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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 180-Day LEOP STA for ABS-3A - March 2015

1. Applicant

Name:	Lockheed Martin Corporation	Phone Number:	703-413-5970
DBA Name:		Fax Number:	703-413-5908
Street:	2121 Crystal Drive Suite 100	E-Mail:	Jennifer.Warren@lmco.com
City:	Arlington	State:	VA
Country:	USA	Zipcode:	22202 -
Attention:	Ms Jennifer Warren		

2. Contact

Name:	David S. Keir	Phone Number:	(202) 429-8970
Company:	Lerman Senter PLLC	Fax Number:	(202) 293-7783
Street:	2000 K Street, NW Suite 600	E-Mail:	dkeir@lermansenter.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20006 -1809
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 CGX - Fixed Satellite Transmit/Receive Earth Station

5. Type Request

☐ Use Prior to Grant ☐ Change Station Location ☒ Other

6. Requested Use Prior Date

03/07/2015

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: Narrative	Attachment 2: Coordination Report	Attachment 3:
12. Description. Lockheed Martin Corporation requests expedited Special Temporary Authority for a 180-day period, commencing as soon as possible, to use the C-band antenna at its Carpentersville, NJ earth station (Call Sign E7541) to support post-launch/early-orbit operations TT&C for the ABS-3A satellite, which was launched on March 1, 2015. Authority to commence transmissions is needed no later than March 7, 2015, which is earlier than could be granted under the FCC's Rules and the Communications Act. Accordingly, a request for an interim 30-day STA is also being submitted contemporaneously with this STA Request. See Attached Narrative.		
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. <i>See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes.</i> <div style="text-align: right; margin-top: 5px;"> <input checked="checked" type="radio"/> Yes <input type="radio"/> No </div>		
14. Name of Person Signing Jennifer 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).		

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.

Description of Operations and Public Interest Statement

Lockheed Martin Corporation (“Lockheed Martin”) hereby requests replacement special temporary authority (“STA”) on an expedited, emergency basis to operate its Carpentersville, New Jersey C/Ku-band fixed earth station (FCC Call Sign E7541) to provide telemetry, tracking and control (“TT&C”) functions during the post-launch and early orbit phases (“LEOP”) of operation for the ABS-3A satellite. Authority for almost identical operation was previously granted to Lockheed Martin under FCC File Nos. SES-STA-20150108-00005 (30-day interim STA) and SES-STA-20150108-00004 (180-day long-term STA); however, different frequencies than authorized in those two STAs are now required for the ABS-3A LEOP operation.

ABS-3A is a Boeing Model 702SP satellite using all-electric propulsion and licensed by Papua New Guinea for operation at the 3° West Longitude orbital location (3° W.L.). It was launched on March 1, 2015 aboard a SpaceX Falcon 9 launch vehicle from Cape Canaveral, Florida, making the need for immediate LEOP authority acute.¹ Accordingly, Lockheed Martin will need to begin transmissions no later than this Saturday, March 7, 2015, well before this request for new 180-day authority can be placed on FCC Public Notice and made subject to the statutory 30-day public comment period under the FCC’s Rules and the Communications Act of 1934, as amended.² While Lockheed Martin respectfully requests that this request be placed on Public Notice at the earliest possible date, it is also filing concurrently a request for an interim 30-day STA for these same operations to allow testing and LEOP operations to commence on a timely basis in advance of grant of the longer term authority requested. This was the same approach employed in connection with the previously granted STAs.

1. Requested STA Operations

Lockheed Martin specifically seeks authority to transmit telecommand signals at the center frequencies 6420 MHz and 6425 MHz for in transit communications (in lieu of the frequencies 6020 MHz and 6025 MHz, which were previously granted), and to receive telemetry signals from the satellite on the 4194.5 MHz and 4197 MHz frequencies. Additional technical parameters for the STA operation are set forth in the table that is the final page of this attachment and in the Comsearch Frequency Coordination and Interference Analysis Report (“Comsearch Report”) that is also attached to this request. Lockheed Martin is requesting STA for a total of one-hundred and eighty (180) days commencing no later than March 7, 2015. As previously

¹ See William Harwood, “SpaceX Rocket Boosts 2 Satellites toward Orbit,” CBS News, posted March 2, 2015 (“The ABS 3A satellite was released from the Falcon 9 second stage a half hour after launch”), available at <http://www.cbsnews.com/news/spacex-flight-features-money-saving-satellite-boosting-tech/> (last visited 3/03/2015).

