licensees,[14] and would mitigate the interference potential of Row 44's system, even if Row 44 is unable to maintain a high level of EIRP stability or a sufficient level of pointing accuracy.

5. The Bureau should limit Row 44's operations to a data rate of 256 kbit/s, with a minimum of 4 chips/bit.

ViaSat has raised material issues with respect to Row 44's ability to operate effectively at 512 kbit/s. For example, ViaSat has noted that Row 44's user terminals could support, at best, 512 kbit/s operations down to a 0.3 dB/K G/T contour. Given consumer demands for continuous service, ViaSat has expressed concern that Row 44 would increase transmit power levels as needed to close its links at 512 kbit/s, thereby exacerbating the degree to which the Row 44 system would fail to comply with Section 25.134(g)(1) of the Commission's rules,[15] and the potential for harmful interference into adjacent operations.[16]

Conspicuously, Row 44's "testing" did not examine, and Row 44 has never provided full link budgets for, the 512 kbit/s case.[17] As such, there is simply no way of knowing the full extent of any technical issues that could extend from operations at 512 kbit/s. Thus, the Bureau has *no* basis for evaluating Row 44's technical claims with respect to the 512 kbit/s case, and cannot even evaluate the most basic technical parameters governing Row 44's proposed

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13 *See* 47 C.F.R. § 25.222(a)(6).

14 *See, e.g., ARINC Order* at ¶ 58(k). In this case, ViaSat is requesting a margin of 3 dB given greater uncertainty regarding the capabilities of Row 44's system.

15 *See* 47 C.F.R. § 25.134(g)(1).

16 ViaSat Petition to Deny, Technical Annex at 1-2 (Jun. 27, 2008).

17 *See, e.g.,* ViaSat Reply to Opposition to Supplement to Petition to Deny at 23 ("We note that there were no 512 kbit/s link budgets supplied with Row 44's recent submission, and we therefore cannot assess Row 44's 512 kbit/s service.").

operations. Accordingly, the Bureau should restrict any licensed Row 44 operations to 256 kbit/s.

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Please contact the undersigned should you have any questions.

Sincerely yours,

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