

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 KA258

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



GRANTED
International Bureau

This SES-STA-20140916-00734
Call Sign KA258 Grant Date 10-7-14
Term Dates From 10-16-14 To 11-15-14
Approver: [Signature]

Applicant: Intelsat License LLC
Call Sign: KA258
File No.: SES-STA-20140916-00734
Special Temporary Authority (STA)



File: SES-STA-20140916-00734
Call Sign KA258 Grant Date 10-7-14
(or other identifier)
Term Dates
From 10-16-14 To 11-15-14
Approve: Paul E. Hays

Intelsat License LLC is granted, under the following conditions, STA for 30 days, to use its earth station Call Sign KA258 at Hagerstown, Maryland to provide launch and early orbit phase (LEOP) services for the Argentine licensed ARSAT-1 satellite at its permanent orbital location 71.8° W.L. The in-orbit testing location will be 81.1° W.L. ARSAT-1 satellite is expected to be launched on October 16, 2014.

1. Uplink to ARSAT-1 satellite on 13999.00 MHz (LCHP) and 14498.00 MHz (RHCP) within coordinated emission and power limits. The maximum EIRP shall not exceed 85 dBW per NTIA manual US 356.
2. Downlink from ARSAT-1 satellite on 11703.00 MHz and 12197.00 MHz (RHCP).
3. The LEOP operations must be coordinated with all operators of satellites that use the same frequency bands and are in the LEOP path. 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. Currently the 24x7 contact information for the ARSAT-1 LEOP mission 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.
4. All operations under this grant of STA must be on an unprotected and non-harmful interference basis, i.e., Intelsat License LLC KA258 must not cause harmful interference to, and shall not claim protection from interference caused to it by, any other lawfully operating station.
5. In the event of any harmful interference under this grant of STA, Intelsat License LLC KA258 must cease operations immediately upon notification of such interference, and must inform the Commission, in writing, immediately of such an event.
6. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future Intelsat License LLC applications.
7. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Intelsat License LLC's risk.
8. 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.

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: Susan H. Crandall	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?	
<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 54.0 N	

9. State MD	10. Longitude (dd mm ss.h) 77 45 33.0 W
11. Please supply any need attachments. Attachment 1: STA Request	Attachment 2: Exhibit A Attachment 3: Exhibit B
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.)	<p>Intelsat License LLC herein requests a grant of Special Temporary Authority for 30 days, commencing October 16, 2014, to use its Hagerstown, Maryland Ku-band earth station, call sign KA258, to provide launch and early orbit phase services for the ARSAT-1 satellite. ARSAT-1 is expected to be launched on October 16, 2014.</p>
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>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
<p>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).</p>	

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

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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.

Exhibit A

PETITION FOR WAIVER OF SECTIONS 25.137 AND 25.114

Pursuant to Section 25.137 of the Federal Communications Commission's ("Commission" or "FCC") rules, earth station applicants "requesting authority to operate with a non-U.S. licensed space station *to serve the United States*" must demonstrate that effective competitive opportunities exist and must provide the same technical information required by Section 25.114 for U.S.-licensed space stations.¹ Intelsat License LLC ("Intelsat") herein seeks authority to provide launch and early orbit phase ("LEOP") services—not commercial services—to the United States, and thus believes that Section 25.137 does not apply.²

To the extent the Commission determines, however, that Intelsat's request for authority to provide LEOP services on a special temporary basis is a request to serve the United States with a non U.S.-licensed satellite, Intelsat respectfully requests a waiver of Sections 25.137 and 25.114 of the Commission's rules.³ The Commission may grant a waiver for good cause shown.⁴ The Commission typically grants a waiver where the particular facts make strict compliance inconsistent with the public interest.⁵ In granting a waiver, the Commission may take into account considerations of hardship, equity, or more effective implementation of overall policy on an individual basis.⁶ Waiver is therefore appropriate if special circumstances warrant a deviation from the general rule, and such a deviation will serve the public interest.

In this case, good cause exists for a waiver of both Section 25.137 and Section 25.114. With respect to Section 25.114, Intelsat seeks authority only to provide LEOP services for the ARSAT-1 satellite. The information sought by Section 25.114 is not relevant to LEOP services. Moreover, Intelsat does not have—and would not easily be able to obtain—such information because Intelsat is not the operator of the ARSAT-1 satellite, nor is Intelsat in contractual privity with that operator. Rather, an affiliate of Intelsat has a contract with INVAP, the manufacturer of the ARSAT-1 satellite, to conduct LEOP services for the satellite.

¹ 47 C.F.R. § 25.137 (emphasis added).

² See *EchoStar Satellite Operating Company Application for Special Temporary Authority Related to Moving the EchoStar 6 Satellite from the 77° W.L. Orbital Location to the 96.2° W.L. Orbital Location, and to Operate at the 96.2° W.L. Orbital Location*, DA 13-593, File No. SAT-STA-20130220-00023 (released Apr. 1, 2013) (noting that operating TT&C earth stations in the United States with a foreign-licensed satellite does not constitute "DBS service").

