

S2110
Iridium Constellation LLC
Iridium

SAT-STA-20170421-00064

IB2017001121



File # SAT-STA-20170421-00064

Call Sign S2110 Grant Date 05/03/17

(or other identifier)

Term Dates period of
From 05/03/17 To: 30 days

Approved:

Stephen J. Dual
Stephen J. Dual
Chief, Satellite Policy Branch

Approved by OMB
3060-0678

Date & Time Filed: Apr 21 2017 1:08:51:983PM
File Number: SAT-STA-20170421-00064
Callsign:

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SPACE STATION SPECIAL TEMPORARY AUTHORITY

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APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
2nd 30-day STA for first-generation storage orbit

1. Applicant

Name:	Iridium Constellation LLC	Phone Number:	703-287-7518
DBA Name:		Fax Number:	
Street:	1750 Tysons Boulevard	E-Mail:	maureen.mclaughlin@iridium.com
	Suite 1400		
City:	McLean	State:	VA
Country:	USA	Zipcode:	22102
Attention:	Maureen C McLaughlin		

ATTACHMENT TO GRANT
Iridium Constellation LLC
IBFS File No. SAT-STA-20170421-00064

IBFS File No(s):	SAT-STA-20170421-00064	<p>GRANTED – With Conditions</p>  <p>International Bureau Satellite Division</p>
Licensee/Grantee:	Iridium Constellation LLC (Iridium)	
Call Sign:	S2110	
Satellite Name:	Iridium Constellation	
Orbital Location: (required station-keeping tolerance)	763 km circular orbit, 86.4° inclination	
Administration:	United States of America	
Nature of Service:	Mobile-satellite service (telemetry, tracking and command only)	
Scope of Grant:	Special temporary authorization for a period of 30 days to conduct telemetry, tracking, and command operations necessary to transit three first-generation satellite from the 778 km orbit and maintain four first-generation satellites as in-orbit spares at an altitude of approximately 763 km. ¹	
Service Area(s):	N/A	
Frequencies:	19.4-19.6 GHz (space-to-Earth) 29.1-29.3 GHz (Earth-to-space)	
<p>Unless otherwise specified herein, operations under this grant must comport with the legal and technical specifications set forth by the applicant or petitioner and with Federal Communication Commission's rules not waived herein. This grant is also subject to the following conditions:</p> <p>1. Authorization is limited to telemetry, tracking and command operations only.</p>		
<p>Licensee/grantee is afforded thirty (30) days from the date of release of this action to decline the grant as conditioned. Failure to respond within this period will constitute formal acceptance of the grant as conditioned.</p> <p>This action is taken pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon release.</p> <p>Station licenses are subject to the conditions specified in Section 309(h) of the Communications Act of 1934, as amended, 47 U.S.C. § 309(h).</p>		
Action Date:	May 3, 2017	
Term Dates	From: May 3, 2017	To: period of 30 days
<p>Approved:</p> <div style="text-align: center;">  Stephen L. Duall Chief, Satellite Policy Branch </div>		

¹ Iridium was previously granted special temporary authority to conduct telemetry, tracking, and command operations necessary to transit a single first-generation satellite from the 778 km orbit and maintain it as an in-orbit spare at an altitude of approximately 763 km. See IBFS File No. SAT-STA-20170223-00020 (granted Mar. 31, 2017).

2. Contact

Name:	Jennifer D. Hindin	Phone Number:	202-719-4975
Company:	Wiley Rein LLP	Fax Number:	
Street:	1776 K St NW	E-Mail:	jhindin@wileyrein.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20006 -
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 CXW – Space Station (Non-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.)

Iridium seeks STA for 30 days to keep up to 4 first-generation satellites in a storage orbit.

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
Maureen C McLaughlin

11. Title of Person Signing
Vice President Public Policy

12. Please supply any need attachments.

Attachment 1: STA Exhibit

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).

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**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

Application of)	
)	
Iridium Constellation LLC)	Call Sign: S2110
)	
For Special Temporary Authority)	File No. SAT-STA-2017 _____
)	

APPLICATION FOR SPECIAL TEMPORARY AUTHORITY

On March 31, 2017, the Commission granted Iridium Constellation LLC (“Iridium”) special temporary authority (“STA”) through April 29, 2017 to modify its authorization for its “Big LEO” band non-geostationary satellite orbit (“NGSO”) constellation (call sign S2110) to keep one first-generation satellite in a temporary 760 km storage orbit.¹ To ensure complete continuity of service as the entire Iridium first-generation satellite constellation is replaced, Iridium will need to place additional first-generation (“Block 1”) satellites in the storage orbit to be available as spares. The goal is to keep the most robust satellites in operational mode at all times and to remove from service and prepare for de-orbit less robust satellites. Accordingly, Iridium hereby requests STA for an additional thirty (30) days to keep up to four first-generation satellites in the temporary storage orbit.²

