

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:
Carpentersville TT&C STA for Hylas-1 - 2019-09 (30-Day STA)

1. Applicant

Name:	Lockheed Martin Corporation	Phone Number:	703-413-5747
DBA Name:		Fax Number:	703-413-5908
Street:	2121 Crystal Drive Suite 100	E-Mail:	ryan.n.terry@lmco.com
City:	Arlington	State:	VA
Country:	USA	Zipcode:	22202
Attention:	Ryan N. Terry		

30 days "With conditions"

File # SES-STA-20190919-01212

Call Sign E7541 Grant Date 10/08/2019
(or other identifier)

Term Dates
From: 10/08/2019 To: 11/09/2019

Approved: [Signature]



GRANTED

International Bureau

2. Contact	
Name: Ryan N. Terry	Phone Number: 703-413-5747
Company: Lockheed Martin Corporation	Fax Number: 703-413-5908
Street: 2121 Crystal Drive Suite 100	E-Mail: ryan.n.terry@lmco.com
City: Washington	State: DC
Country: USA	Zipcode: 22202 -
Attention:	Relationship: Same
(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 SESL/C2008110301443 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 CGX – Fixed Satellite Transmit/Receive Earth Station	
5. Type Request	
☒ Use Prior to Grant ☐ Change Station Location ☒ Other	
6. Requested Use Prior Date 10/01/2019	
7. City Carpentersville	
8. Latitude (dd mm ss.s h) 40 38 39.1 N	

9. State NJ	10. Longitude (dd mm ss.s h) 75 11 27.8 W
11. Please supply any need attachments. Attachment 1: STA	Attachment 2: Coordination 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.) Lockheed Martin Corporation hereby requests Special Temporary Authority beginning October 1, 2019, to operate its Carpentersville, New Jersey fixed earth station (Call Sign E7541) to provide telemetry, tracking, and control functions during the period of ranging and propulsion monitoring for the relocation of the Hylas-1 satellite.	
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. Yes ☒ No ☐	
14. Name of Person Signing Jennifer A Warren	15. Title of Person Signing Vice President, Technology Policy & Regulation
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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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.

Applicant: Lockheed Martin Corporation
File No.: SES-STA-20190919-01212
Call Sign: E7541
Special Temporary Authority

Lockheed Martin Corporation ("Lockheed Martin") is granted a special temporary authority for 30 days, starting October 08, 2019, to operate its earth station in Carpentersville, New Jersey, to provide telemetry, tracking, and control ("TT&C") functions during the period of ranging and propulsion monitoring for the Hylas-1 satellite currently located at the 50° W.L. orbital location with the final location at 79° W.L. orbital location. Hylas-1 satellite is licensed by United Kingdom. Operations shall utilize frequencies 17302.048 (H/LHCP) and 17305.051 MHz (H/RHCP), (Earth-to-space) and 11701.008 MHz (V/LHCP), and 11702.808 MHz (V/RHCP) (space-to-Earth) under the following conditions:

1. Operations will not exceed the operational power levels and parameters.
2. All operations under this grant of special temporary authority shall be on an unprotected and non-harmful interference basis. Lockheed Martin 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 under this grant of special temporary authority, Lockheed Martin must cease operations immediately upon notification of such interference, and must inform the Commission, in writing, immediately of such an event.
4. All operators of satellites 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 Lockheed satellite is Ph.: (609) -865-2658 (Cellular)-(908)-859-4050 (earth station desk).
5. Any action taken or expense incurred as a result of operations pursuant to this special temporary authority is solely at Lockheed Martin's risk.
6. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future Lockheed Martin applications.

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.



