

E140121 SES-STA-20161215-00953 IB2016002729  
Intelsat License LLC

Approved by OMB  
3060-0678

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:  
Request for STA Using Hagerstown, Maryland Earth Station E140121 to Provide TT&C for Intelsat 1R Drift

1. Applicant

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

*with conditions*

File # SES-STA-20161215-00953

Call Sign E14021 Grant Date 12/20/2016  
(or other identifier)

Term Dates

From 1/1/2017 To: 1/31/2017

Approved: [Signature]



Applicant: Intelsat License LLC

Call Sign: E060384, E030096, E140121, E940532, KA258, KL92

File Nos.: SES-STA-20161215-00951 thru 00956

Intelsat License LLC is granted special temporary authority (STA) beginning January 1, 2017, for 30 days, to operate its fixed earth stations in Riverside, CA; Castle Rock, CO; Hagerstown, MD; and Ellenwood, GA call signs: E060384, E030096, E140121, E940532, KA258, KL92 to provide telemetry, tracking, and command ("TT &C") to the Intelsat 1R (S2368) satellite during its drift from 50.1° W.L. to 169.2° E.L. orbital locations on the 13995 MHz and 14498.5 MHz (Earth-to-space); and 11696 MHz and 11697 MHz (space-to-Earth) center frequencies under the following conditions:

1. Grant of this STA is without prejudice to any determination that the Commission may make regarding pending or future Intelsat applications.
2. All operations under this grant of STA shall be on an unprotected and non-harmful interference basis. Intelsat shall not cause harmful interference to, and shall not claim protection from interference caused to it by, any other lawfully operating radio communication system.
3. In the event of any harmful interference as a result of operations under this grant Intelsat License LLC shall cease operations immediately upon notification of such interference and shall immediately inform the Commission, in writing, of such an event.
4. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Intelsat License LLC's risk.

This grant is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon release.



File # SES-STA-2016 1215-00953

Call Sign E14021 Grant Date 12/20/2016  
(or other identifier)

Term Dates  
From 1/1/2017 To: 1/31/2017

Approved: Paul E. Hays

<b>2. Contact</b>			
<b>Name:</b>	Cynthia J. Grady	<b>Phone Number:</b>	703-559-6949
<b>Company:</b>	Intelsat Corporation	<b>Fax Number:</b>	703-559-8539
<b>Street:</b>	7900 Tysons One Place	<b>E-Mail:</b>	cynthia.grady@intelsat.com
<b>City:</b>	McLean	<b>State:</b>	VA
<b>Country:</b>	USA	<b>Zipcode:</b>	22102 -5972
<b>Attention:</b>		<b>Relationship:</b>	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?			
<input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).			
<input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee			
<input type="radio"/> Other (please explain):			
4b. Fee Classification CGX - Fixed Satellite Transmit/Receive Earth Station			
5. Type Request			
<input type="radio"/> Use Prior to Grant <input type="radio"/> Change Station Location <input checked="" type="radio"/> Other			
6. Requested Use Prior Date			
7. City/Hagerstown			
8. Latitude (dd mm ss.s h) 39 35 53.1 N			

9. State MD	10. Longitude (dd mm ss.s h) 77 45 22.3 W
11. Please supply any need attachments. Attachment 1: STA Request Attachment 2: Exhibit A Attachment 3:	
12. 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.) <div style="border: 1px solid black; padding: 5px;"> <p>Intelsat License LLC herein requests thirty days, beginning January 1, 2017, of Special Temporary Authority to use its Hagerstown, Maryland Ku-band earth station, call sign E140121, to provide telemetry, tracking, and command services for Intelsat 1R (S2368) during its drift from 50.1W.L. to 169.2 E.L.</p> </div>	
13. 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. <p style="text-align: right;">Yes <input checked="" type="radio"/> No <input type="radio"/></p>	
14. Name of Person Signing Cynthia J. Grady	15. Title of Person Signing Regulatory Counsel, Intelsat Corporation
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).	

