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February 11, 2009

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

Re: Ex Parte Letter -- Applications of Row 44, Inc. (Call Sign E080100; File Nos. SES-LIC-20080508-00570, SES-AMD-20080619-00826; SES-AMD-20080819-01074; SES-AMD-20080829-01117; SES-AMD-20090115-00041; and SES-STA-20080711-00928)

Dear Ms. Dortch:

This letter is submitted on behalf of Row 44, Inc. (“Row 44”), pursuant to Section 1.1206 of the Commission’s Rules, to report on the joint *ex parte* meeting with FCC staff on Monday involving both Row 44 and Hughes Network Systems, LLC (“Hughes”) concerning the above-referenced Row 44 applications for authority to operate aeronautical mobile-satellite service (“AMSS”) Earth stations. The FCC staffers participating in the meeting are identified with asterisks in the list of individuals receiving courtesy copies of this letter. Hughes has already filed its own *ex parte* notice concerning this meeting.

In addition, this letter addresses the recent rash of correspondence from ViaSat, Inc. concerning the Row 44 applications. Despite ViaSat’s rhetoric, and its varied and shifting attempts to stall progress in this proceeding through lengthy and repetitious filings,¹ recent submissions by Row 44 establish a clear pathway to resolution of the remaining issues, and completion of processing of the application for permanent authority.

¹ Notably, while ViaSat initially focused much of its attention on antenna misorientation during flight maneuvers, now that Row 44 has addressed those concerns (*see, e.g.*, Row 44 November 26, 2008 *Ex Parte* Letter), and ViaSat has announced plans to use the same AeroSat antenna that Row 44 employs (*see, e.g.*, ViaSat January 29, 2009 *Ex Parte* Letter), ViaSat’s primary attack has shifted to the power density of Row 44’s transmissions. But the maximum power density specified by Row 44 is consistent with Section 25.134 of the Commission’s Rules applicable to conventional VSAT systems.



In particular, on February 6, 2009, Row 44 filed a Test Plan (“Test Plan”), originally requested by FCC staff on January 23, 2009, and signed by all of the satellite operators potentially affected by its proposed operations, that enumerates data that Row 44 can gather and share pursuant to its requested special temporary authorization (“STA”) to confirm prior showings that its AMSS Earth station system will operate without causing harmful interference. *See* FCC File No. SES-STA-20080711-00928. Grant of Row 44’s requested STA and implementation of this Test Plan would provide the most definitive record upon which the FCC can premise final action on Row 44’s application for a permanent license.²

The remainder of this letter addresses issues discussed at the Monday, February 9, 2009 meeting involving Row 44, Hughes and FCC staff, and expands on those discussions to expose other flaws in ViaSat’s recent filings.³ Some of ViaSat’s contentions also appear in submissions from two other parties, which simply repeat assertions previously advanced by ViaSat without further elaboration.⁴

² Row 44 considers emblematic of the extreme positions ViaSat has sometimes asserted in this proceeding its February 9th declaration that “Row 44 proposes, without explanation or justification, to withhold from other parties data that might be gathered pursuant to the STA.” ViaSat February 9, 2009 *Ex Parte* Letter at 3. The Test Plan states plainly that a report will be filed with the FCC upon completion of the test period. *See* Test Plan at 4 (“*Reporting to FCC*”). As Row 44 has asked that the Commission, in turn, consider this data in taking action on its license application, it would expect that ViaSat would be afforded an opportunity to review this data, subject to an appropriate non-disclosure agreement.

³ Specifically, this letter addresses the following *Ex Parte* correspondence filed by ViaSat and others: ViaSat *Ex Parte* Letter filed December 8, 2008 (“Interference Study”); ViaSat *Ex Parte* Letter filed December 11, 2008; LiveTV, LLC (“LiveTV”) *Ex Parte* Letter dated December 12, 2008; ViaSat *Ex Parte* Letter filed January 16, 2009; KVH Industries, Inc. (“KVH”) *Ex Parte* Letter dated January 20, 2009; ViaSat *Ex Parte* Letter dated January 22, 2009; ViaSat *Ex Parte* Letter dated January 24, 2009; ViaSat *Ex Parte* Letter dated January 29, 2009; ViaSat *Ex Parte* Letter dated February 6, 2009; and ViaSat *Ex Parte* Letter dated February 9, 2009.