30 days *"with conditions"*
File # SES-STA-20190919-01212

Call Sign E7541 Grant Date 10/08/2019
(or other identifier)

Term Dates
From: 10/08/2019 To: 11/07/2019

Approved: [Signature]

Description of Operations and Public Interest Statement

Pursuant to 47 CFR 25.120 of the Commission's Rules, Lockheed Martin Corporation ("Lockheed Martin") hereby requests Special Temporary Authority ("STA") for a period of thirty (30) days to operate its Carpentersville, New Jersey fixed earth station (Call Sign E7541) to provide telemetry, tracking, and control ("TT&C") functions during the period of ranging and propulsion monitoring for the Hylas-1 satellite. Hylas-1 is a hybrid Ka-band/Ku-band satellite with European coverage.

Lockheed Martin is in a support role to provide these services during the relocation of Hylas-1 from its current orbital position to the 79 W.L. orbital. Accordingly, Lockheed Martin requests authority to begin communications on October 1, 2019, in preparation for the start of ranging and propulsion monitoring.

1. Requested STA Operations

The TT&C and ranging signals will be transmitted partly in the Ku-band. As to the instant request for STA, Lockheed Martin seeks herein authority to communicate with Hylas-1 as a point of communication on the Ku-band frequencies identified in the attached technical exhibit. In all other respects, operation of the earth station will be consistent with the parameters set forth under the existing permanent authority.

The nature of the Hylas-1 relocation requires extended support for the completion of the mission. Accordingly, Lockheed Martin is requesting that the duration of this STA be a total of thirty (30) days. Further, a request for extension of the instant STA request for an additional one hundred eighty (180) days is being filed concurrently to cover the entire period required to complete Lockheed Martin support to Avanti, the satellite operator.

The required frequency coordination for use of the designated transmit frequencies has been completed and is attached to the instant application as an exhibit.

Lockheed Martin designates Michael Usarzewicz to be the contact person that will be available whenever transmission to Hylas-1 is to occur through the subject earth station. Mr. Usarzewicz can be reached at the following phone numbers:

(609) 865-2658 (cellular)
(908) 859-4050 (earth station desk)

2. Grant of the Requested Authority Will Serve the Public Interest

Lockheed Martin believes that the limited operations it proposes in support of the the Hylas 1 relocation mission serve the public interest by ensuring control of a spacecraft transiting other space assets in the same orbital arc.

Lockheed Martin's Carpentersville earth station will be part of a network of control and ranging facilities that will be used solely to position the satellite as it progresses in transfer to its final location and to calibrate propulsion. No end user service will be provided within the United States at any time. The safe and orderly use of the entire geostationary orbital resource and protection of the hundreds of satellites licensed by the U.S. and other countries that operate there depends in no small part on ensuring that the Hylas-1 satellite is controlled while over North America en route to its final geostationary orbital position. In this regard, Lockheed Martin's earth station thus will serve a vital function.

* * * * *

Lockheed Martin requests authority to operate its Carpentersville, NJ earth station antenna to provide critical TT&C and ranging services during the Hylas-1 mission, for a term of 30 days, commencing October 1, 2019.

TECHNICAL DETAILS OF SPECIAL TEMPORARY AUTHORITY

Satellite Characteristics

Satellite: Hylas-1 spacecraft relocation
Orbital Location: In-orbit transit (support between 50 and 79 W.L.)

* * *

Earth Station Characteristics

Antenna: 14.2-m TIW Systems
Antenna Location: 40°38' 39.1" N / 075° 11' 27.8" W
Telecommand Uplink Frequencies:
17302.048 MHz (H/LHCP)
17305.051 MHz (H/RHCP)
Telemetry Downlink Frequencies:
11701.008 MHz (V/LHCP)
11702.808 MHz (V/RHCP)
Antenna Gain: 63.5 dBi @ 14 GHz
Antenna Power: 19.1 dBW (into the flange)
Maximum EIRP: 83.0 dBW for all carriers
EIRP Density: 23.0 dBW/4kHz
Uplink Emission: 800KF8D
Downlink Emission: 400KM2D

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Lockheed Martin Corporation-Phillipsburg
CARPENTERSVILLE, NJ
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
September 17, 2019

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1. CONCLUSIONS

An interference study considering all existing, proposed and prior coordinated microwave facilities within the coordination contours of the proposed earth station demonstrates that this site will operate satisfactorily with the common carrier microwave environment. Further, there will be no restrictions of its operation due to interference considerations.

