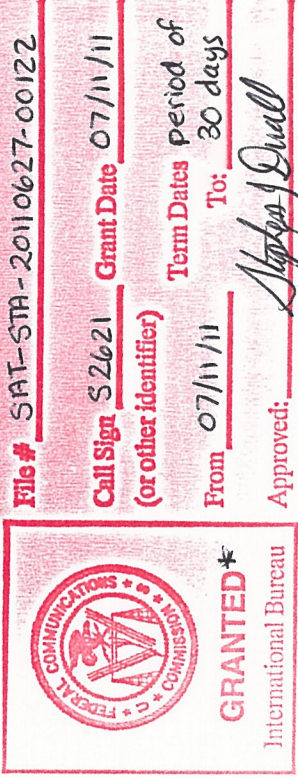


S2621 SAT-STA-20110627-00122 IB2011002765
EchoStar Satellite Operating Corporation
EchoStar 4

Date & Time Filed: Jun 27 2011 7:12:38:633PM
File Number: SAT-STA-20110627-00122
Callsign:



Approved by OMB
3060-0678

File # SAT-STA-20110627-00122
Call Sign S2621 Grant Date 07/11/11
Term Dates period of 30 days
From 07/11/11 To: 30 days

Approved: Stephen J. Duall
Chief, Satellite Policy Branch

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:
Special Temporary Authority to Deorbit EchoStar 4 from 76.85 W.L.

I. Applicant

Name:	EchoStar Satellite Operating Corporation	Phone Number:	202-293-0981
DBA Name:		Fax Number:	
Street:	100 Inverness Terrace East	E-Mail:	
City:	Englewood	State:	CO
Country:	USA	Zipcode:	80112 -
Attention:	Ms Alison Minea		

Attachment to Grant
EchoStar Satellite Operating Corporation
IBFS File No. SAT-STA-20110627-00122

The application of EchoStar Satellite Operating Corporation (EchoStar) for special temporary authority, IBFS File No. SAT-STA-20110627-00122, IS GRANTED. Accordingly, EchoStar is authorized for a period of 30 days commencing on July 11, 2011, to perform tracking, telemetry, and telecommand (TT&C) functions in the 12.2-12.7 and 17.3-17.8 GHz frequency bands with the EchoStar 4 satellite (Call Sign: S2621) to execute end-of-life maneuvers boosting the satellite to a disposal orbit with a minimum perigee altitude of approximately 350 km above the geostationary arc, and thereafter to execute further maneuvers to burn hydrazine propellant to depletion, while maintaining a minimum perigee approximately 350 km above the geostationary arc. This authorization is granted in accordance with the terms, conditions, and technical specifications set forth in EchoStar's application, the Commission's rules, and the following conditions:

1. EchoStar shall coordinate all orbit raising maneuver TT&C operations with existing geostationary satellites to ensure that no unacceptable interference results from its TT&C operations during its disposal operations.
2. During the disposal operations, no harmful interference shall be caused by EchoStar 4 to any other lawfully operating space station or radio communications system and operations of the EchoStar 4 satellite shall cease immediately upon notification of such interference.
3. EchoStar is required to accept interference from other lawfully operating space stations or radio communications systems.
4. EchoStar shall take all necessary steps to insure ground station availability, both for planned operations and in the event of unanticipated difficulties in executing planned operations, so as to complete propellant depletion and bus shutdown.
5. We grant EchoStar a waiver of Section 25.283(c) of the Commission's rules, 47 C.F.R. § 25.283(c), with respect to an oxidizer tank. EchoStar states that an oxidizer tank will be sealed in connection with end-of-life operations. The sealed tank would contain approximately 18.69 kg of N₂O₄ oxidizer and less than 4 kg of helium, with the tank volume being approximately 328 liters. We waive Section 25.283(c) based on the following findings:

a) EchoStar and the satellite's manufacturer, Lockheed Martin, analyzed three available options for venting or depleting the remaining oxidizer. One option was to burn oxidizer and hydrazine by firing the liquid apogee engine (LAE). Lockheed Martin concluded doing so would result in structural failure of satellite appendage hinges, with a consequent high likelihood of debris generation. Another option was to vent oxidizer through the LAE following burn to depletion of hydrazine using monopropellant thrusters. Due to residual hydrazine (in a worst-case scenario, up to 4 kg), Lockheed Martin and EchoStar concluded that this option presents a risk of accidental detonation and explosion as oxidizer is released into the LAE.

