Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Request of RBC Signals LLC for 30-Day Special Temporary Authorization To Operate an Earth Station To Provide Tracking, Telemetry & Command Services	))))	Call Sign: File No.: SES-STA-_____

Expedited Consideration Requested

REQUEST FOR SPECIAL TEMPORARY AUTHORIZATION

RBC Signals LLC ("RBC Signals"), pursuant to Section 25.120 of the Commission's rules, 47 C.F.R. § 25.120, respectfully seeks a 30-day special temporary authorization ("STA") to operate two (2) M2 Antenna Systems Yagi antennae (the "400 MHz Yagi") at an existing site in Deadhorse, Alaska, commencing as early as November 27, 2019 or otherwise as soon as possible, to support operation of Analytical Space, Inc.'s ("ASI") recently launched U.S.-licensed non-geostationary satellite orbit ("NGSO") Meshbed experimental cubesat.[1] The 400 MHz Yagi will perform tracking, telemetry and command ("TT&C") for housekeeping, orientation and subsystem control in the 401.24-401.36 MHz band (Earth-to-space/space-to-Earth).

This STA will further serve the public interest by enabling reliable TT&C support for Meshbed when the U.S.-licensed satellite passes over the Earth at northern latitudes inaccessible

[1] *See* Analytical Space, Inc., File No. 0306-EX-ST-2019, Call Sign WO9XBG ("*Meshbed Experimental License*"). RBC Signals notes that the *Meshbed Experimental License* expires on December 2, 2019, and, following its expiration, the Meshbed cubesat will operate pursuant to File No. 1560-EX-ST-2019 Call Sign WO9XBG ("*Meshbed Renewal Application*"). *See also* https://www.analyticalspace.com/meshbed (Meshbed overview) and https://www.nasaspaceflight.com/2019/11/indias-pslv-cartosat-3-launch/ (reporting successful launch earlier today).

to the existing ground station in Windham, New York.[2] RBC Signals has concurrently filed a request for 30-day STA to provide back-up TT&C support from its existing site Fairbanks, Alaska, if needed.

I. BACKGROUND

RBC Signals is a Seattle, Washington-based company that provides earth station services around the world. RBC Signals has held multiple STAs to provide similar TT&C support for various NGSO satellite missions using the 400 MHz Yagi (Model 400CP30A), including to conduct TT&C operations from the subject Deadhorse location to support comparable cubesat missions.[3] RBC Signals also has existing temporary authority for identical operations to support Meshed from a site in Windham, New York.[4] The authority sought herein is identical to the TT&C operations in the *Windham STA* and will allow RBC Signals to provide more comprehensive launch and support for ASI's Meshbed cubesat.[5]

The *Meshbed Experimental License* authorizes ASI to analyze the technical feasibilities of its next-generation Meshbed experimental satellite, which was developed by ASI to test and evaluate the capabilities of its innovative wideband phased array antenna system. Although RBC Signals can effectively deliver TT&C support under the *Windham STA* from a location in upstate New York,

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[2] *See* RBC Signals, LLC, File No. SES-STA-20180816-02235 ("*Windham STA")*. RBC Signals has also filed a 180-day STA to permit ongoing TT&C support from the Windham location.

[3] *See, e.g.,* RBC Signals, LLC, File Nos. SES-STA-20180807-02129 (providing TT&C support for the 3 Diamonds mission) and SES-STA-20190129-00053 (providing TT&C support for the SpaceQuest mission).

[4] *See Windham STA*.

[5] The maximum orbital lifetime of the Meshbed cubesat (approximately 24 months), does not warrant regular earth station operating authority (*i.e.*, a 15-year license). RBC Signals reserves the right to request an extension of this STA as necessary to support the Meshbed mission, and acknowledges it can provide TT&C support only for as long as ASI is authorized to operate the Meshbed cubesat.

this authorization will provide ASI with a reliable TT&C facility in the northwestern the United States, thus ensuring the cubesat can be controlled when it is out of view of the Windham ground station, which is particularly important during the launch phase of the mission. As described in the *Meshbed Experimental License* Technical Description, ASI is relying on RBC Signals to provide TT&C support, which is critical to the success of the mission.

RBC Signals provides the attached draft FCC Form 312 Schedule B and radiation hazard analysis for additional information relating to its proposed earth station operations. To the extent applicable, RBC Signals incorporates by reference the satellite technical specifications and mission overview information in the *Meshbed Experimental License* and pending *Meshbed Renewal Application* and will perform the proposed TT&C operations consistent with the terms and conditions imposed by the Commission.

II. DISCUSSION

Consistent with its existing operations at the Windham site, RBC Signals seeks to operate the 400 MHz Yagi with the Meshbed cubesat in the 401.24-401.36 MHz band (Earth-to-space/space-to-Earth). RBC Signals' TT&C operations will be conducted on an unprotected and non-interference basis. Following launch, the 400 MHz Yagi will be operated only as needed to communicate with the Meshbed satellite as it passes over the Deadhorse site (between one and six times per day for brief periods of approximately 10 minutes).