2. SUMMARY OF RESULTS

A number of great circle interference cases were identified during the interference study of the proposed earth station. Each of the cases, which exceeded the interference objective on a line-of-sight basis, was profiled and the propagation losses estimated using NBS TN101 (Revised) techniques. The losses were found to be sufficient to reduce the signal levels to acceptable magnitudes in every case.

3. SUPPLEMENTAL SHOWING

Pursuant to Part 25.203(c) of the FCC Rules and Regulations, the satellite earth station proposed in this application was coordinated by Comsearch using computer techniques and in accordance with Part 25 of the FCC Rules and Regulations.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 09/03/2019.

Company

10Band LLC
ABC, Inc. - WPVI-TV
AT&T Corp.
Affiniti PA, LLC
Allentown, City of
American Broadcasting Companies, Inc.
Bergen, County of
Blue Blazer (DE) LLC
Blueline Communications
Boeing Company
Borough of Sayreville
Business Only Broadband, LLC
CBS Communications Services Inc
Camden County Metro Police
Camp Hill School District
Carlisle Area School District
Chevra Hatzalah Inc.
City of Jersey City
City of Lebanon Authority
Clearwire Spectrum Holdings III, LLC
Conterra Ultra Broadband, LLC
County of Hunterdon
Cumberland Valley School District
Delaware River & Bay Authority
Diocese of Camden
ECW Wireless, LLC
East Pennsboro Area School
Eastern Lancaster County School District
Electric Railroad, LLC
Entercom License, LLC
Federal Communication Commission
Federal Home Loan Bank of New York
Franklin County Dept. of Emergency Servi
Frascoigna, Carl
Freehold Township Police Department
Geodesic Networks LLC
Greater Boston Radio Inc.
Guard Insurance Group
High Voltage Communications LLC (CFN)
Highway Networks, LLC
Hispanic Information and Telecomm Netwrk

Hoboken Fire Department
 Hudson County Prosecutors Office
 J & R Electronics Inc
 Jefferson Microwave, LLC
 Lakewood Municipal Utilities Authority
 MPS Communications
 Middlesex, County of
 Mineola Union Free School District
 NBC Telemundo License Co.
 NBC Telemundo License LLC
 NEW YORK UNIVERSITY
 NW Technologies, LLC
 NYC DOT Staten Island Ferry
 Neptune Police Department
 New Cingular Wireless PCS LLC - NJ
 New Cingular Wireless PCS, LLC (NY)
 New Cingular Wireless PCS, LLC - PA
 New Jersey Public Broadcasting Authority
 New Jersey, State of -NJ Transit
 New Line Networks, LLC
 New York City Police Department
 New York City Police TARU
 New York City Transit Authority
 New York Methodist Hospital
 Nextel Comm. of The Mid-Atlantic, Inc.
 Nextel of New York, Inc.
 Northrop Grumman Systems Corp.
 Northrop Grumman Systems Corporation Inc
 Ocean County of - Div of Wireless Tech.
 Ocean, County of
 Office of Emergency Mng, City of Newark
 Pennsylvania Turnpike Commission
 Philadelphia, City of
 PhillieCo, L.P.
 Pierce Broadband, LLC
 Plymouth Township Police Department
 Port Authority of New York & New Jersey
 Pottsville Area School District
 R. Fritz Enterprises Inc
 Reading Hospital & Medical Center
 Robin Wesstrom
 Rutgers, The State University of N.J.
 Secom Net
 Sesame Workshop
 Somerset County (M.I.S.)
 Sonshine Family Television Corporation
 Sprint Spectrum L.P.
 Sprint Spectrum LP DBA Sprint PCS
 Sprintcom, Inc
 St. Joseph Medical Center
 Standard Backhaul Communications LLC
 State of New Jersey
 State of New Jersey Information Technology
 State of New York, Div of State Police
 Susquehanna Township School District
 T-Mobile License LLC

