



DUPLICATE

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Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W., Room TW-B204
Washington, D.C. 20554

**Re: Erratum to Amendment to Application of Northrop Grumman
Space & Mission Systems Corp., File No. SAT-AMD-20070209-00029**

Dear Ms. Dortch:

On behalf of Northrop Grumman Space & Mission Systems Corporation ("NGST"), this letter is being submitted for inclusion in the above-referenced application file. On February 9, 2007, NGST amended its five pending applications for a hybrid geostationary/non-geostationary Ka-band and V-band satellite system. The above-referenced amendment corresponds to a geostationary-orbit satellite NGST proposes now to locate at the 125° W.L. orbital location.

The enclosed Erratum to the above-referenced filing pertains to one element of the orbital debris mitigation plan for the spacecraft. The safe flight profile section of the orbital debris mitigation plan NGST filed in November 2005, when the satellite in question was proposed for a different orbital location, should have been updated to correspond to the new orbital location. The attached Erratum accomplishes this task, and NGST requests that the Erratum be included in the referenced file.

Please contact the undersigned if you have any questions or wish any additional information regarding the foregoing or the enclosed Erratum to Amendment.

Respectfully yours,

Stephen D. Baruch
*Attorney for Northrop Grumman Space &
Mission Systems Corp.*

Enclosure

cc w/ encl. (By E-Mail): Robert Nelson
Andrea Kelly
Karl Kensinger

**Erratum to Amendment to Application of
Northrop Grumman Space &
Mission Systems Corp.
File No. SAT-AMD-20070209-00029
March 2007**

ERRATUM

In its February 9, 2007 Amendment to its application for a new hybrid Ka-band/V-band geostationary satellite orbit fixed-satellite service spacecraft to be located at the 125° W.L. orbital location (File No. SAT-AMD-20070209-00029), Northrop Grumman Space & Mission Systems Corporation (“NGST”) specifically incorporated by reference its pending orbital debris mitigation submission in the November 2005 Amendment in File No. SAT-AMD-20051118-00229. *See* NGST February 9 Amendment in File No. SAT-AMD-20070209-00029, Narrative Statement at p. 13. In general, the NGST orbital debris mitigation plan shown in the November 2005 Amendment in File No. SAT-AMD-20051118-00229 still applies for all collocated satellites. The GESN satellite will have sufficient fuel to stationkeep within 0.05 degrees. In addition, if needed, the GESN satellites can also fly at an inclination and eccentricity other than 0 degrees. In all cases, the NGST will coordinate with all collocated satellites’ operators to ensure that GESN satellites will not cause any collisions with any neighboring satellites. This includes U.S. licensed satellites (commercial and Federal) and non-U.S. licensed satellites that are in operation or planned for operation.

With the relocation of the proposed spacecraft from the 119° W.L. orbital location to the 125° W.L. orbital location, it became necessary for NGST to update the safe flight profile section of its November 2005 orbital debris mitigation showing under Section 25.114(d)(14) of the Commission’s Rules, 47 C.F.R. § 25.114(d)(14), to include specific information about how NGST will accommodate other U.S.-licensed satellites that are operated or authorized for operation from the same nominal location in other frequency bands. NGST also took into account other known satellites located at, or reasonably expected to be located at, the requested orbital location, or assigned in the vicinity of that location, such that the station-keeping volumes of the respective satellites might overlap.

NGST includes as an attachment hereto a replacement for Section 3, Safe Flight Profiles, from the November 2005 Amendment. All other elements of the November 2005 Orbital Debris Mitigation Showing NGST made for the proposed satellite are, as was stated in the February 9 Amendment, unaffected by the changes proposed in the orbital location of the spacecraft.

ATTACHMENT

Replace Section 3 from Attachment to November 2005 Amendment with the following text:

3. Safe Flight Profiles:

NGST has assessed and limited the probability of the spacecraft becoming a source of debris by collisions with large debris or other operational space stations.

NGST has assessed and limited the probability of the spacecraft becoming a source of debris by collisions with large debris or other operational space stations. The four (4) GESN GSO satellites will occupy the following orbital slots: 125° W.L., 73° W.L., 68.5° E.L., and 116.5° E.L. NGST has analyzed other geostationary satellite orbit (GSO) satellites that could be within the stationkeeping volume of the GESN satellites – including U.S. licensed satellites (commercial and Federal) that are in operation or applied for and under consideration, and non-U.S. licensed satellites that are in operation or understood by NGST to be progressing toward launch. NGST has concluded that the GESN satellites will not cause any collisions with any neighboring satellites.

There are U.S. licensed satellites operating at 125.05° W.L. (PanAmSat/Intelsat Galaxy 14) and 125.10° W.L. (PanAmSat/Intelsat Galaxy 14). NGST's proposed GSO satellite at 125.0° W.L. will be stationkept to within +/- 0.05 degrees and, in addition, the GESN satellite can fly at an inclination and eccentricity other than 0 degrees. NGST will coordinate with PanAmSAT/Intelsat. SES Americom, Inc. also has a licensed but not operational U.S. satellite (AMC-21) at 125° W.L. NGST will achieve collocation with this satellite at this slot by flying its satellite at an inclination other than 0 degrees. NGST will coordinate with SES Americom, Inc.