Attachment to Grant
EchoStar Satellite Operating Corporation
IBFS File No. SAT-STA-20110627-00122

b) Given the limitations of the A2100 design used in this spacecraft, the proposed method for addressing stored energy sources represents a reasonable choice among the available options.

c) Waiver for this on-orbit satellite does not constitute a finding that the chosen option, which involves maintaining potentially reactive chemical energy sources, and maintaining gases in a pressurized state, is safe. The waiver request was not supported by any analysis of potential failure scenarios or risks associated with post-mission long-term exposure to the space environment.

7. Within 30 days of completion of the end-of-life maneuvers, EchoStar shall send a letter to the Chief, Satellite Division, International Bureau, indicating the apogee and perigee of the EchoStar 4 disposal orbit.



*with conditions

File # SAT-STA-20110627-00122

Call Sign S2621 Grant Date 07/11/11

(or other identifier)

Term Dates period of
From 07/11/11 To: 30 days

Approved: Stephen J. Duall

Stephen J. Duall
Chief, Satellite Policy Branch

2. Contact			
Name:	Pantelis Michalopoulos	Phone Number:	(202) 429-6494
Company:	Step toe & Johnson LLP	Fax Number:	
Street:	1330 Connecticut Ave. NW	E-Mail:	pmichalopoulos@steptoe.com
City:	Washington	State:	
Country:	USA	Zipcode:	20036 -
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?			
<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			
5. Type Request			
<input type="radio"/> Change Station Location		<input type="radio"/> Extend Expiration Date	
		<input checked="" type="radio"/> Other	
6. Temporary Orbit Location		7. Requested Extended Expiration Date	
76.85 W.L.			

<p>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.)</p> <div style="border: 1px solid black; padding: 5px;"> <p>EchoStar Satellite Operating Corporation requests Special Temporary Authority to deorbit the EchoStar 4 satellite from 76.85 W.L. See attached narrative.</p> </div>					
<p>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"; party to the application; party to the application; party to the application.</p> <p style="text-align: right;"> <input checked="" type="radio"/> Yes <input type="radio"/> No </p>					
<p>10. Name of Person Signing Alison Minea</p>	<p>11. Title of Person Signing Corporate Counsel</p>				
<p>12. Please supply any need attachments.</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">Attachment 1: Narrative</td> <td style="width: 50%;">Attachment 2:</td> </tr> <tr> <td></td> <td>Attachment 3:</td> </tr> </table>		Attachment 1: Narrative	Attachment 2:		Attachment 3:
Attachment 1: Narrative	Attachment 2:				
	Attachment 3:				
<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>					

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

_____)	
)	
In the Matter of)	
)	
ECHOSTAR SATELLITE OPERATING)	File No. SAT-STA-2011 _____ - _____
CORPORATION)	Call Sign S2621
)	
Special Temporary Authority to Deorbit)	
EchoStar 4 from 76.85° W.L.)	
_____)	

APPLICATION FOR SPECIAL TEMPORARY AUTHORITY

By this application, and pursuant to Section 25.120(b)(4) of the Commission’s rules,¹ EchoStar Satellite Operating Corporation (“EchoStar”) respectfully requests Special Temporary Authority (“STA”) for 30 days to deorbit the EchoStar 4 satellite from its current orbital location at 76.85° W.L., where it is operating as a Mexican-licensed Direct Broadcast Satellite (“DBS”). The satellite will be transferred to a disposal orbit at least 300 km above the Geostationary Satellite Orbit (“GSO”). The grant of this application will not cause harmful interference to any authorized user of the spectrum and is in the public interest. To the extent necessary, EchoStar also requests a limited waiver of Sections 25.114(d)(14)(ii) and 25.283(c) of the Commission’s rules.²

EchoStar respectfully requests action on this request by July 11, 2011. The “full-motion” antennas, E980005, E070014 and E070275, that will be required for the deorbiting are also needed to conduct transfer orbit operations for Quetzsat-1, which is set to be launched on or

¹ 47 C.F.R. § 25.120(b)(4).

² *Id.* §§ 25.114(d)(14)(ii), 25.283(c).

about August 12. Grant of the instant request by July 11, 2011 will allow this recommissioning of the full-motion antennas.

