Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Request of RBC Signals LLC for 180-Day Special Temporary Authorization To Operate an Earth Station To Provide Tracking, Telemetry & Command Services	))))	Call Sign: File No.: SES-STA-_____

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 180-day special temporary authorization ("STA") to operate two (2) M2 Antenna Systems Yagi antennae (the "400 MHz Yagi") at a site in Windham, New York. The 400 MHz Yagi will communicate with Analytical Space, Inc.'s ("ASI") proposed Meshbed experimental cubesat[1] to 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). RBC Signals seeks to commence these TT&C operations upon launch of the satellite, currently scheduled for December 1, 2018.[2] The proposed operations will ensure the timely initiation of TT&C operations following the satellite's launch and thus will strongly serve the public interest.

I. BACKGROUND

RBC Signals is a Seattle, Washington-based satellite services company that provides earth station services around the world. RBC Signals currently holds multiple STAs to provide similar TT&C support for various non-geostationary satellite orbit ("NGSO") cubesats using the 400 MHz

[1] *See* Analytical Space, Inc., File No. 0585-EX-CN-2018 ("*Meshbed Experimental Application*").

[2] In the event of a launch date change, RBC Signals reserves the right to update this application to ensure that the STA commencement date is consistent with the Meshbed launch.

Yagi (Model 400CP30A),[3] including to conduct TT&C operations from Windham to support ASI's Radix cubesat mission.[4] The authority sought herein is identical to the TT&C operations currently authorized in the *Radix STA* and will allow RBC Signals to support ASI's Meshbed mission.[5]

The Meshbed experimental cubesat was developed by ASI to test and evaluate the capabilities of its innovative wideband phased array antenna system. The Meshbed cubesat is currently the subject of an experimental license application with the Commission to allow ASI to analyze the technical feasibilities of its next-generation antenna technology.[6] Here, RBC Signals seeks authority to provide TT&C functions following the Meshbed launch on December 1, 2018 as a secondary payload aboard a Polar Satellite Launch Vehicle ("PSLV") operated by the Indian Space Research Organization ("ISRO").[7] The Meshbed cubesat will be deployed once the PSLV reaches orbit into a nominal 550 km circular orbit and will operate at an inclination from the equator of approximately 97.6°. As described in the *Meshbed Experimental Application* Technical Description, ASI is relying on RBC Signals to provide TT&C support, which is critical to the success of the mission.

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[3] *See, e.g.*, RBC Signals, LLC, File No. SES-STA-20180605-00993 (60-Day STA to provide TT&C support for the 3 Diamonds mission from Deadhorse, Alaska).

[4] *See* RBC Signals, File No. SES-STA-20180719-01877 ("*Radix STA")*. The *Radix STA* is an extension of RBC Signal's original 30-day STA for identical operations. *See* File No. SES-STA-20180430-00416 (expired on July 22, 2018).

[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.

[6] *Supra* n.1.

[7] *Id.*, Technical Description.

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 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, and only as-needed to communicate with the Meshbed satellite as it passes over the Windham earth station (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 *Radix STA*, to the extent applicable.[8] 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 ("Table of 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

[8] RBC Signals notes that Condition 5 in the *Radix STA* regarding limiting transmissions towards the International Space Station ("ISS") during extravehicular activities ("EVAs") is not applicable to the operations proposed herein. Meshbed will operate in an orbit with greater separation from the ISS orbit (at an inclination angle of approximately 97.6°), well above the ISS inclination angle of 51.6°).

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,[9] 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.[10] 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 such interference.[11] Moreover, RBC Signals has not identified any non-federal, co-frequency operations within a 40 km radius of the Windham, New York 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 post-grant restrictions or conditions that the Commission imposes to address any concerns.

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[9] *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.").

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

[11] NOAA has 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 remains 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.

B. STA Request and Public Interest Considerations

RBC Signals respectfully requests this 180-day STA pursuant to Section 25.120 of the Commission's rules, 47 C.F.R. § 25.120, and seeks to commence operations on December 1, 2018, the planned launch date of the Meshbed satellite. This should afford sufficient time for public notice and Commission consideration of this application. Due to the short-term nature of the Meshbed mission, RBC Signals does not anticipate filing a regular earth station license application to support Meshbed from the Windham location.

Grant of this STA request is in the public interest because it will ensure that RBC Signals is able to provide TT&C for launch and operation of the Meshbed satellite and 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 prior to the satellite's launch. Further, because the satellite is not scheduled for launch until December 1, 2018, the Commission may impose additional, post-grant restrictions or conditions on the proposed TT&C operations to the extent any unanticipated issues arise. RBC Signals agrees to abide by any such additional conditions.

III. CONCLUSION

In view of the foregoing, the public interest would be served by grant of a 180-day STA to allow RBC Signals to provide TT&C support for the Meshbed cubesat, commencing on December 1, 2018.