² As detailed below, the nature of these operations requires at least 180 days of operational authority. See 47 U.S.C. §309(c)(2)(G) (non-broadcast special temporary authorizations limited to thirty days where no application for regular operation is contemplated unless public notice is provided under Section 309(b) of the Act); 47 C.F.R. § 25.120(b)(2).

acknowledged, this duration is significantly longer than has been typical for satellite LEOP operations because the satellite employs an all-electric propulsion system. An all-electric satellite allows a much lighter payload, as heavy chemical fuel tanks are not required. The trade-off, however, is that it takes a matter of months, rather than a few weeks, for an all-electric satellite to reach its final, on-orbit operating position.³ Given this lengthy period for LEOP maneuvers, Lockheed Martin anticipates that it will require an additional STA to extend operations beyond the initial 180-day period.⁴

Lockheed Martin's proposed transmissions will use total input power and emissions for telecommand as stated in the Comsearch Report. When no commands are being sent, a CW carrier that is within the emission of Lockheed Martin's E7541 operation would be present, as provided for in its license. The authority requested in this application is very similar to that previously granted to Lockheed Martin to perform LEOP services on several previous occasions within the past two years,⁵ and almost identical to the previously-granted STAs under FCC File Nos. SES-STA-20150108-00005 and SES-STA-20150108-00004. A radiation hazard study with respect non-ionizing radiation for the antenna at higher power operation was part of Lockheed Martin's original application for this facility under FCC File No. SES-LIC-20081103-01443, and that report is hereby incorporated by reference.

All of Lockheed Martin's proposed TT&C operations in support of the ABS-3A launch will be on a strictly non-harmful interference, non-protected basis as the requested transmit frequencies do not fall fully within Lockheed Martin's current C-band authority for the Carpentersville site. Lockheed Martin designates Michael Usarzewicz to be the contact person that will be available whenever transmission to, or reception from, ABS-3A is to occur through the subject earth station. Mr. Usarzewicz can be reached at the following cell phone number: (609)-865-2658 and/or station number: (908) 859-4050.

³ See Peter B. de Selding, "Electric-propulsion Satellites Are All the Rage, Space News, June 30, 2013, available at <http://spacenews.com/35894electric-propulsion-satellites-are-all-the-rage/#sthash.xxbDwHS1.dpuf> (last visited March 3, 2015); see also Ex Parte Letter from Sam Black, Acting President, Satellite Industry Association, to Ms. Marlene Dortch, Secretary, FCC, GN Dkt No. 13-114, RM-11640, at 2 (dated Oct. 29, 2014) ("satellites with all-electric propulsion that promise to improve satellite economics – will result in LEOP operations being conducted over a period of many months (early plans indicate that the LEOP for all-electric propulsion satellites may take between 200 and 320 days)").

⁴ "The Commission may grant a temporary authorization for a period not to exceed 180 days, *with additional periods not exceeding 180 days*, if the Commission has placed the [original] special temporary authority (STA) request on public notice." 47 C.F.R. § 25.120(b)(2) (emphasis added).

⁵ See, e.g., Request of Lockheed Martin Corp. for STA to operate Carpentersville, NJ earth station in support of launch of AM4R, SES-STA-20140425-00315 (granted May 6, 2014); Request of Lockheed Martin Corp. for STA to operate Carpentersville, NJ earth station in support of launch of ABS-2, SES-STA-20140103-00005 (granted Jan. 28, 2014); Request of Lockheed Martin Corp. for STA to operate Carpentersville, NJ earth station in support of launch of Satmex 8, File No. SES-STA-20130319-00280 (granted March 22, 2013).

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

Lockheed Martin believes that the operations it proposes in support of the launch of the ABS-3A satellite are required in furtherance of the public interest. Operations have been coordinated with all potentially affected entities that operate communications systems in compliance with the Table of Frequency Allocations, and a copy of the coordination report is attached to this application. ABS-3A will be located in geostationary orbit at 3° W.L. providing C- and Ku-band capacity to connect the Americas, Europe, Africa and the Middle East. Three C-band beams will cover the Americas, the Middle East and Africa along with a global beam, and four Ku-band beams will cover Europe, the Middle East, Africa, and the Americas. The satellite will support VSAT services, TV distribution, IP trunking, cellular backhaul and maritime services.