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**INTELSAT**

*Envision. Connect. Transform.*

December 15, 2016

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

Re: Request for Special Temporary Authority  
Hagerstown, Maryland Earth Station E140121

Dear Ms. Dortch:

Intelsat License LLC (“Intelsat”) herein requests thirty days, beginning January 1, 2017, of Special Temporary Authority (“STA”)<sup>1</sup> to use its Hagerstown, Maryland Ku-band earth station—call sign E140121—to provide telemetry, tracking, and command (“TT&C”) services for Intelsat 1R (S2368) during its drift from 50.1° W.L. to 169.2° E.L. Subject to receipt of FCC approval, Intelsat 1R is expected to begin drifting January 1, 2017 and the drift will take approximately four months.<sup>2</sup>

TT&C operations will be performed in the following frequencies: 13995 MHz and 14498.5 MHz (Earth-to-space); and 11696 MHz and 11697 MHz (space-to-Earth). The drift operations will be coordinated with all operators of satellites that use the same frequency bands and are in the drift path.<sup>3</sup> All operators of satellites in that path will be provided with an emergency phone number where the licensee can be reached in the event that harmful interference occurs.

The 24x7 contact information is as follows:

Ph.: (703) 559-7701 – East Coast Operations Center (primary)  
(310) 525-5591 – West Coast Operations Center (back-up)

Request to speak with Harry Burnham or Kevin Bell.

In further support of this request, Intelsat incorporates by reference Exhibit A, which contains technical information that demonstrates that the operation of the earth station will be compatible with its electromagnetic environment and will not cause harmful interference into any lawfully operating terrestrial facility, or into Federal systems operating in the 13.75 -14.00 GHz band. In the extremely unlikely event that harmful interference should occur due to transmissions to or from its earth station, Intelsat will take all reasonable steps to eliminate the interference.

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<sup>1</sup> Intelsat has filed its STA request, an FCC Form 159, a \$200.00 filing fee, and this supporting letter electronically via the International Bureau’s Filing System (“IBFS”).

<sup>2</sup> See *Intelsat License LLC, Request for Special Temporary Authority to Drift and Operate Intelsat 1R at 169.2° E.L.*; Call Sign S2368, File No. SAT-STA-20161018-00099 (filed Oct. 18, 2016).

<sup>3</sup> Intelsat will handle the coordination.

Ms. Marlene H. Dortch  
December 15, 2016  
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Grant of this STA request will allow Intelsat to drift the Intelsat 1R satellite to its new location. This, in turn, will help Intelsat meet a potential service demand at 169.2° E.L. orbital location and thereby promotes the public interest.

Please direct any questions regarding this STA request to the undersigned at (703) 559-6949.

Respectfully submitted,

*/s/ Cynthia J. Grady*

Cynthia J. Grady  
Regulatory Counsel  
Intelsat Corporation

cc: Paul Blais

**Intelsat Licence LLC  
Hagerstown, Maryland**

**ViaSat 13.5 Meter Earth Station**

**1. Background**

This Exhibit is presented to demonstrate the extent to which the Intelsat License LLC ("Intelsat") satellite earth station in Hagerstown, Maryland is in compliance with the Federal Communications Commission ("FCC") Report and Order 96-377. The potential interference from the earth station to U.S. Navy shipboard radiolocation operations ("RADAR") and the National Aeronautics and Space Administration ("NASA") space research activities in the 13.75-14.0 GHz band is addressed in this exhibit. The parameters for the earth station are:

Coordinates (NAD83):	39° 35' 53.1" N, 77° 45' 22.3" W
Satellite Location for Earth Station:	Intelsat 1R at 149°W to 6°W
Frequency Band:	13.75-14.00 GHz
Polarizations:	Linear & Circular
Emissions:	850KF2D
Modulation:	FM/PCM/PSK
Maximum Aggregate Uplink EIRP:	88dBW for all Carriers
<b>Transmit Antenna Characteristics</b>	
Antenna Size:	13.5 Meters in Diameter
Antenna Type/Model:	ViaSat
Gain:	64 dBi
RF Power into Antenna Flange:	24 dBW or 0.7 dBW/4kHz
Minimum Elevation Angle:	5.69° @ 257.78° Azimuth 5.29° @ 86° Azimuth
Side Lobe Antenna Gain	FCC Reference Pattern

Because the above uplink spectrum is shared with the Federal Government, coordination in this band requires resolution data pertaining to potential interference between the earth stations and both U.S. Navy Department and NASA systems. Potential interference from the earth station could impact the U.S. Navy and/or NASA systems in two areas. These areas are noted in FCC Report and Order 96-377 dated September 1996, and consist of (1) Radiolocation and Radio Navigation, (2) Data Relay Satellites.