⁴ ViaSat tries to argue that the presence of these other filers indicates a groundswell of opposition to Row 44’s application (*see* ViaSat January 22, 2009 *Ex Parte* Letter at 2 & 3), but both ARINC and KVH are business partners of ViaSat with commercial interests identical to its own. *See, e.g.*, Mary Kirby, “ViaSat’s Global Ku-band Connectivity Plan Progresses,” Flightglobal.com, posted 1/22/2009, available at <http://www.flightglobal.com/articles/2009/01/22/321506/viasats-global-ku-band-connectivity-plan-progresses.html>. And LiveTV, which offers services that could become less attractive to airline customers if Row 44’s service succeeds, does not currently operate in the Ku-band FSS spectrum at all; by its own admission, its interest in using the Ku-band FSS is purely aspirational. *See* LiveTV December 12, 2008 *Ex Parte* Letter at 1 (“we are



1. Row 44's Limited Flight Test STA Should Be Granted

At the February 9, 2009 meeting, Row 44 noted that at the outset of ViaSat's participation in this proceeding, it found specific fault with Row 44's proposal because Row 44 "has not demonstrated that it has conducted *extensive transmit/receive flight testing* of its proposed antenna to establish that its AMSS system can operate" on a non-harmful-interference basis. ViaSat Petition to Deny at 4 (filed June 27, 2008) (emphasis added). Having made this statement more than seven months ago, ViaSat cannot reasonably claim now that such testing ought not be permitted at this time. ViaSat's June 2008 declaration that in-flight testing was a prerequisite for consideration of Row 44's application, itself a dubious contention, certainly cannot be reconciled with its more recent insistence that Row 44 be required to engage in further, redundant "ground testing of [its] proposed system ... *before* any grant of authority that might permit Row 44 to engage in airborne operations." ViaSat January 29, 2009 *Ex Parte* Notice at 1 (emphasis original). *See also* Section 2, below.

At the February 9 meeting, FCC staff asked why, when Row 44 has operated some planes pursuant to an experimental authorization held by Hughes (Call Sign WE2XEW), there remains a need for it to obtain an STA from the International Bureau to conduct airborne technical trials. In response, counsel noted that the experimental license does not permit the same operating parameters as the permanent license application on which the STA is premised. Specifically, the maximum EIRP density specified in the Hughes license is 13.5 dBW/4 kHz, while Row 44 has sought authority to operate at 14.0 dBW/ 4 kHz. For this reason, while Row 44 does have some data from past flights that corroborate its operation on a non-harmful-interference basis, this data might not be viewed as conclusive with respect to the proposal outlined in the license application. Based on past performance, Row 44 can assume that ViaSat would be the first (and perhaps the only) entity to assert that such data are of no value in considering Row 44's underlying application.

Moreover, while Hughes' generous assistance in making the experimental license available for Row 44's testing program is greatly appreciated, Row 44's operations under the license remain under Hughes' ultimate control, and at its discretion. Row 44 cannot be certain that other customer needs would not place potential limitations on future Row 44 operations.

Finally, and perhaps most importantly, it is only with the cooperation of the neighboring satellite operators under the Test Plan that Row 44 can maximize the amount of useful data available to evaluate antenna system performance. The cooperative efforts of Row 44 and the satellite operators will require each to devote time, personnel and equipment to coordinating Row 44's operations with corroborative measurements to ascertain that no interference is being caused to potentially affected satellite transponders. In order for these efforts to be worthwhile, and

actively exploring the use of Ku-band FSS spacecraft to provide true broadband services to our customers.")



therefore justify the time and expense of all concerned, Row 44 and the operators need the assurance of the FCC that the Test Plan's approach is acceptable, and that the data gathered will be considered in the ultimate processing of Row 44's application. The empirical results expected from executing the Test Plan will allow multiple variables to be included in the test case because the controlled experiment will take the Row 44 system beyond its antenna mispoint/misorientation limits to validate non-interference through the suspension of transmission, as demonstrated through monitoring at the satellite operator gateways.