Grant of the STA serves the public interest. Iridium is engaged in the unprecedented endeavor of deploying an entirely new global satellite constellation at the same time it retires an

¹ See Iridium Constellation LLC, SAT-STA-20170223-00020 (granted Mar. 31, 2017). See also Letter from Scott Blake Harris, Harris, Wiltshire & Grannis, LLP to Jose Albuquerque, FCC (Mar. 24, 2017) (“Supplemental Letter”).

² See 47 C.F.R. § 25.120(b)(4). Iridium also will file a request for 180-day STA, which the company anticipates will be placed on Public Notice prior to grant. In addition, Iridium will file a request for modification of its license to cover use of the storage orbit for the entire constellation replacement based upon the information and experience it gains from the replacement of Block 1 satellites with Iridium NEXT satellites in these first few launches.

older global satellite system. During this transition, it is imperative that Iridium have the most robust among its satellites in operation at all times and that any less robust satellites be taken out of service and deorbited first. It is also important that Block 1 satellites be available to provide service if a new satellite develops any unexpected temporary communication problems.

Providing Iridium with the flexibility to maneuver its healthiest Block 1 satellites to a storage orbit will ensure the availability of sufficient engineering resources to coordinate the safe movement of Iridium's satellites during the deorbiting process and eliminate the risk that this unique replacement effort will have any adverse impact on Iridium service. Until a particular plane is fully populated with operational Iridium NEXT mission satellites and spares, only Block 1 spares can serve this purpose. The first-generation satellites Iridium seeks to keep in-orbit will be the least likely to suffer an anomaly that would hinder them from being deorbited as required by, and without any change to, the previously approved orbital debris mitigation plan.³

I. BACKGROUND AND REQUEST FOR SPECIAL TEMPORARY AUTHORITY

On January 1, 1995, the FCC authorized Iridium's predecessor-in-interest to launch and operate an NGSO mission constellation of 66 satellites in the Big LEO band along with 12 in-orbit spares.⁴ On August 1, 2016, the Commission authorized Iridium to construct, deploy and operate its second-generation satellite constellation, commonly known as Iridium NEXT, with 66 space stations and up to 15 "second-generation in-orbit satellites."⁵ Specifically, the grant "is based on a planned one-for-one substitution of first-generation satellites by second-generation

³ See *Iridium Constellation LLC Application for Modification of Big LEO License to Change the Orbital Debris Mitigation Plan*, 29 FCC Rcd 9422 (I.B. 2014).

⁴ See *Application of Motorola Satellite Communications, Inc.*, Order and Authorization, 10 FCC Rcd 2268, ¶ 25 (IB 1995).

⁵ See generally *Iridium Constellation LLC, Application for Modification of License to Authorize a Second-Generation NGSO MSS Constellation*, Order and Authorization, 31 FCC Rcd. 8675, ¶¶ 45-47 (Aug. 1, 2016) ("Iridium NEXT Order").

satellites, but does not preclude Iridium seeking authorization at a later date to retain some first-generation satellites as spares.”⁶

This 30-day STA seeks authority to retain up to four first-generation satellites in a storage orbit upon their substitution by a second-generation satellite. Iridium began its phased launch of second-generation satellites with the successful launch and delivery of 10 satellites to a temporary 625 km parking orbit in January 2017.⁷ Following positioning to the 780 km mission orbit and completion of in-orbit testing, second-generation satellites from this and subsequent launches will be brought into operation and replace first-generation satellites in specific orbital planes and slots. Under the STA, Iridium seeks to move certain of the replaced first-generation satellites to a storage orbit of approximately 760 km. There, these first-generation satellites can serve as spares to support Iridium’s phased deployment of Iridium NEXT. While positioned in storage orbit, the first-generation satellites will not be co-located and will not operate as part of Iridium’s mission constellation.⁸

Iridium’s decision about which satellites to replace first is based on the overall health and safety of the operating constellation. With each launch, ten Iridium NEXT satellites go to one of the six planes where the Iridium constellation operates. The first launch was to plane number 6, primarily because there was an open slot (i.e., a slot where there was no operating satellite). Because Iridium’s launch provider can deliver ten satellites at a time to a given orbital plane, there will be Block 1 satellites replaced early in the process that remain healthy with ample fuel and thus would be useful as spares. Iridium intends to place in storage orbit satellites whose

⁶ *Id.*, ¶ 5 n.22.