I. BACKGROUND AND INTRODUCTION

EchoStar 4 is currently a Mexican-licensed satellite stationed at the 76.85° W.L. orbital location. The satellite's operation at that slot under Mexican authority was made subject to an exchange of letters between the Commission and the Mexican Administration.³ EchoStar 4's stay at the nominal 77° W.L. orbital location is further governed by the license granted to EchoStar's partner, QuetzSat, S. de R.L. de C.V. ("QuetzSat"), to use the nominal 77° W.L. orbital location, and by agreements among EchoStar, SES Global Latin America, S.A. ("SES"), and QuetzSat.⁴ As the Commission is aware, EchoStar 4, having reached the end of its useful life, has been retired from commercial service and now must be deorbited. EchoStar has shared the specifics of its de-orbiting plans with Commission staff through previous confidential filings. During deorbiting, EchoStar 4 will vacate the nominal 77° W.L. orbital location, thereby triggering the need for this request in accordance with existing agreements.⁵ EchoStar, moreover, understands that neither the Mexican Administration nor QuetzSat objects to the satellite's deorbit.

³ See EchoStar Satellite LLC Application for Special Temporary Authority to Conduct Telemetry, Tracking, and Command Operations during the Relocation of EchoStar 4 to the 77° W.L. Orbital Location, *Order and Authorization*, 21 FCC Rcd. 4077, at Appendix A (2006) ("77° W.L. Order").

⁴ See Satellite Relocation and Use Agreement for the 77° W.L. Orbital Location, (77° W.L. Agreement), *filed in* File No. SAT-STA-20080616-00121, Attachment 3 (granted Oct. 31, 2008) ("EchoStar 8 STA Application").

⁵ 77° W.L. Order, Appendix A at 8.

II. GRANT OF THIS APPLICATION IS IN THE PUBLIC INTEREST AND WILL NOT CAUSE HARMFUL INTERFERENCE

The deorbiting of EchoStar 4 will not cause harmful interference to any other satellite operator, and will serve the public interest, convenience and necessity.⁶ The satellite's communications payload has already been switched off, with only telemetry, tracking and control ("TT&C") operations being performed, and the satellite will continue to operate in this manner until it achieves its disposal orbit. During the deorbit maneuvers, EchoStar will coordinate its TT&C operations with all potentially affected operating satellite networks.

EchoStar 4 also will not cause harmful interference to other authorized satellites during its deorbit because EchoStar 4 will operate on an unprotected, non-harmful interference basis. In the event that the satellite causes harmful interference, EchoStar will cease operations immediately.

The public interest will be served by the grant of this application, as it will allow EchoStar to safely deorbit the satellite and will allow other operational satellites to be better accommodated in the vicinity of 77° W.L. Removing satellites that have reached the end of their life from the GSO reduces the risk that those satellites will cause collisions and frees up valuable orbital locations for new satellites.

III. LIMITED WAIVER OF THE ORBITAL DEBRIS MITIGATION RULES

Section 25.283(c) of the Commission's rules requires space station licensees to ensure, at spacecraft end-of-life, "that all stored energy sources on board the satellite are discharged, by venting excess propellant, discharging batteries, relieving pressure vessels, and other appropriate

⁶ See e.g., *Newcomb Communs., Inc.*, 8 FCC Rcd. 3631, 3633 (1993); *Columbia Comms. Corp.*, 11 FCC Rcd. 8639, 8640 (1996); *Am. Tel. & Tel. Co.*, 8 FCC Rcd. 8742 (1993).

measures.”⁷ Similarly, Section 25.114(d)(14)(ii) requires space station applicants to address in their applications “whether stored energy will be removed at the spacecraft’s end of life, by depleting residual fuel and leaving all fuel line valves open, venting any pressurized system, leaving all batteries in a permanent discharge state, and removing any remaining source of stored energy, or through other equivalent procedures specifically disclosed.”⁸ The purpose of these rules, as is evident from Section 25.114(d)(14)(ii), is to “limit the probability of accidental explosions . . . after completion of mission operations.”⁹

The EchoStar 4 satellite was launched in 1998, before the *Notice of Proposed Rulemaking* that led to the orbital debris mitigation rules was published.¹⁰ Nevertheless, the satellite is substantially compliant with these rules, with one qualification. At the satellite’s end of life, the batteries will be left in a permanent state of discharge and all sources of stored energy, with the exception of the helium, fuel and oxidizer tanks, will be removed or vented at the spacecraft’s end-of-life by leaving all fuel lines open. Because of the design of the spacecraft bus by the satellite manufacturer, however, the small amount of oxidizer remaining in those tanks cannot be vented. Instead, this residual oxidizer will be securely sealed using pyrotechnic valves upon the completion of the satellite’s transfer to its disposal orbit, and stored under conditions that would make a leak extremely unlikely, and an accidental, post-mission explosion more unlikely still.¹¹

⁷ 47 C.F.R. § 25.283(c).

