

May 15, 2018

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

Re: Request for Special Temporary Authority  
Call Sign: E140121  
File No. SES-STA-2018050400487

Dear Ms. Dortch:

Intelsat License LLC herein supplements the above referenced request to correct typographical errors and to provide Exhibit A, which was not correctly attached to the original submission. Attached is a copy of the correct original request and Exhibit A.

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

Sincerely,

/s/ Cynthia J. Grady

Cynthia J. Grady  
Regulatory Counsel  
Intelsat Corporation

cc: Paul Blais

May 4, 2018

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

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

Dear Ms. Dortch:

Intelsat License LLC (“Intelsat”) herein requests 30 days, beginning May 23, 2018, of Special Temporary Authority (“STA”)<sup>1</sup> to use its Mountainside, Maryland Ku-band earth station—call sign E140121—to provide telemetry, tracking, and command (“TT&C”) services for Intelsat 5 (Call Sign S2704) during its drift from 156.9° E.L. to 137.0° W.L.<sup>2</sup> and on station at 137.0° W.L. Intelsat 5 is currently drifting using non-U.S. antennas and is expected to require the use of U.S. antennas on May 13, 2018.<sup>3</sup>

TT&C operations will be performed in the following frequencies: 14498 MHz (H) and 13999 MHz (RHCP) in the uplink; and 11451 MHz (H, V, and RHCP), 11452 MHz (H, V, and RHCP), and 11454 MHz (RHCP, and LHCP) in the downlink. The drift operations will be coordinated with all operators of satellites that use the same frequency bands and are in the drift path.<sup>4</sup> Once on-station at 137.0° W.L., Intelsat will operate in conformance with FCC rules and any relevant coordination agreements. All

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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> Intelsat originally intended to redeploy Intelsat 5 to 93.2° W.L. See *Policy Branch Information; Actions Taken*, Report No. SAT-01311, File No. SAT-STA-20180410-00027 (Apr. 20, 2018) (Public Notice). When the FCC recently made available for reassignment the C-band frequencies at 137° W.L., Intelsat filed to modify the authorization for the Intelsat 5 satellite to instead redeploy it to 137.0° W.L. Intelsat has also filed two STAs in support of the new redeployment. See *Intelsat License LLC, Modification of authorization to Redeploy to, and Operate Intelsat 5 (S2704) at, 137.0 W.L.*, File No. SAT-MOD-20180501-00036 (filed May 1, 2018); *Intelsat License LLC, Request for 30-Day Special Temporary Authority to Drift Intelsat 5 and Operate at, 137.0 W.L., Call Sign S2704*, File No. SAT-STA-20180502-00039 (filed May 2, 2018); *Intelsat License LLC, Request for 180-Day Special Temporary Authority to Operate Intelsat 5 at 137.0 W.L., Call Sign S2704*, File No. SAT-STA-20180502-00040 (filed May 2, 2018).

<sup>3</sup> Intelsat is concurrently filing STA requests for KL92, KA258, and E060384 to support Intelsat 5’s redeployment to 137.0° W.L.

<sup>4</sup> Intelsat will handle the coordination.

Ms. Marlene H. Dortch  
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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 herewith attaches 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.

Grant of this STA request will allow Intelsat to drift Intelsat 5 to, and safely station-keep the satellite at, its new location. This, in turn, will help meet a new service demand at the 137.0° W.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 License 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 Arc Range for Earth Station:	Intelsat 5 at 5°W to 150°W
Frequency Band:	13.75-14.00 GHz
Polarizations:	Linear & Circular
Emissions:	850KF7D
Modulation:	FM/BPSK
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:	4.7° @ 101.19° Azimuth 4.93° @ 258.46° 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:  | 12.2 dBi                                       |
| 6. Antenna Elevation Angles: | 4.7° @ 101.2° azimuth<br>4.9° @ 258.5° 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 12.2 towards the nearest shoreline.

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

$$\begin{aligned} \text{PFD} &= \text{Antenna Feed Power density (dBW/4kHz)} + \text{Antenna Off-Axis Gain (dBi)} - \text{Spread Loss (dBW/m}^2\text{)} \\ &= 0.7\text{dBW/4kHz} + 12.2\text{dBi} - (10*\log[4*\text{PI}*[131\text{km}]^2]) \\ &= -100.4 \text{ dBW/m/4kHz} - \text{Additional Path Losses (69 dB)} \end{aligned}$$

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  $-169.4\text{dBW/m}^2/4 \text{ kHz}$ . This is 2.4dB 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.