Lockheed Martin's Carpentersville earth station will be part of a global network of control facilities that will be used to position the satellite as it progresses from transfer orbit over a period of months to its final location.⁶ 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 ABS-3A satellite is controlled while over North America; Lockheed Martin's earth station thus will serve a vital function.

* * * * *

As outlined above, Lockheed Martin requests authority to operate its Carpentersville, NJ C-band earth station antenna to provide critical TT&C services during the launch and early operations phase of the ABS-3A satellite, for a term of 180 days commencing no later than March 7, 2015.

⁶ The spacecraft will be controlled throughout the launch and transfer orbit phases by The Boeing Company, which is the manager of the LEOP portion of the mission.

Operating Parameters for Proposed Carpentersville, NJ C-Band TT&C LEOP STA

SITE NAME (or identifier):	Carpentersville, NJ – Call Sign E7541
----------------------------	---------------------------------------

Antenna Characteristics (size & gain)

Size	14.2
Antenna Manufacturer	TIW

Satellites Desired: ABS-3A LEOP

Uplink Carrier Parameters

Type of Service (Broadcast Data TTC)	TTC
Polarization:	LHCP and RHCP
Occupied Bandwidth	850 kHz
Emission Designators	850KFXD

Prepared By

COMSEARCH

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

Prepared For

**Lockheed Martin Corporation
Carpentersville, New Jersey**

Temporary Transmit-Only Earth Station
Operation Dates: 03/07/2015 - 09/07/2015

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. Verbal and written coordination was conducted with the below listed carriers on March 3, 2015.

Company

256Q Networks
AB Services LLC
ALGONQUIN GAS TRANSMISSION, LLC
AT&T Corporation
AWC Networks
Adams County Department of Emergency Svc
Affiniti PA, LLC
Allentown SMSA Limited Partnership
Appalachia Engineering Services
Appalachian Broadcasting
Atlantic City Electric Company
Auburn Data Systems, LLC
BFI Licenses, LLC
Beaver Springs Faith Baptist Church, Inc
Bedford, County of
Berks County Department of Emergency Ser
Blue Ridge Carriers
Blueline Communications
Bucks County Dept. of Emergency Communic
CNG Transmission Corporation
CONSOLIDATED EDISON COMPANY OF NEW YORK
CTAB Holdings LLC
Capital Communications of America
Carbon, County of 911 Center
Cellco Partnership - Bridgeville, PA/WV
Cellco Partnership- PA Region
Cellco Prtnrshp - Phil. Tri-State Rgn
Chester, County of
China Cat Productions LLC

Company (Continued)

City of New York
Commonwealth of Pennsylvania-Radio Proj.
Comprehensive Wireless LLC
Conterra Ultra Broadband, LLC
Converge Towers LLC
Coral Reef Technologies Ltd
Coralinks
County of Burlington, Public Safety Cntr
County of Camden
County of Fayette
County of Warren, NJ
County of York
DAUPHIN COUNTY EMERGENCY MANAGEMENT
Delaware County (PA) Emergency Services
Delaware Division of Communications
Delmarva Power and Light Company
Direct Broadcast Services, Inc.
ECW Wireless, LLC
EG Broadcast Newco Corp
EMS OF NORTHEAST PENNSYLVANIA
Eastern MLG LLC
Eastern Pennsylvania EMS Council
Electric Railroad, LLC
Essex County Sheriff's Office (NJ)
Exelon Generation Company, LLC
FELHC, INC
Federal Communications Commission
Fundamental Broadcasting LLC
Garden State Transmissions
Geodesic Networks LLC
Gloucester, County of
Green Line Networks
Greene, County of (PA)
Hardy Cellular Telephone Company
High Voltage Communications LLC
Highway Networks, LLC
Huntingdon, County of
Jefferson Microwave, LLC
Juniata County Emergency Services
Kryptick Technologies
Lackawanna, County of
Lancaster County-Wide Communications
Luzerne County Department of Public Sfty
MONMOUTH, COUNTY OF
MVC Research. LLC
Mahwah Communications
Maryland Public Broadcasting Commission
Mifflin Mobilecom
Monroe County Control Center (PA)
Montgomery County Of
Morris, County of