³ 47 C.F.R. §§ 25.137 and 25.114.

⁴ 47 C.F.R. §1.3.

⁵ *N.E. Cellular Tel. Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990) ("*Northeast Cellular*").

⁶ *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969); *Northeast Cellular*, 897 F.2d at 1166.

The information that Intelsat is not including is not required to determine potential harmful interference. The Schedule S information for this satellite would pertain to the operation of the ARSAT-1 satellite at its final orbital location. However, the present application for LEOP services involves communications *prior* to the satellite attaining its final location in the geostationary orbit. In other words, during the LEOP mission, the earth station will not be communicating with a satellite located in the geostationary orbit. Rather, it will be transmitting to a satellite traveling on its “transfer orbit” or “LEOP path,” which starts immediately following its separation from a launch vehicle, and ends when the satellite reaches its geostationary orbital location. Moreover, as with any STA, Intelsat will perform the LEOP services on a non-interference basis.

Because it is not relevant to the service for which Intelsat seeks authorization, and because obtaining the information would be a hardship, Intelsat seeks a waiver of all the information required by Section 25.114. Intelsat has provided in this STA request the required technical information that is relevant to the LEOP services for which Intelsat seeks authorization.

Good cause also exists to waive Section 25.137. Section 25.137 is designed to ensure that “U.S.-licensed satellite systems have effective competitive opportunities to provide analogous services” in other countries. Here, there is no service being provided by the satellite; it is simply being placed in its orbital location after separating from the launch vehicle. Thus, the purpose of the information required by Section 25.137 is not implicated here. For example, Section 25.137(d) requires earth station applicants requesting authority to operate with a non-U.S.-licensed space station that is not in orbit and operating to post a bond.⁷ The underlying purpose in having to post a bond—*i.e.*, to prevent warehousing of orbital locations by operators seeking to serve the United States—would not be served by requiring Intelsat to post a bond in order to provide approximately ten days of LEOP services to the ARSAT-1 satellite.

It is Intelsat’s understanding that ARSAT-1 is licensed by Argentina, which is a WTO-member country. Thus, the purposes of Section 25.137—to ensure that U.S. satellite operators enjoy “effective competitive opportunities” to serve foreign markets and to prevent warehousing of orbital locations serving the United States—will not be undermined by grant of this waiver request.

Finally, Intelsat notes that it expects to operate with the ARSAT-1 satellite using its U.S. earth station for a period of approximately 10 days. Requiring Intelsat to obtain copious technical and legal information from an unrelated party, where there is no risk of harmful interference and the operations will cease after approximately 10 days, would pose undue hardship without serving underlying policy objectives. Given these particular facts, the waiver sought herein is plainly appropriate.

⁷ See 47 C.F.R. §25.137(d)(4).

Exhibit B
Intelsat License LLC
Hagerstown, Maryland
NEC 12.5 Meter Earth Station
Call Sign: KA258

Compliance with FCC Report & Order (FCC 96-377) for the 13.75 - 14.0 GHz Band
Analysis and Calculations

1. Background

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

Table 1. Earth Station Characteristics

- Coordinates (NAD83): 39° 35' 54.0" N, 77° 45' 33.0" W
 - Satellite Location for Earth Station: ARSAT-1 at 5.0° W to 150.0° W
 - Frequency Band: 13.75-14.5 GHz for uplink
 - Polarizations: Circular
 - Emissions: 816KF2D
 - Modulation: FM
 - Maximum Aggregate Uplink EIRP: 88.0 dBW for all Carriers
 - Transmit Antenna Characteristics
 - Antenna Size: 14.2 meter in Diameter
 - Antenna Type/Model: TIW
 - Gain: 65.1 dBi
 - RF power into Antenna Flange: 22.9 dBW or -0.2 dBW/ MHz (Maximum)
 - Minimum Elevation Angle:
Hagerstown, Md. 5.5° @ 101.9° Az.
5.7° @ 257.8° Az.
 - Side Lobe Antenna Gain: 32 - 25*log(θ)
-

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 the U.S. Navy Department and NASA systems. Potential interference from the earth station could impact with the U.S. Navy and/or NASA systems in two areas. These areas are noted in FCC Report and Order 96-377, and consist of (1) Radiolocation and radio navigation, (2) Data Relay Satellites.

Summary of Coordination Issues:

- 1) Potential Impact to Government Radiolocation (Shipboard Radar)
- 2) Potential Impact to NASA Data Relay Satellite Systems (TDRSS)

2. Potential Impact to Government Radiolocation (Shipboard Radar)

Radiolocation operations (RADAR) may occur anywhere in the 13.4 - 14 GHz frequency band aboard ocean going U.S. Navy ships. The FCC Report & Order 96-377 allocates the top 250 MHz 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 the Hagerstown earth station is approximately 131km south-east toward the Atlantic Ocean. The calculation of the power spectral density at this distance is given by:

- | | |
|------------------------------|-----------------------|
| 1. Clear Sky EIRP: | 88.00 dBW |
| 2. Carrier Bandwidth : | 816 kHz |
| 3. PD at antenna input: | -0.2 dBW/4kHz |
| 4. Transmit Antenna Gain: | 65.1 dBi |
| 5. Antenna Gain Horizon: | FCC Reference Pattern |
| 6. Antenna Elevation Angles: | 5° |

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 off-axis antenna gains of 12.3 dBi towards the Atlantic Ocean.