The proposed TT&C operations are identical to the TT&C operations currently authorized by the Commission at Windham and will be conducted in compliance with the terms and conditions in the *Windham STA*, to the extent applicable. Furthermore, RBC has been granted numerous STAs

for use of 400 MHz frequencies in Alaska since 2017 and is unaware of any interference incidents related to its limited TT&C support operations.[6]

RBC Signals will work with Commission staff to ensure that these temporary operations will not increase the potential interference to current or future government users, and will coordinate with NASA, NOAA and other U.S. government agencies to ensure that the limited TT&C operations proposed herein are compatible with government operations and that the interests of the United States are fully accommodated.

A. TT&C Spectrum Use

The United States Table of Frequency Allocations, Section 2.106 of the Commission's rules, 47 C.F.R. § 2.106, provides that the 401-402 MHz band is shared on a co-primary basis between meteorological aids (Earth-to-space) and space operations services (space-to-Earth). RBC Signals seeks to perform TT&C downlink operations in frequencies from 401.24-401.36 MHz consistent with the co-primary space operations allocation in this band,[7] and TT&C uplink operations in the band as a non-conforming use (*i.e.*, on an unprotected, non-interference basis).

RBC Signals understands that there are certain U.S. government meteorological aids and Earth exploration operations conducted in the 401-402 MHz band.[8] RBC Signals will operate on an unprotected, non-interference basis to Federal users and, if it learns that its operations are causing harmful interference to other Federal operations, it will suspend or modify its operations to resolve

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[6] *See, e.g.*, File Nos. SES-STA-20170731-00848, SES-STA-20171213-01333, SES-STA-20181109-03203.

[7] *See* 47 C.F.R. § 2.1 (defining "space operations" as "a radiocommunication service concerned exclusively with the operation of spacecraft, in particular space tracking, space telemetry, and space telecommand.").

[8] *See* https://www.ntia.doc.gov/files/ntia/publications/compendium/0401.00-0402.00_01MAR14.pdf.

such interference.[9] Moreover, RBC Signals has not identified any non-federal, co-frequency operations within an approximately 500 mile radius of the Deadhorse, Alaska site and believes its TT&C operations in this band will not present a potential for interference into other authorized spectrum users. Although RBC Signals is not aware of any interference cause by previously approved operations in the band, it remains in consultation with relevant Federal agencies regarding these issues and will abide by additional conditions that the Commission imposes to address any concerns.

B. STA Request and Public Interest Considerations

RBC Signals respectfully requests this 30-day STA pursuant to Section 25.120 of the Commission's rules, 47 C.F.R. § 25.120, and seeks to commence operations at the earliest possible time. A 30-day STA is appropriate because RBC Signals does not plan to file an application for regular authority for the subject TT&C operations because the short-term length of the mission does not warrant a long-term commercial earth station license (*i.e.*, a 15-year term). RBC Signals has concurrently filed a 30-day STA for identical operations from a back-up facility in Fairbanks, Alaska, which will only be used in the event that Deadhorse due to unforeseen issues (*e.g.*, freezing or other environmental factors).

Although RBC Signals seeks potential grant and commencement of operations less than three (3) working days from submission of this STA request, extraordinary circumstances exist for the Commission to grant this request. In particular, the critical need for TT&C support from a northwestern United States to effectively support Meshbed operations, along with the *de minimis* potential for interference from operations similar or identical to those previously authorized by the

[9] NOAA has previously raised concerns regarding potential interference to meteorological satellite operations. Although RBC Signals is not aware of any interference cause by previously approved operations in the band, it will remain in consultation with NOAA regarding these issues and will abide by additional post-grant restrictions or conditions that the Commission imposes to address NOAA's concerns.

Commission, present compelling reasons in support of near-term grant. Given the unique circumstances here, including the previously authorized operations in the 401-402 MHz band at the Deadhorse, Alaska site, STA authority for immediate TT&C from this site for the Meshed satellite is warranted.

Grant of this STA request is in the public interest because it will ensure that RBC Signals is able to provide comprehensive TT&C during launch and deliver ongoing support for the Meshbed satellite to more effectively assist ASI in demonstrating the significant benefits of its next-generation wideband panel antenna technology. Moreover, the requested STA will support ASI's experimental authorization and ensure that the Meshbed cubesat has access to reliable ground station services during the life of the mission.

III. CONCLUSION

In view of the foregoing, the public interest would be served by grant of a 30-day STA to allow RBC Signals to provide TT&C launch and mission support for the Meshbed cubesat from Deadhorse, Alaska, commencing at the earliest possible time.