Company (Continued)

Nassau County Police Department
National Tower Company LLC
NeXXCom Wireless LLC
New Cingular Wireless PCS LLC -NJ
New Cingular Wireless PCS - Maryland
New Cingular Wireless PCS LLC- WV/NC/SC
New Cingular Wireless PCS LLC-DE/NH/RI
New Cingular Wireless PCS of PA LLC
New Cingular Wireless PCS, LLC - PA
New Jersey State Police
New Jersey Transit Rail Operations, Inc.
New Jersey Turnpike Authority-Pkwy Div
New Jersey, State of -NJ Transit
New York, City of (Police Department)
Norfolk Southern Railway
Northeast Pennsylvania SMSA LTD Prtnrsh
Northumberland, County of
OCEAN, COUNTY OF
Ocean, County of - Div of Wireless Tech.
Office of Emergency Telecom Services, NJ
Old Dominion LLC
Orange Poughkeepsie SMSA LTD Partnership
Orange and Rockland Utilities, Inc.
PEG Bandwidth, LLC
PSEG Services Corporation
Peco Energy Company
Penn Service Microwave Co., Inc.
Pennsylvania Turnpike Commission
Pike, County of PA
Pitt Power
Pittsburgh SMSA Limited Partnership
Port Authority of New York & New Jersey
Qoncept Holdings LLC
Rendezvous Communications LLC
SCS Networks
SCTF NET
SOMERSET COUNTY
SW Networks
State of Maryland, MIEMSS
Stevens Institute of Technology
Texas Eastern Communications, LLC
Thought Transmissions, LLC
Transwave Communication Systems, Inc.
Turtle Networks 6559
Turtle Networks 6562
USCOC of Cumberland, Inc.
USOC of Pennsylvania RSA No 10 B2 Inc.
Velox Networks LLC
Verizon Wireless (VAW) LLC - Delaware/NJ
Verizon Wireless (VAW) LLC - Maryland
Verizon Wireless (VAW) LLC-Pennsylvania

Company (Continued)

Virginia Electric & Power Company
WITF Inc.
WYOMING, COUNTY OF
Weblin Holdings LLC
Wireless Internetwork LLC
World Class Wireless, LLC
YAB Mobile
Zen Networks, Inc
iSignal

There are no unresolved interference objections with the stations contained in these applications.

The following 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: 03/04/2015
Job Number: 150303COMSJC03

Administrative Information

Status	TEMPORARY (Operation from 03/07/2015 to 09/07/2015)
Call Sign	TEMP09
Licensee Code	RCASTR
Licensee Name	Lockheed Martin Corporation

Site Information **CARPENTERSVILLE, NEW JERSEY**

Venue Name	
Latitude (NAD 83)	40° 38' 39.4" N
Longitude (NAD 83)	75° 11' 27.6" 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**

Manufacturer	TIW
Model	14.2 Meter
Gain / Diameter	57.5 dBi / 14.2 m
3-dB / 15-dB Beamwidth	0.20° / 0.50°

Max Available RF Power	(dBW/4 kHz)	7.2
	(dBW/MHz)	31.2

Maximum EIRP	(dBW/4 kHz)	64.7
	(dBW/MHz)	88.7
	(dBW)	88.0

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

Frequency Information**Transmit 6.1 GHz**

Emission / Frequency Range (MHz)	850KFXD / 6420.0
	850KFXD / 6425.0

Max Great Circle Coordination Distance	566.1 km / 351.7 mi
Precipitation Scatter Contour Radius	434.7 km / 270.1 mi

COMSEARCH

Earth Station Data Sheet

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(703)726-5500 <http://www.comsearch.com>