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

$$\begin{aligned} \text{PFD} &= \text{Antenna Feed Power density (dBW/4kHz)} + \text{Antenna Off-Axis Gain (dBi)} - \text{Spread Loss (dBW-m}^2\text{)} \\ &= -0.2 \text{ dBW/4kHz} + 12.3 \text{ dBi} - 10 \cdot \log[4\pi \cdot (131000\text{m})^2] \\ &= -102.2 \text{ dBW/ m}^2/4 \text{ kHz} + \text{Additional Path Losses (~69.0 dB)} \end{aligned}$$

Our calculations indicate additional path loss of approximately 69.0 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 -170.2 dBW/m²/4 kHz. This is 3.2 dB below the -167 dBW/m²/4 kHz interference criteria of the FCC Report & Order 96-377. Therefore, there should be no interference to the U.S. Navy RADAR from the Hagerstown 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 (TDRSS)

The geographic location of the Intelsat License LLC 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 License LLC earth station in Hagerstown, Maryland.

The transmissions from the Intelsat License LLC earth station in Castle Rock, Colorado will not overlap with the 13.75-13.8 GHz band. Therefore, the TDRSS forward space-to-space link (TDRSS forward link-to-LEO) will not be impacted by the Intelsat License LLC earth station in Hagerstown, Maryland.

4. Coordination Result Summary and Conclusions

The results of the analysis and calculations performed in this exhibit indicate that compatible operation between the earth station at the Hagerstown, Maryland facility and the U.S. Navy and NASA systems space-to-earth link are possible. These analyses have been based on the assumption of 816 kHz bandwidth carriers. No interference to U.S. Navy RADAR operations, TDRSS space-to-earth link, or TDRSS space-to-space link will occur from the Hagerstown, Maryland site earth station.



September 16, 2014

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 KA258

Dear Ms. Dortch:

Intelsat License LLC ("Intelsat") herein requests a grant of Special Temporary Authority ("STA")¹ for 30 days, commencing October 16, 2014, to use its Hagerstown, Maryland Ku-band earth station—call sign KA258—to provide launch and early orbit phase ("LEOP") services for the ARSAT-1 satellite. ARSAT-1 is expected to be launched on October 16, 2014.² The LEOP period is expected to last approximately 10 days.³

The ARSAT-1 LEOP operations will be performed in the following frequencies: 13999.00 MHz (LHCP) and 14498.00 MHz (RHCP) in the uplink, and 11703.00 MHz and 12197.00 MHz in the downlink (RHCP). The LEOP operations will be coordinated with all operators of satellites that use the same frequency bands and are in the LEOP path.⁴ 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 for the ARSAT-1 mission 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.

¹ Intelsat has filed its STA request, an FCC Form 159, a \$195.00 filing fee, and this supporting letter electronically via the International Bureau's Filing System ("IBFS").

² The permanent orbital location for ARSAT-1, which Intelsat understands is licensed by Argentina, will be at 71.8° W.L. The in-orbit testing location will be 81.1° W.L.

³ Intelsat is seeking authority for 30 days to accommodate a possible launch delay.

⁴ Empresa Argentina de Soluciones Satelitales S.A. ("ARSAT"), the operator of the ARSAT-1 LEOP mission, will handle the coordination.

Ms. Marlene H. Dortch
September 16, 2014
Page 2

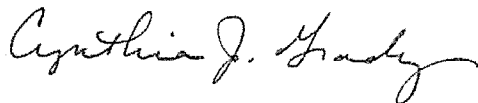
In further support of this request, Intelsat hereby attaches Exhibits A and B, which contain technical information that demonstrates that the operation of the earth station will be compatible with its electromagnetic environment and will not cause harmful interference into any lawfully operating terrestrial facility, as well as a waiver request. 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. Intelsat also notes that for purposes of the ARSAT-1 LEOP mission, it is seeking to operate in the frequencies listed in this request at power levels not to exceed 22.9 dBW.

Finally, Intelsat clarifies that during the ARSAT-1 launch, INVAP/ARSAT will control the spacecraft. INVAP/ARSAT will build and send the commands to the Intelsat antenna, which will process and execute the commands. Telemetry received by Intelsat will be forwarded to Telespazio, INVAP, and ARSAT. Intelsat will remain in control of the baseband unit, RF equipment, and antenna.

Grant of this STA request will allow Intelsat to help launch the ARSAT-1 satellite. This, in turn, will help provide services to Argentina and the neighboring areas at the 81.1° 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,



Cynthia J. Grady
Regulatory Counsel
Intelsat Corporation

cc: Paul Blais