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May 15, 2009

BY HAND DELIVERY AND ELECTRONIC POSTING

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

Re: HNS License Sub, LLC, File No. 0076-EX-RR-2009, Ref. No. 8313

Dear Ms. Dortch:

On April 6, 2009, the Commission's Office of Engineering and Technology, wrote to HNS License Sub, LLC ("Hughes") requesting additional information pertaining to antennas and frequencies used by Hughes under Call Sign WE2XEW – the license to which the above-referenced renewal application pertains. *See* Correspondence from D. Young, OET, Correspondence Ref. No. 8313. On May 6, 2009, Hughes requested an extension of time, to May 15, to gather and provide the information sought in Mr. Young's April 6 request.

Hughes's response to the April 6 request is enclosed with this letter.

Please do not hesitate to let me know if there are any questions or if any additional information is required in relation to Correspondence Ref. No. 8313 and Hughes's renewal application for Call Sign WE2XEW.

Respectfully submitted,

Stephen D. Baruch
Counsel for HNS License Sub, LLC

Enclosure
cc (by e-mail): Douglas Young
Steven Doiron

Response of HNS License Sub, LLC to Request for Additional Information in Ref. No. 8313

The following is the response of HNS License Sub, LLC ("Hughes") to the April 6, 2009 request from the Commission's Office of Engineering and Technology (Ref. No. 8313) for additional information regarding Hughes's operations under Call Sign WE2XEW.

The following specific questions are asked:

(a) What new antennas are currently in use on the license for Call Sign WE2XEW, and in what quantity?

In 2005, Hughes began a test and development program dealing with satellite communication systems capable of operating while the terminal is in motion. Being an area of potential interest to its customers, Hughes used its program to investigate how its existing products could best be adapted for use in a mobility environment. In partnership with General Dynamics, Hughes installed a gyro-stabilized antenna on a General Motors Corporation ("GMC") Hummer vehicle for use in system tests and customer demonstrations. The technical characteristics of this terminal formed the basis for the lead application for this Call Sign WE2XEW (and its predecessor temporary authorization under Call Sign WC9XET). The original Hummer-based terminal remains in demonstration service to this day.

Since the original grant by OET of the experimental license, Hughes has undertaken a variety of tests with different antenna products from various manufacturers in order to assess the performance of these products when integrated into the Hughes VSAT system. These have all been short term tests with the equipment being returned to the antenna vendor at the conclusion of the test cycle. In each case, the characteristics of the antenna in question and nature of operation by Hughes were such that the transmissions remained within the level of transmissions authorized under the WE2XEW license. Some of these tests have included terminals in Ka band (pursuant to a 2007 license modification) as well as terminals located on ships and airplanes (pursuant to 2008 and 2009 license modifications). In each case, Hughes obtained all necessary permission from OET prior to the start of these tests. In each case, the test equipment has been decommissioned upon completion of the tests.

Most recently, Hughes has conducted tests in collaboration with Row 44, Inc. ("Row 44") regarding the use of satellite receive equipment in an aeronautical environment. These tests have been for the most part completed and Row 44 has now transitioned authorization for its pre-deployment testing to an STA granted to it by the International Bureau in March 2009. For the near term, the AeroSat HR6400 antenna that Hughes described in detail in its March 12, 2009 submission in connection with File No. 0013-EX-ML-2009 may continue to be used at static locations in conjunction with Row 44. At present, there are two of the AeroSat antennas in periodic use under Call Sign WE2XEW, and it is possible that one or two units of a different model antenna with the same technical characteristics as the AeroSat antenna could be employed for use in the Row 44 static testing.

In conclusion, while Hughes has tested a variety of different antennas under its current authorization (as appropriately modified), during the current license term, only the original General Dynamics antenna model has been used under the authorization for more than a few months. In conjunction

with the instant application for renewal of its experimental license, Hughes has not added any antenna models to its authorization that were tested for short periods of time but that are no longer in use. This includes the AeroSat HR6400 antenna and potential equivalent antennas (as described in connection with File No. 0013-EX-ML-2009) remain in short-term use for static ground tests, as this use is expected soon be transitioned to a Row 44 authorization.

(b) List all frequencies for which the emission 1M60G7D will be used.

The carrier with the emission designator 1M60G7D is used in the 14-14.5 GHz transmit band, subject to the geographical limitations and conditions imposed in the current license for Call Sign WE2XEW. Although Hughes has no mobility applications operating at this time in the Ka-band frequencies at 29.5-30 GHz, it is conceivable that 1M60G7D is an emission code that Hughes could use in the future in that band.

(c) Demonstrate how the AeroSat antenna, at an EIRP density level of 13.5 dBW/4 kHz, will satisfy the off-axis density levels that the General Dynamics antenna emits in the elevation plane.

The antenna being used by Hughes and Row 44 pursuant to the 2009 modification of license under Call Sign WE2XEW is a product developed and designed by AeroSat. This antenna is a rectangular micro-horn array which is mechanically steered so as to be kept pointed toward the satellite.

For the case where the terminal is operated from locations on the same longitude as the satellite with which it communicates, the GSO arc is at that point parallel to the horizon of the aircraft. As a result, the antenna array has its widest width along the GSO arc, thus providing maximum protection to adjacent satellites.

However, when the aircraft is at a longitude different than that of the satellite with which it is communicating and accounting for motion of the aircraft, the GSO arc will have both an azimuth as well as an elevation component. Were the widest width of the AeroSat antenna to be tied to the azimuth of the aircraft only, there would be an increase in interference toward the GSO arc as the longitude away from the satellite increased. This change would be proportional to the increase in the elevation component of the GSO arc at that location. As a consequence of the reduction in the array width in the direction of the GSO, there would be an increase in off-axis gain and a resulting increase in interference to adjacent satellites.

To guard against this effect, the AeroSat antenna was designed so that the array's waveguide feed can rotate in yaw (on the polarization axis) by up to 25 degrees and meet the requirements of 25.209. This rotation of the waveguide feed ensures that the maximum array width is always parallel to the GSO arc, thus ensuring that the variations in elevation component do not result in an increase in interference to adjacent satellites. This same system ensures that aircraft movements do not result in a change in the array size toward the GSO arc.

To ensure that the adjacent satellites are protected from interference levels beyond those authorized in Section 25.134 of the FCC's rules, the antenna system will disable the transmitter if the amount of array tilt exceeds the 25 degree capability designed into the antenna subsystem.

By: _____

Steven Doiron
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and HNS License Sub, LLC
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Dated: May 15, 2009