⁸ *Id.* § 25.114(d)(14)(ii).

⁹ *Id.*

¹⁰ Mitigation of Orbital Debris, *Notice of Proposed Rulemaking*, 17 FCC Rcd. 5586 (2002).

¹¹ See EchoStar Satellite Operating Corporation, Confidential Supplemental Information Regarding the Deorbiting of the EchoStar 4 Satellite (June 15, 2011), *filed in* File No. SAT-LOA-19880128-00046. (attached hereto and filed confidentially).

In response to questions from International Bureau officials, Lockheed Martin, the satellite's manufacturer, has re-analyzed the potential for venting the remaining oxidizer by firing the Liquid Apogee Engine ("LAE"). Lockheed determined that doing so would cause a structural catastrophic failure of the satellite appendage hinges. Specifically, Lockheed Martin has opined that, at forces of 150 lbf, the hinges are certain to fail catastrophically, independent of satellite appendage angle. Lockheed Martin has also confirmed that this is a design aspect common to all Lockheed A2100 spacecraft buses. The Commission has repeatedly granted waivers in recognition of this design limitation.¹²

EchoStar hereby requests a waiver of Sections 25.283(c) and 25.114(d)(14)(ii) to the extent necessary. The Commission has authority to grant waivers of its rules for "good cause shown."¹³ In general, good cause exists if grant of a waiver would not undermine the purposes of the rule and would otherwise serve the public interest.¹⁴ A waiver of the Commission's rules is appropriate in the circumstances once "considerations of hardship, equity, or more effective implementation of overall policy" have been taken into account.¹⁵

The EchoStar 4 satellite has been launched and operating for thirteen years, well before the orbital debris mitigation rules were proposed, making a design change problematic. The relevance of this fact has been recognized by the Commission even where the satellite in question has yet to be launched. Thus in March 2008, the Bureau granted a limited waiver to EchoStar Satellite Operating Company for the AMC-14 satellite, then still awaiting launch,

¹² See, e.g., Stamp Grant, SES Americom, Inc., File No. SAT-MOD-20100324-00056, Condition 8 (granted Jun. 21, 2010); Stamp Grant, EchoStar Satellite Operating Corporation, File No. SAT-LOA-20071221-00183, Condition 4 (granted Mar. 12, 2008).

¹³ See 47 C.F.R. § 1.3; *WAIT Radio v. FCC*, 418 F.2d 1153 (1969).

¹⁴ See, e.g., *WAIT Radio*, 418 F.2d at 1157; *Intelsat North America LLC*, 22 FCC Rcd 11989, at ¶ 6 (2007); *Dominion Video Satellite, Inc.* 14 FCC Rcd. 8182, at ¶ 5 (1999).

¹⁵ *WAIT Radio*, 418 F.2d at 1159.

which was also built on the Lockheed Martin A2100 bus, explaining that “waiver is granted because modification of the spacecraft would present an undue hardship, given the late stage of satellite construction.”¹⁶ Because EchoStar cannot change the EchoStar 4 satellite’s design, good cause exists to grant the requested waiver.

IV. WAIVER PURSUANT TO SECTION 304 OF THE ACT

In accordance with Section 304 of the Communications Act of 1934, as amended, 47 U.S.C. § 304, EchoStar hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise.

V. REQUEST FOR EXPEDITED TREATMENT

Because EchoStar will only have a limited amount of time to complete the deorbiting due to ground antenna resource constraints, EchoStar respectfully requests expedited processing for this request.

VI. CONCLUSION

For the foregoing reasons, EchoStar requests that the Bureau grant STA to deorbit EchoStar 4 from 76.85° W.L. and to grant the requested waiver.

¹⁶ See Stamp Grant, File Nos. SAT-LOA-20071221-00183, SAT-STA-20080219-00048, SAT-STA-20080229-00054, Condition 4 (granted Mar. 12, 2008). See also *PanAmSat H-2 Licensee Corp*, Stamp Grant, File No. SAT-AMD-20070731-00108 at condition 5 (granted Nov. 30, 2007) (“*PanAmSat H-2*”); *PanAmSat Licensee Corp.*, Stamp Grant, File No. SAT-AMD-20070716-00102 at condition 7 (granted Oct. 4, 2007) (“*Intelsat 11*”).

Respectfully submitted,

/s/

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June 27, 2011