

S2253 SAT-STA-20150505-00033 IB2015000869
Intelsat License LLC
Galaxy 11



File # SAT-STA-20150505-00033
Call Sign S2253 Grant Date 08/20/15
(or other identifier)
Term Dates period of
From 11/15/15 To 180 days
Approved: Stephen J. Duall

Approved by OMB
3060-0678

Date & Time Filed: May 5 2015 10:46:37:056AM
File Number: SAT-STA-20150505-00033
Callsign:

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SPACE STATION SPECIAL TEMPORARY AUTHORITY
FOR OFFICIAL USE ONLY

APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
180-Day STA to Drift and Operate Galaxy 11 at 60.1 E.L. (S2253)


1. Applicant

Name:	Intelsat License LLC	Phone Number:	703-559-7848
DBA Name:		Fax Number:	703-559-8539
Street:	c/o Intelsat Corporation 7900 Tysons One Place	E-Mail:	susan.crandall@intelsat.com
City:	McLean	State:	VA
Country:	USA	Zipcode:	22102 -5972
Attention:	Susan H. Crandall		

Attachment to Grant
IBFS File No. SAT-STA-20150505-00033
Call Sign S2253

The application of Intelsat License LLC (Intelsat) for special temporary authority, IBFS File No. SAT-STA-20150505-00033, is GRANTED in part and DEFERRED in part.¹ Specifically, Intelsat is authorized, for a period of 180 days, commencing on November 15, 2015, to conduct Telemetry, Tracking, and Command (TT&C) operations with the Galaxy 11 space station (Call Sign S2253) necessary to drift the Galaxy 11 space station from the 55.6° W.L. orbital location to the 60.1° E.L. orbital location—and to maintain Galaxy 11 at 60.1° E.L.—using the following center frequencies: 14000.5 MHz, 14498.5 MHz, 11701 MHz, and 11702 MHz. No action is taken on Intelsat's requests to modify the post-mission disposal plan for Galaxy 11 and to operate Galaxy 11 at 60.1° E.L. using the 13.75-14.5 GHz (Earth-to-space), 10.95-11.2 GHz (space-to-Earth), and 11.7-12.2 GHz (space-to-Earth) frequency bands. Operations under this authorization must be in accordance with the technical specifications set forth in Intelsat's application and its current authorization for Galaxy 11, IBFS File No. SAT-MOD-20121018-00184, Federal Communication Commission rules not waived herein, and are subject to the following conditions:

1. All operations under this authorization must be on an unprotected and non-harmful interference basis, i.e., the Galaxy 11 space station shall not cause harmful interference to, and shall not claim protection from interference caused to it by, any other lawfully operating station. In the event of any harmful interference, Intelsat shall cease operations immediately upon notification of such interference, and shall inform the Commission, in writing, immediately of such an event.
2. In connection with the provision of service in any particular country, Intelsat is obliged to comply with the applicable laws, regulations, rules, and licensing procedures of that country.
3. While at the 60.1° E.L. orbital location, Intelsat must maintain the Galaxy 11 spacecraft with an east/west longitudinal station-keeping tolerance of +/- 0.05 degrees.
4. Any action taken or expense incurred as a result of operations pursuant to this special temporary authority is solely at Intelsat's own risk.
5. Intelsat is afforded thirty days from the date of release of this grant and authorization to decline this authorization as conditioned. Failure to respond within this period will constitute formal acceptance of the authorization as conditioned.
6. This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective immediately. Petitions for reconsideration under Section 1.106 or applications for review under Section 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106, 1.115, may be filed within 30 days of the date of the public notice indicating that this action was taken.

 GRANTED* International Bureau *with conditions	File # <u>SAT-STA-2015 0505 -00033</u>
	Call Sign <u>S2253</u> Grant Date <u>08/20/15</u> (or other identifier)
	Term Dates period of From <u>11/15/15</u> To: <u>180 days</u>
	Approved: <u>Stephen J. Duall</u> Stephen J. Duall Chief, Satellite Policy Branch

¹ The application was placed on Public Notice as accepted for filing on June 5, 2015. See Policy Branch Information, Satellite Space Applications Accepted for Filing, Public Notice, Report No. SAT-01089 (IBFS File No. SAT-STA-20150505-00033). No comments were filed.

2. Contact

Name:	Susan H. Crandall	Phone Number:	703-559-7848
Company:	Intelsat Corporation	Fax Number:	703-559-8539
Street:	7900 Tysons One Place	E-Mail:	susan.crandall@intelsat.com
City:	McLean	State:	VA
Country:	USA	Zipcode:	22102 -5972
Attention:		Relationship:	Legal Counsel

(If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.)

3. Reference File Number or Submission ID

4a. Is a fee submitted with this application?

- If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).
- Governmental Entity Noncommercial educational licensee
- Other (please explain):

4b. Fee Classification CRY - Space Station (Geostationary)

5. Type Request

- Change Station Location Extend Expiration Date Other

6. Temporary Orbit Location

7. Requested Extended Expiration Date

8. Description (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

Intelsat License LLC herein requests 180 days, commencing November 15, 2015, of Special Temporary Authority 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 of a revised post-mission disposal statement with respect to the

9. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes. Yes No

10. Name of Person Signing
Susan H. Crandall

11. Title of Person Signing
Assoc. General Counsel, Intelsat Corporation

12. Please supply any need attachments.

Attachment 1: STA Request

Attachment 2:

Attachment 3:

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT
(U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION
(U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

The public reporting for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the required data, and completing and reviewing the collection of information. If you have any comments on this burden estimate, or how we can improve the collection and reduce the burden it causes you, please write to the Federal Communications Commission, AMD-PERM, Paperwork Reduction Project (3060-0678), Washington, DC 20554. We will also accept your comments regarding the Paperwork Reduction Act aspects of this collection via the Internet if you send them to PRA@fcc.gov. PLEASE DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.

Remember – You are not required to respond to a collection of information sponsored by the Federal government, and the government may not conduct or sponsor this collection, unless it displays a currently valid OMB control number or if we fail to provide you with this notice. This collection has been assigned an OMB control number of 3060-0678.

THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.

8. Description

Intelsat License LLC herein requests 180 days, commencing November 15, 2015, of Special Temporary Authority 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 of a revised post-mission disposal statement with respect to the Galaxy 11 satellite.

May 5, 2015

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th 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”)¹ 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.² 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.

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

² 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.³ 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*,⁴ 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.)⁵

³ 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).

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

⁵ 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.

- 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:⁶
 - 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

⁶ 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.