⁷ *Iridium Announces Successful First Launch of Iridium NEXT Satellites*, Iridium.com (Jan. 14, 2017), available at <http://investor.iridium.com/releasedetail.cfm?releaseid=1007978>.

⁸ *Cf.* File No. SAT-MOD-20120813-00128.

communications and other systems remain well-functioning and that have enough fuel to (a) move to a storage orbit, (b) move back into a mission orbit if needed, and (c) deorbit after they were no longer needed in the mission orbit.

As a result of the first launch, Iridium hopes to move four replaced first generation satellites to the temporary storage orbit and to deorbit three satellites immediately from mission orbit.⁹ Of the satellites temporarily placed into storage orbit, SV077 will be deorbited as soon as safely possible based on the availability of engineering resources and experience gained from the Iridium NEXT operations, which is anticipated to be in approximately 2-3 months. The remaining three satellites in the storage orbit would be maintained as spares for a longer period of time pending of the successful launch and operation of additional Iridium NEXT satellites. The plan for each subsequent plane will be similar.

II. PUBLIC INTEREST STATEMENT

A. Grant of this STA Request Will Serve the Public Interest.

As the Commission has acknowledged, Iridium NEXT will “provide mobile voice and data services to end users on a network with improved voice quality and enhanced data transmission speeds.”¹⁰ Allowing Iridium the flexibility sought in this STA will backstop Iridium’s phased transition to Iridium NEXT and its provision of these beneficial service enhancements. Use of the storage orbit will also provide time separation between the deorbits and ensure the availability of engineering resources needed to coordinate the safe movement of multiple satellites.

⁹ In the first launch, one Iridium NEXT satellite filled a vacant slot and two others are drifting to an adjacent plane.

¹⁰ Iridium NEXT Order, ¶ 1.

Moreover, the storage orbit and request to maneuver first-generation satellites is temporary, and the satellites Iridium chooses for use as spares will be those with the highest-functioning systems on all measures. As Iridium subsequently launches second-generation satellites, Iridium will de-boost and de-orbit the first-generation satellites on a rolling basis. When the entire Iridium NEXT constellation and spares have been launched, tested and demonstrated to be operating successfully, the need for Block 1 satellites in-orbit will cease.

Grant of this STA request also poses no interference risk. The proposed location of the first-generation spare satellite orbit ensures safe station-keeping without any overlap in orbital position. Further, upon replacement by a second-generation satellite in the mission constellation, a first-generation satellite will suspend mission operations and will not be co-located and operated in tandem with the second-generation satellite.

B. Iridium Will Continue to Comply with the Approved Orbital Debris Mitigation Plan.

In 2014, the Commission issued a revised orbital debris mitigation plan for Iridium's Block 1 satellites.¹¹ Under the revised plan, the agency allowed Iridium to extend the post-mission atmospheric re-entry period to 25 years for up to ten satellites, while the rest of the Block 1 fleet remained subject to the one-year re-entry period approved in 2002. Iridium has abided by this plan. In June 2016, Iridium removed SV039 from its mission orbit for purposes of deorbit and filed the required notification to the FCC.¹² This month, Iridium also commenced the deorbit of the first Block 1 satellite replaced by an Iridium NEXT satellite and will timely file the required notification to the FCC.

¹¹ See generally Revised Orbital Debris Order.

¹² See Letter from Maureen C. McLaughlin, Iridium to Mr. Jose Albuquerque, Chief, Satellite Division, International Bureau, Federal Communications Commission (June 29, 2016).

The flexibility sought by this STA will not affect Iridium's continued compliance with its existing orbital debris mitigation plan. Specifically, Iridium will deorbit no more than ten Block I satellites under the approved atmospheric re-entry period of up to 25 years. Iridium will use all available fuel to achieve the lowest perigee altitude possible for each deorbited satellite. Indeed, Iridium anticipates that many of the ten satellites approved for an atmospheric re-entry period of up to 25 years will actually achieve a perigee altitude resulting in a significantly faster atmospheric re-entry period of a few years. As stated above, Iridium will keep only the most robust Block I satellites in storage orbit following their replacement by Iridium NEXT satellites. These Block I satellites will be the least likely to suffer an anomaly that would diverge from the approved orbital debris mitigation plan. In sum, Iridium will continue to comply fully with its existing, approved deorbit plan.

III. CONCLUSION

Iridium respectfully requests that the Commission grant this 30-day STA to permit Iridium to retain up to four first-generation satellites in a temporary storage orbit.

Respectfully submitted,

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April 21, 2017