In response to a follow-up FCC staff question, Row 44 noted that there is ample justification for Row 44 to operate using up to twelve remote airborne units. Row 44 proposes to operate using three different satellites across the domestic satellite arc, and flying aircraft on routes that cut across these different coverage areas in different ways will supply critical data concerning system performance under maximum skew angle conditions based on an aircraft's geographic position and flight maneuvers, and will allow testing of satellite "hand-off." Use of multiple aircraft will also permit analysis based on circumstances where multiple aircraft are operating in the same geographic area and providing service to a high volume of passenger users. Similarly, operation of equipped aircraft on different routes, in different regions, and on different days will allow data to be gathered in a greater variety of flight conditions with respect to uncontrolled variables such as weather, wind speed, and turbulence. Finally, the use of multiple aircraft will maximize the amount of data that can be gathered. In light of the fact that Row 44 has airline customers ready to spend considerable sums of money on additional fleet build-out once final authority is granted, moving forward quickly with testing is critical. ViaSat's suggestions to the contrary (see Section 2, below) are transparently calculated to drag out the process.

Finally, ViaSat's expressed alarm at the number of remote units Row 44 has requested authority to operate via STA is itself remarkable, considering that throughout most of the period that ViaSat's own AMSS application was pending, it had been authorized to operate *up to fifty (50)* aeronautical mobile Earth stations pursuant to an experimental authorization. *See* Call Signs WD2AXQ and WE2XBE.⁵ This authority was granted initially based on far less data concerning the interference avoidance capabilities of these antennas than Row 44 has provided to-date in this proceeding. *See* FCC File No. 0030-EX-ML-2003. To the extent that ViaSat expresses concern about initiation of "commercial" operations, the bulk of the initial Row 44 trials will involve free passenger access to the service. In any case, given the considerable costs of equipment installation and flight testing, it would not be possible for Row 44 to operate a viable commercial offering with so few planes, and the intent of these trials is simply to demonstrate both the utility and performance of the service.

⁵ *See also* Row 44 September 24, 2008 *Ex Parte* Letter at 2 (referencing that Row 44's STA request was for "a quantity of deployed equipment equivalent to an experimental authorization").



2. Row 44 Has Completed Extensive Ground Testing Using the AeroSat Antenna

In its most recent filings, ViaSat has advanced the notion that Row 44 can only demonstrate the pointing and shut-off capabilities of its antenna by employing “ViaSat’s process for testing the pointing performance of new antenna systems.” ViaSat January 29, 2009 *Ex Parte* Notice at 1. Row 44, however, can assure the Commission that, with the exception of ViaSat’s superfluous use of a laser pointer and a video camera, its own antenna patterns supplied with its application and associated amendments employed the same type of test methodology that ViaSat has recently described. Specifically, the tests conducted at AeroSat’s Amherst, New Hampshire facility employed a sophisticated three-axis (pitch over roll over heading) motion table constructed to gather data concerning the AeroSat HR6400 antenna. The entire antenna system assembly, including the Aircraft Data Inertial Reference Unit, was mounted on the motion table during the test procedure. Flight profile data input into the system allowed the accurate measurement of antenna pointing and orientation under different simulated flight maneuvers, with all data synchronized using Inter-Range Instrumentation Group B (“IRIG-B”) to maintain maximum accuracy. The antenna patterns generated from this ground testing program were submitted with the original application (Exhibit B), and additional patterns, using the same testing procedure, that depict maximum mispoint plus maximum misorientation of the antenna while in transmit mode were submitted in August 2008. *See* FCC File No. SES-AMD-20080829-01117. ViaSat’s persistent assertions that this test data is not part of the record in this proceeding are misplaced. *See* ViaSat February 6, 2009 *Ex Parte* Letter at 1; ViaSat February 6, 2009 *Ex Parte* Letter at 3.

The absence of any need to repeat such ground-based testing is underscored by the support for flight testing already received from all of the satellite operators. *See* Test Plan. ViaSat attempts to twist one satellite operator’s desire to see some additional flight test data⁶ into a conclusion that “even the satellite operators do not have enough data to confirm Row 44’s assertions about its system.” ViaSat January 24, 2009 *Ex Parte* Letter at 1. In reality, the operators -- whom, it should be emphasized, are the primary parties protected by the FCC’s two degree spacing policy -- have both the greatest stake in ensuring that interference will not occur and the most substantial capabilities to evaluate the actual interference-avoidance characteristics of mobile antenna systems during in-flight use.