Summary of Coordination Issues:

- a.) Potential Impact to Government Radiolocation (Shipboard Radar)
- b.) Potential Impact to NASA Tracking and Data Relay Satellite Systems ("TDRSS")



## 2. Potential Impact to Government Radiolocation (Shipboard Radar)

Radiolocation operations ("RADAR") may occur anywhere in the 13.4-14.0 GHz frequency band aboard ocean-going U.S. Navy ships. FCC order 96-377 allocates the top 250MHz of this 600 MHz band to the Fixed Satellite Service ("FSS") on a co-primary basis with the radiolocation operations and provides for an interference protection level of  $-167 \text{ dBW/m}^2/4\text{kHz}$ .

The closest distance to the shoreline from Hagerstown, Maryland earth station is approximately 131 km. The calculation of the power spectral density at this distance is given by:

- |                              |   |
|------------------------------|---|
| 1. Clear Sky EIRP:           | 88 dBW                                      |
| 2. Carrier Bandwidth:        | 850 kHz                                     |
| 3. PD at antenna input:      | 0.7 dBW/4kHz                                |
| 4. Transmit Antenna Gain:    | 64 dBi                                      |
| 5. Antenna Gain to Horizon:  | 10.9 dBi                                    |
| 6. Antenna Elevation Angles: | 5.7° @ 257.8° azimuth<br>5.3° @ 86° azimuth |

The earth station will radiate interference toward the ocean according to its off-axis side-lobe performance. A conservative analysis, using FCC standard reference pattern, results in an off-axis antenna gain of 10.9 towards the nearest shoreline.

The signal density at the shoreline, through free space is:

$$\begin{aligned} \text{PFD} &= \text{Antenna Feed Power density (dBW/4kHz)} + \text{Antenna Off-Axis Gain (dBi)} - \text{Spread Loss (dBW/m}^2\text{)} \\ &= 0.7\text{dBW/4kHz} + 10.9\text{dBi} - 10*\log[4*(131\text{km})^2] \\ &= -101.7 \text{ dBW/m/4kHz} - \text{Additional Path Losses (69 dB)} \end{aligned}$$

Our calculation indicate additional path loss of approximately 69 dB including absorption loss and earth diffraction loss for the actual path profiles from the earth station to the nearest shoreline.

The calculated PFD, including additional path losses to the closest shoreline, is  $-170.7\text{dBW/ m}^2/4 \text{ kHz}$ . This is 3.7dB below the  $-167.0 \text{ dBW/ m}^2/4 \text{ kHz}$  interference criteria of the R&O 96-377. Therefore, there should be no interference to the U.S. Navy RADAR from the Hagerstown, Maryland earth station due to the distance and the terrain blockage between the site and the shore.

## 3. Potential Impact to NASA's Tracking and Data Relay Satellite System

The geographic location of the Intelsat earth station in Hagerstown, Maryland is outside the 390 km radius coordination contour surrounding NASA's White Sands, New Mexico ground station complex. Therefore the TDRSS space-to-earth link will not be impacted by the Intelsat earth station in Hagerstown, Maryland.

The TDRSS space-to-space link in the 13.772 to 13.778 GHz band is assumed to be protected if an earth station produces an EIRP of less than 71 dBW/6MHz in this band. The 13.5 meter earth station antenna will not transmit in this band. Therefore, there will be no potential interference to the TDRSS space-to-space link.

#### **4. Coordination Result Summary and Conclusions**

The results of the analysis and calculation performed in this exhibit indicate that compatible operation between the earth station at the Hagerstown, Maryland facility and U.S. Navy and NASA TDRSS space-to-earth and space-to-space links are possible. No interference to U.S. Navy RADAR or NASA TDRSS operations from the Hagerstown, Maryland site earth station should occur.