Telecom Transport Management, Inc
The Goldman Sachs Group, Inc.
Time Warner Cable New York City LLC
Total Recall Corp
Towerstream Corp.
Township of Aberdeen
Township of Lower Merion
Township of Middletown
Townsquare Media Monmouth-Ocean License
Uniti Fiber PEG, LLC
Verizon Wireless (VAW) LLC - Northern NJ
Verizon Wireless (VAW) LLC-Pennsylvania
WPHL, LLC
Weblin Holdings LLC
Weehawken, Township of
Widmo Holdings LLC
William Paterson University
Wireless Internetwork LLC
World Class Wireless, LLC
XO Communications, LLC
Xchange Telecom Corp.
Xvergent
Zen Networks, Inc
xWave Engineering LLC

4. EARTH STATION COORDINATION DATA

This section presents the data pertinent to frequency coordination of the proposed earth station that was circulated to all carriers within its coordination contours.

COMSEARCH
Earth Station Data Sheet
19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Date: 09/17/2019
Job Number: 190903COMSGE05

Administrative Information

Status TEMPORARY (Operation from 10/01/2019 to 04/01/2020)
Call Sign
Licensee Code RCASTR
Licensee Name Lockheed Martin Corporation-Phillipsburg

Site Information **CARPENTERSVILLE, NJ**

Venue Name
Latitude (NAD 83) 40° 38' 39.1" N
Longitude (NAD 83) 75° 11' 27.8" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 54.86 m / 180.0 ft

Link Information

Satellite Type Geostationary
Mode TO - Transmit-Only
Modulation Digital
Satellite Arc 4° W to 147° West Longitude
Azimuth Range 102.5° to 257.9°
Corresponding Elevation Angles 5.5° / 5.0°
Antenna Centerline (AGL) 9.14 m / 30.0 ft

Antenna Information**Transmit - FCC32**

Manufacturer TIW SYSTEMS
Model FCC STD 14.2-MET
Gain / Diameter 57.5 dBi / 14.2 m
3-dB / 15-dB Beamwidth 0.24° / 0.46°

Max Available RF Power (dBW/4 kHz) 2.5
(dBW/MHz) 26.5

Maximum EIRP (dBW/4 kHz) 60.0
(dBW/MHz) 84.0

Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%

Frequency Information**Transmit 18.0 GHz**

Emission / Frequency Range (MHz) 800KF8D / 17302.048
800KF8D / 17305.051

Max Great Circle Coordination Distance 415.5 km / 258.1 mi
Precipitation Scatter Contour Radius 262.2 km / 162.9 mi