ViaSat’s position in this proceeding that the satellite operators are both insufficiently informed or concerned about potential interference to validate properly Row 44’s demonstrations

⁶ As Row 44’s counsel reported in the February 9, 2009 meeting, only one of the three operators, EchoStar, pushed for flight test data sharing under the STA as a condition of signing a supplemental coordination letter – a circumstance which led directly to the development of the Test Plan, already under discussion as a data sharing agreement at the time that the Satellite Division requested that Row 44 submit such a plan. Even EchoStar, however, has characterized this simply as a “slow roll out” of service to allow the gathering of operational data.



in this regard⁷ and yet somehow also dissatisfied with the amount of information provided by Row 44 to date is logically incoherent. The satellite operators have the greatest stake in ensuring that the geostationary arc remains free of harmful interference, and have signed on to participate in Row 44's Test Plan. In reaching this decision, the satellite operators have had the opportunity to review the material that is included in the FCC record, including a live presentation of the same Row 44, AeroSat and Hughes presentation that was given at their joint *ex parte* meeting with FCC staff on November 25, 2008. See Row 44 November 26, 2008 *Ex Parte* Letter. Based on these materials, the satellite operators have agreed that Row 44 has sufficiently demonstrated the pointing capabilities of its antenna system to allow flight testing of the system to verify this predicted performance.

3. ViaSat's "Interference Study" Bears Little Relationship to Row 44's Proposal.

On December 8, 2008, ViaSat filed a lengthy interference study in which it asserted "Row 44's proposed system would pose a substantial and unacceptable risk of interference into adjacent satellite systems." ViaSat December 8, 2008 *Ex Parte* Letter at 4. Due to its own failings, however, the ViaSat study bears little relationship to the operations actually proposed by Row 44. First, ViaSat arbitrarily and incorrectly assumes that Row 44 will operate at a higher input power level of 12.5 Watts at the antenna flange, when it proposes to transmit with only 10 Watts of power. Second, with respect to every interference case its study purports to evaluate, ViaSat incorrectly assumes that the antenna gain will be 33.3 dBi, when Row 44 has repeatedly identified the correct antenna gain as 28.6 dBi. Third, ViaSat ignores data in the record showing that Row 44's antenna "blanking" algorithm will mute all transmissions prior to reaching a $\pm 0.5^\circ$ mispoint and simply assumes that transmissions would continue with a variance of up to $\pm 0.75^\circ$. As a significant error in even one variable may lead to results that are wholly unreliable, ViaSat's liberties with three important technical characteristics undermine the credibility of its interference study.⁸

⁷ See, e.g., ViaSat January 16, 2009 *Ex Parte* Letter at 1 ("It is not enough, as some satellite operators suggest, to simply assume that Row 44's unsubstantiated assertions about its proposed operating conditions would be correct.") See also ViaSat January 22, 2009 *Ex Parte* Letter at 4 ("the Commission may not rely solely on the unsubstantiated conclusions of a few satellite operators that are selling satellite capacity to Row 44.") The latter quote is factually incorrect in that all three satellite operators within the respective coordination zones for the satellites used by Row 44 have signed a supplemental coordination letter and the proposed Test Plan, including EchoStar, from which Row 44 does not obtain any satellite capacity through Hughes.

⁸ For example, if one were to assume that LeBron James' height is 5' 7", one might conclude that he would never succeed as a professional basketball player.



Since filing this flawed study, ViaSat has repeatedly claimed that the study is “unrebutted” or “undisputed” by Row 44.⁹ But Row 44 has consistently challenged, from the outset of ViaSat’s participation in this proceeding, the erroneous assumptions that underpin this study.¹⁰ Row 44 does not feel obligated to continue knocking down at every turn the same straw men that ViaSat continues to prop up repeatedly in this proceeding. Given the fact that ViaSat’s study is not premised on the operating parameters that Row 44 has outlined in its application, it is not surprising that ViaSat’s conclusions depart substantially from those reached jointly by engineers from Hughes, AeroSat Corporation and Row 44, which have participated in the preparation of the technical data provided in the Row 44 application, as amended. In sum, ViaSat’s interference analysis is of no value in evaluation of Row 44’s application.

