

May 5, 2015

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

Re: Request for Special Temporary Authority to Drift Galaxy 11 to, and Operate at, 60.1° E.L. and Notification of Revised Post-mission Disposal Statement; Call Sign: S2253

Dear Ms. Dortch:

Intelsat License LLC (“Intelsat”) herein requests 180 days, commencing November 15, 2015, of Special Temporary Authority (“STA”)<sup>1</sup> to drift Galaxy 11 (Call Sign S2253) from 55.6° W.L. to 60.1° E.L. and operate the satellite temporarily at 60.1° E.L. Intelsat also herein notifies the Federal Communications Commission (“FCC”) of a revised post-mission disposal statement with respect to the Galaxy 11 satellite.

The Galaxy 11 satellite is currently operating at 55.6° W.L.<sup>2</sup> Subject to receipt of FCC approval, the satellite will be relocated to 60.1° E.L.—with the drift starting no earlier than November 15, 2015. The satellite should arrive on-station by late May 2016. Intelsat is relocating the Galaxy 11 satellite to meet a temporary customer demand.

During the drift of the Galaxy 11 satellite from 55.6° W.L. to 60.1° E.L., Intelsat will utilize only the satellite’s telemetry, tracking, and control (“TT&C”) frequencies and will follow industry practices for coordinating TT&C transmission during the relocation process. The specific TT&C frequencies are: 14000.5 MHz, 14498.5 MHz, 11701 MHz, and 11702 MHz.

Once located at 60.1° E.L., Intelsat will also operate on the following communications frequencies: 13750 – 14500 MHz, 10950 – 11200 MHz, and 11700 – 12200 MHz.

Grant of this STA request will not result in increased risk of harmful interference. As noted above, Intelsat will operate only the above listed TT&C frequencies during the drift, and will coordinate its TT&C transmissions with operators of satellites in the drift path. Should any interference occur during the drift, Intelsat will take all reasonable steps to eliminate such interference. Once on-station at 60.1° E.L., Intelsat will operate the communications payload in conformance with its coordination agreements concerning the nominal 60° E.L. location.

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<sup>1</sup> Intelsat has filed this STA request, an FCC Form 159, and a \$930.00 filing fee electronically via the International Bureau’s Filing System.

<sup>2</sup> See *Policy Branch Information; Actions Taken*, Report No. SAT-01050, File No. SAT-MOD-20121018-00184 (Oct. 31, 2014) (Public Notice) (hereinafter “Galaxy 11 Modification”).

Further, Intelsat has assessed and limited the probability of the space station becoming a source of debris as a result of collisions with large debris or other operational space stations. Galaxy 11 will not be located at the same orbital location as another satellite or at an orbital location that has an overlapping station-keeping volume with another satellite. Further, Intelsat is not aware of any other FCC licensed system, or any other system applied for and under consideration by the FCC, having an overlapping station-keeping volume with Galaxy 11 at 60.1° E.L. Finally, Intelsat is not aware of any system with an overlapping station-keeping volume with Galaxy 11 that is the subject of an ITU filing and that is either in orbit or progressing towards launch.

Grant of this STA request is in the public interest because it will allow Intelsat to meet a temporary customer demand at 60.1° E.L.

In addition, Intelsat notifies the FCC that it now expects to dispose of the spacecraft by moving it to a planned minimum altitude of 175 kilometers (perigee) above the geostationary arc.<sup>3</sup> Intelsat is reserving 29.4 kg of fuel for this purpose. As the Commission is aware, because there is no mechanism for precisely calculating the amount of fuel left on the spacecraft once it is in orbit, it is possible that the spacecraft will not meet the planned minimum de-orbit altitude.

In its *Second Report and Order* in IB Docket 02-54, *Mitigation of Orbital Debris*,<sup>4</sup> the FCC declared that satellites launched prior to March 18, 2002, such as the Galaxy 11 satellite, would be designated as grandfathered satellites not subject to a specific disposal altitude. Therefore, the planned disposal orbit for Galaxy 11, as revised, complies with the FCC's rules.

In addition, Intelsat provides the following information:

- 1) Planned orbital eccentricity: 0.00035 (This is a best estimate of optimal eccentricity to match the natural eccentricity circle due to Sun and Moon perturbations after decommissioning.)<sup>5</sup>

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<sup>3</sup> In 2012, Intelsat stated that it expected to de-orbit the Galaxy 11 satellite to an altitude of 300 km. *See* Galaxy 11 Modification, Engineering Statement at 9. To the extent necessary, Intelsat requests that the waiver of Sections 25.114(d)(14)(ii) and 25.283(c) previously granted to the Galaxy 11 spacecraft continue to apply. These rules require that spacecraft are able to vent all pressurized systems at end of life. *See* Intelsat License LLC, Application to Modify Authorization for Galaxy 11, File No. SAT-MOD-20121018-00184, Stamp Grant at ¶ 4 (Oct. 30, 2014).

<sup>4</sup> *Mitigation of Orbital Debris, Second Report and Order*, IB Docket No. 02-54, released June 21, 2004.

<sup>5</sup> Intelsat's priority is to achieve the planned minimum perigee of 175 km. However, because it is extremely difficult to anticipate end-of-life thruster performance and operational conditions, it is extremely difficult to achieve the planned eccentricity. In order to achieve the planned eccentricity, not only must there be sufficient propellant reserved but, in addition, individual thrusters must be fired at specific times during satellite decommissioning because the timing of thruster firing will affect eccentricity. Due to difficulties in predicting the thruster end-of-life performance, as well as earth station availability and visibility as the satellite drifts, it may not be possible to fire the right thruster at the optimal times. Thus, optimal eccentricity may not be achieved, which, in turn, will affect the apogee altitude.

Ms. Marlene H. Dortch

May 5, 2015

Page 3

- 2) Planned apogee altitude: 189.4 km above the geostationary arc.
- 3) Information concerning the methods that will be used to assess and provide adequate margins concerning fuel gauging uncertainty:<sup>6</sup>
  - a. Intelsat propulsion engineers review the current propellant usage—particularly the mixing ratio—to properly allocate sufficient margin to account for unavailable propellant that may result from a non-optimal mixing ratio, in addition to the nominal hold-back and reserves provided to us by the manufacturer.
  - b. Intelsat performs thermal gauging near the spacecraft's end of life by inferring the remaining propellant from the thermal signature when Intelsat applies heat to different part of the propellant tank system.

For the reasons set forth herein, Intelsat respectfully requests that the Commission grant this STA request. Please direct any questions regarding this supplement to the undersigned at (703) 559-7848.

Sincerely,



Susan H. Crandall  
Associate General Counsel  
Intelsat Corporation

cc: Stephen Duall  
Jay Whaley  
Cindy Spiers

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<sup>6</sup> This information is considered when determining the additional hold-back and adjustments to book values to attempt to ensure sufficient propellant to achieve the planned minimum altitude. There are, however, many uncertainties to both methods that could lead to incorrect conclusions regarding remaining fuel, which could affect the disposal altitude the spacecraft reaches.