

Description of Operations and Public Interest Statement

Lockheed Martin Corporation (“Lockheed Martin”) hereby requests special temporary authority (“STA”) 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. 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 is currently scheduled for launch on February 16, 2015 aboard a SpaceX Falcon 9 launch vehicle from Cape Canaveral, Florida.¹ Accordingly, Lockheed Martin would likely need to begin test transmissions in preparation for the launch on or about February 9, 2015.² Due to the need to place this request on FCC Public Notice and solicit public comment prior to grant under the FCC’s Rules and the Communications Act of 1934, as amended,³ Lockheed Martin respectfully requests that this request be placed on Public Notice at the earliest possible date. However, as insufficient time remains prior to launch to allow complete processing of this 180-day STA Request by February 9, 2015, Lockheed Martin 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 here.

1. Requested STA Operations

Lockheed Martin specifically seeks authority to transmit telecommand signals at the center frequencies 6020 MHz and 6025 MHz for in transit communications, 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 February 9, 2015. This duration is 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

¹ See Stephen Clark, “Cargo flight first of many SpaceX launches planned for 2015,” Spaceflight Now, posted on January 6, 2015 (“In mid-February, a Falcon 9 rocket will launch from Florida with two Boeing-built communications satellites [Eutelsat 115 West B and ABS-3A] — the first spacecraft to use all-electric propulsion to reach their operational posts 22,300 miles above Earth’s equator”), available at <http://spaceflightnow.com/2015/01/06/cargo-flight-first-of-many-spacex-launches-planned-for-2015/>.

² The test transmissions that would begin on or about February 9th would occur over a period of approximately three to five days. During these tests, the earth station would not be communicating with any satellite; instead, the transmissions will be made with the antenna at zenith to verify RF functionality.

³ 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).

chemical fuel tanks are not required. The trade-off, however, is that it takes a matter of months, rather than a couple of weeks, for an all-electric satellite to reach its final, on-orbit operating position.⁴ 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.⁵

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. With the exception of the duration of the STA, 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.⁶ 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 are not included in 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.

⁴ 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-range/#sthash.xxbDwHS1.dpuf> (last visited December 16, 2014); 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)").

⁵ "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).

⁶ 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.⁷ 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.

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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 February 9, 2015.

⁷ 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
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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