Of perhaps even more dubious value are ViaSat’s repeated efforts to draw meaningful conclusions regarding Row 44’s technical operations from accounts that appear on blogs and in mainstream media outlets. A recent and particularly inaccurate example of this can be found in ViaSat’s January 16th *Ex Parte* filing, where ViaSat selectively quotes, from an otherwise very favorable account in the *Los Angeles Times*, a reporter’s unelaborated observation that “Row 44’s connection with the Horizons-1 satellite was ‘lost again as [the plane] head[ed] back toward the Strip and turbulence tossed the small plane about.’” ViaSat January 16, 2009 *Ex Parte* Letter at 2. ViaSat draws from this account the unfounded conclusion that “Mr. Colker’s observation confirms ViaSat’s analysis that Row 44’s proposed system simply cannot maintain a peak pointing accuracy of 0.2 degrees.” *Id.* In fact, the appropriate conclusion is that the Row 44 antenna system functioned properly when antenna misorientation occurred relative to the target satellite, and the antenna ceased transmission, thereby causing a brief interruption in service. In this case, Row 44’s logs from that flight confirm that the plane took a turn into canyons north of Lake Mead, and while encountering some turbulence, banked at a steep angle, causing the misorientation (or polarization skew) parameters to be exceeded (i.e., a Clarke Belt alarm was recorded), and transmission suspended.¹¹ Antenna mispointing or misorientation while

⁹ See ViaSat January 22, 2009 *Ex Parte* at 3 and ViaSat February 6, 2009 *Ex Parte* at 2. See also ViaSat February 9 *Ex Parte* Letter at 4 (“Row 44 has not even attempted to respond to ViaSat’s December 8, 2008 interference analysis”).

¹⁰ See, e.g., Row 44 Opposition to ViaSat Petition at 8 n.13 (filed July 23, 2008)(antenna gain); Row 44 November 26, 2008 *Ex Parte* Letter, Attachment at 15 (10 Watt input at antenna flange); *Id.* at 4-10 (antenna pointing and orientation accuracy).

¹¹ At that location, the antenna was transmitting to Horizons-1 at a skew angle of approximately 16 degrees, leaving about a 9 degree margin for a left banking turn north. Thus, the antenna system performed precisely as intended when it ceased transmission at a skew angle of 25 degrees. It also bears noting that not only do the terrain and typical weather characteristics of the Las Vegas area pose a particularly challenging environment for air navigation, but the Grumman aircraft on which the demonstration took place allows much steeper banking and aggressive flight maneuvers than a commercial airliner. Indeed, in the very next sentence following the one quoted



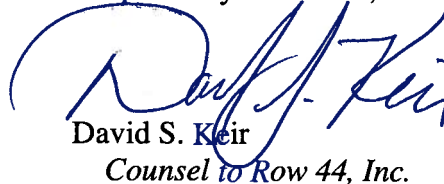
transmitting may cause harmful interference, while cessation of transmission by design when mispointing or misorientation parameters are exceeded prevents interference from occurring.

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Row 44 has reiterated several times in this proceeding its willingness to provide any data the FCC may require to complete the processing of its application. To date, the FCC's Satellite Division has asked Row 44 on a few occasions for additional data or other documentation. In each case, Row 44 has responded quickly to provide the additional information requested, usually responding in less than two weeks. At this point in the process, Row 44 firmly believes that the only additional data that the FCC might find useful in completing action on the application is the hard data that can be gathered through flight testing of the remote antennas pursuant to the requested STA and employing the cooperative data sharing mechanism outlined in the Test Plan. Accordingly, Row 44 respectfully requests that the STA be granted as soon as the Satellite Division can complete its review of the Test Plan.

Should there be any further questions regarding this matter, please contact the undersigned counsel.

Respectfully submitted,



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Counsel to Row 44, Inc.

cc: John Giusti*	Kathryn Medley
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* = Attended February 9, 2009 Meeting

by ViaSat, the reporter notes Row 44 CEO John Guidon's comment that "This wouldn't happen so much on a commercial flight," and the reporter's companion observation that "several aboard report a touch of nausea." David Colker, "Wi-Fi up high: Row 44 Web access for airlines gets a test flight over Las Vegas," L.A. TIMES (January 11, 2009), available at <http://www.latimes.com/business/lafi-consumer11-2009jan11,0,2227041.story?track=rss>.