COMSEARCH
Earth Station Data Sheet
19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values	CARPENTERSVI, NJ
Licensee Name	Lockheed Martin Corporation-Phillipsburg
Latitude (NAD 83)	40° 38' 39.1" N
Longitude (NAD 83)	75° 11' 27.8" W
Ground Elevation (AMSL)	54.86 m / 180.0 ft
Antenna Centerline (AGL)	9.14 m / 30.0 ft
Antenna Model	TIW SYSTEMS FCC STD 14.2-MET
Antenna Mode	Transmit 18.0 GHz
Interference Objectives: Long Term	-154.0 dBW/4 kHz 20%
Short Term	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power	2.5 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 18.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	3.51	102.08	-10.00	100.00
5	3.90	97.51	-10.00	100.00
10	2.91	92.51	-10.00	100.00
15	2.84	87.51	-10.00	100.00
20	2.83	82.52	-10.00	100.00
25	3.07	77.52	-10.00	100.00
30	3.44	72.52	-10.00	100.00
35	3.78	67.52	-10.00	100.00
40	3.82	62.52	-10.00	100.00
45	3.80	57.53	-10.00	100.00
50	3.59	52.54	-10.00	100.00
55	3.40	47.55	-9.93	100.00
60	3.31	42.56	-8.72	100.00
65	3.12	37.58	-7.37	100.00
70	2.88	32.61	-5.83	100.00
75	3.07	27.61	-4.03	100.00
80	3.04	22.64	-1.87	100.00
85	3.06	17.68	0.82	107.65
90	3.07	12.74	4.37	119.91
95	2.74	8.00	9.42	143.08
100	2.73	3.74	17.68	179.76
105	2.58	3.84	17.40	269.64
110	2.72	7.37	10.31	147.02
115	2.80	10.92	6.05	129.40
120	2.62	14.56	2.92	122.68
125	2.05	18.40	0.38	123.94
130	1.63	22.02	-1.57	126.51
135	2.22	24.75	-2.84	109.91
140	2.76	27.32	-3.91	100.00
145	2.31	30.46	-5.09	100.99
150	2.22	33.06	-5.98	100.00
155	1.94	35.55	-6.77	102.80
160	2.22	37.22	-7.27	100.00
165	2.67	38.33	-7.59	100.00
170	2.46	39.65	-7.95	100.00
175	1.94	40.84	-8.28	100.00
180	1.90	41.11	-8.35	100.00
185	1.86	40.92	-8.30	100.36

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values

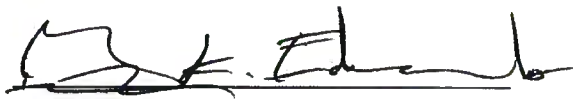
CARPENTERSVI, NJ
Licensee Name Lockheed Martin Corporation-Phillipsburg
Latitude (NAD 83) 40° 38' 39.1" N
Longitude (NAD 83) 75° 11' 27.8" W
Ground Elevation (AMSL) 54.86 m / 180.0 ft
Antenna Centerline (AGL) 9.14 m / 30.0 ft
Antenna Model TIW SYSTEMS FCC STD 14.2-MET
Antenna Mode Transmit 18.0 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power 2.5 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 18.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	1.23	40.84	-8.28	115.02
195	1.33	39.59	-7.94	113.65
200	2.37	37.09	-7.23	100.00
205	1.76	35.72	-6.82	106.80
210	1.77	33.44	-6.11	108.56
215	2.21	30.54	-5.12	102.72
220	3.42	26.81	-3.71	100.00
225	3.50	23.78	-2.41	100.00
230	4.90	19.59	-0.30	100.00
235	4.41	16.68	1.44	100.00
240	4.50	13.22	3.97	100.00
245	3.77	10.24	6.75	116.58
250	2.53	7.51	10.11	149.81
255	2.28	4.01	16.92	287.27
260	2.60	3.20	19.36	415.45
265	3.11	7.34	10.36	139.83
270	3.39	12.19	4.85	116.30
275	2.86	17.22	1.10	111.99
280	2.80	22.19	-1.65	103.51
285	3.05	27.15	-3.84	100.00
290	3.56	32.11	-5.67	100.00
295	4.21	37.09	-7.23	100.00
300	4.98	42.08	-8.60	100.00
305	5.49	47.09	-9.82	100.00
310	5.46	52.09	-10.00	100.00
315	5.57	57.09	-10.00	100.00
320	4.81	62.08	-10.00	100.00
325	3.99	67.09	-10.00	100.00
330	3.36	72.09	-10.00	100.00
335	3.16	77.09	-10.00	100.00
340	3.15	82.09	-10.00	100.00
345	3.00	87.09	-10.00	100.00
350	3.23	92.08	-10.00	100.00
355	3.48	97.08	-10.00	100.00

5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY: _____



Gary K. Edwards
Senior Manager
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: September 17, 2019