There are U.S.-licensed spacecraft in operation at 68.5° E.L. (PanAmSat/Intelsat IS 10) and 68.65° E.L. (PanAmSat/Intelsat IS 7). NGST's proposed GSO satellite at 68.5° E.L. will be stationkept to within +/- 0.05 degrees and, in addition, the GESN satellite can fly at an inclination and eccentricity other than 0 degrees. NGST will coordinate with PanAmSat/Intelsat to ensure that the proposed NGST satellite at 68.5° E.L. will not overlap in stationkeeping volume with the IS-10 and IS-7 satellites. NGST expects to accomplish successful coordination by the technical means described in Table 1 below.

Separation of inclination will be at least 0.5 degrees, and sufficient fuel will be loaded on the GESN to maintain the differing inclination to within 0.1 degrees.

In general, the NGST orbital debris mitigation plans shown in the November 2005 Amendment in File No. SAT-AMD-20051118-00229 still apply for all collocated satellites, even if the specific satellites involved have changed with the relocation of the GESN satellite. The GESN satellites will have sufficient fuel to stationkeep within 0.05 degrees. In addition, if needed, the GESN satellites can also fly at an inclination and eccentricity other than 0 degrees.

The specifics of the analysis are shown in Table 1 below.

Table 1: Results of GESN Collision Avoidance Analysis for U.S.-Licensed Satellites

GESN Satellite	Neighboring Satellite(s)	Measures to Prevent Collisions
125° W.L.	Galaxy 14, 125.05° W.L. Galaxy 12, 125.1° W.L.	Each of these neighboring satellites is at least 0.05 degrees in separation from the GESN satellite proposed for 125.0° W.L. The GESN satellite will have sufficient fuel to stationkeep within +/- 0.05 degrees and, in addition, in order to accommodate collocation at this slot (particularly with Galaxy 14), the GESN satellite at 125° W.L. can fly at an inclination and eccentricity other than 0 degrees. NGST will coordinate with PanAmSat/Intelsat. Separation of inclination will be at least 0.5 degrees, and sufficient fuel will be loaded on the GESN satellite to maintain the differing inclination to within 0.1 degrees.
125° W.L.	SES Americom, Inc.	The GESN satellite at 125° W.L. will accommodate collocation at this slot by flying at an inclination and eccentricity other than 0 degrees (or “non-zero inclination and eccentricity”). NGST will coordinate with SES Americom, Inc. Separation of inclination will be at least 0.5 degrees, and sufficient fuel will be loaded on the GESN satellite to maintain the differing inclination to within 0.1 degrees.
73° W.L.	None	None needed. However, NGST will coordinate with any future U.S. licensed satellites at this location to ensure that no potential collisions will occur between the NGST satellite and other collocated satellites.
68.5° E.L.	IS-7, 68.65° E.L. and IS-10, 68.5° E.L.	The GESN satellite will have sufficient fuel to stationkeep within +/- 0.05 degrees and, in addition, in order to accommodate collocation at this slot, the GESN satellite at this orbital location can fly at an inclination and eccentricity other than 0 degrees. Separation of inclination will be at least 0.5 degrees, and sufficient fuel will be loaded on the GESN satellite to maintain the differing inclination to within 0.1 degrees. . NGST will coordinate with PanAmSat/Intelsat to ensure that NGST satellite at 68.5° E.L. will not overlap in stationkeeping volume with the IS-7 and IS-10 satellites.
116.5° E.L.	None	None needed. However, NGST will coordinate with any future U.S. licensed satellites at this location to ensure that no potential collisions will occur between NGST satellite and other collocated satellites.

NGST has begun the process of determining non-U.S. licensed satellites in operation at the GESN orbital locations. Based on NGST's analysis, the current non-U.S. licensed satellites, which are either collocated with or located near one of the GESN satellites are the Raduga satellite (Russian Federation) located at 68.54⁰ E.L. and Koreasat 2 located at 116⁰ E.L. The actual orbital locations and stationkeeping volume of these satellites need further analysis.

In general, NGST will coordinate with all non-U.S. licensed satellites where the orbital location is within ± 0.2 degrees from GESN orbital locations to ensure that no potential collision will occur. As a general principle that NGST will follow to the extent that there are non-U.S.-licensed satellites in operation at a GESN orbital location when NGST's satellite is ready for launch, the respective GESN satellite will accommodate collocation at this slot by flying at "non-zero inclination and eccentricity." The non-zero eccentricity will have the satellite pass over and under the GEO band at the equator. The NGST satellite just needs to limit the inclination and eccentricity to allow an acceptable system performance. If the other satellite(s) at the same orbital location has some inclination and eccentricity, NGST and the operator(s) will coordinate to work out a phasing that will allow the two or more satellites to co-exist. Separation of inclination will be at least 0.5 degrees, and sufficient fuel will be loaded on the GESN satellite to maintain the differing inclination to within 0.1 degrees.