Coordination Values	CARPENTERSVILLE, NJ
Licensee Name	Lockheed Martin Corporation
Latitude (NAD 83)	40° 38' 39.4" N
Longitude (NAD 83)	75° 11' 27.6" W
Ground Elevation (AMSL)	54.86 m / 180.0 ft
Antenna Centerline (AGL)	9.14 m / 30.0 ft
Antenna Model	TIW 14.2 Meter
Antenna Mode	Transmit 6.1 GHz
Interference Objectives: Long Term	-154.0 dBW/4 kHz 20%
Short Term	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power	7.2 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	3.52	102.08	-10.00	100.00
5	4.01	97.51	-10.00	100.00
10	4.15	92.51	-10.00	100.00
15	2.87	87.51	-10.00	108.36
20	2.87	82.52	-10.00	108.42
25	3.07	77.52	-10.00	104.78
30	3.50	72.52	-10.00	100.00
35	3.79	67.52	-10.00	100.00
40	3.82	62.52	-10.00	100.00
45	3.86	57.53	-10.00	100.00
50	3.66	52.53	-10.00	100.00
55	3.45	47.54	-9.93	100.00
60	3.33	42.56	-8.72	104.82
65	3.16	37.57	-7.37	112.99
70	2.88	32.61	-5.83	124.18
75	3.16	27.60	-4.02	125.69
80	3.14	22.63	-1.87	133.98
85	3.07	17.67	0.82	145.02
90	3.08	12.74	4.37	162.01
95	2.95	7.93	9.52	192.78
100	2.73	3.74	17.67	240.61
105	2.74	3.71	17.75	368.41
110	2.60	7.45	10.20	203.67
115	2.77	10.94	6.02	179.26
120	2.69	14.50	2.96	163.75
125	2.32	18.20	0.50	160.32
130	1.61	22.03	-1.57	171.33
135	2.18	24.78	-2.85	148.08
140	2.74	27.34	-3.92	133.78
145	2.33	30.44	-5.09	135.93
150	2.25	33.04	-5.98	134.18
155	1.92	35.57	-6.78	137.91
160	2.20	37.24	-7.28	131.46
165	2.65	38.35	-7.59	121.70
170	2.47	39.64	-7.95	123.79
175	1.94	40.84	-8.28	133.10
180	1.90	41.11	-8.35	133.62

COMSEARCH

Earth Station Data Sheet

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Coordination Values	CARPENTERSVILLE, NJ	
Licensee Name	Lockheed Martin Corporation	
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Antenna Mode	Transmit 6.1 GHz	
Interference Objectives: Long Term	-154.0 dBW/4 kHz	20%
Short Term	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power	7.2 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
185	1.86	40.92	-8.30	133.67
190	1.24	40.83	-8.27	150.23
195	1.32	39.60	-7.94	149.37
200	2.35	37.10	-7.24	128.68
205	1.72	35.75	-6.83	142.81
210	1.78	33.44	-6.11	144.38
215	2.16	30.58	-5.14	139.18
220	3.42	26.81	-3.71	122.18
225	3.60	23.70	-2.37	123.93
230	4.84	19.63	-0.32	113.44
235	4.35	16.73	1.41	126.85
240	4.47	13.24	3.95	134.19
245	3.78	10.22	6.76	158.23
250	2.48	7.55	10.05	205.66
255	2.26	4.02	16.89	393.03
260	2.60	3.21	19.35	566.09
265	3.20	7.32	10.39	191.75
270	3.30	12.21	4.84	159.38
275	2.81	17.22	1.10	151.78
280	2.82	22.19	-1.65	139.71
285	3.08	27.15	-3.84	127.86
290	3.59	32.11	-5.67	112.00
295	4.24	37.09	-7.23	100.00
300	5.02	42.08	-8.60	100.00
305	5.51	47.09	-9.82	100.00
310	5.46	52.09	-10.00	100.00
315	5.56	57.09	-10.00	100.00
320	4.72	62.08	-10.00	100.00
325	3.93	67.09	-10.00	100.00
330	3.38	72.09	-10.00	100.00
335	3.19	77.09	-10.00	102.55
340	3.12	82.09	-10.00	103.84
345	3.01	87.09	-10.00	105.90
350	3.24	92.08	-10.00	101.54
355	3.48	97.08	-10.00	100.00

Certification

I hereby certify that I am the technically qualified person responsible for the preparation of the frequency coordination data contained in this report. I am familiar with Parts 101 and 25 of the FCC Rules and Regulations and I have either prepared or reviewed the frequency coordination data submitted with this report, and that it is complete and correct to the best of my knowledge and belief.



Jeffrey E. Cowles
Engineer III, Telecommunications
COMSEARCH
19700 Janelia Farm Blvd.
Ashburn, Virginia 20147

DATED: March 4, 2015