Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Request of RBC Signals LLC for a 180-Day Special Temporary Authorization To Provide Tracking, Telemetry & Command to a U.S.-Licensed Satellite	))))	Call Sign: File No.: SES-STA-_____

REQUEST FOR 180-DAY 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 extension of its existing special temporary authorization ("STA").[1] RBC Signals seeks to continue to operate a M2 Antenna Systems Yagi antenna (the "400 MHz Yagi") at a facility in Fairbanks, Alaska to communicate with a U.S.-licensed low-Earth orbit ("LEO") satellite – Analytical Space, Inc.'s ("ASI") Radix experimental cubesat – to provide backup tracking, telemetry and command ("TT&C") in the 401.24-401.36 MHz band (Earth-to-space/space-to-Earth). RBC Signals seeks this 180-day STA to ensure continuing authority for backup TT&C functions for the Radix mission from the Fairbanks location.

I. BACKGROUND

RBC Signals is a Seattle, Washington-based satellite services company that provides earth station services around the world. RBC Signals previously conducted similar TT&C operations from the Fairbanks facility,[2] and the site is currently used to provide TT&C support for experimental

[1] *See* RBC Signals, LLC, File Nos. SES-STA-20180312-000206 (expires on Sept. 10, 2018) ("*Fairbanks STA*").

[2] *See* RBC Signals, LLC, File Nos. SES-STA-20171015-01165.

cubesat operations in the 401-402 MHz band.[3] In addition, RBC Signals holds multiple STAs to provide TT&C support for various LEO cubesats, including for the Radix mission from a site in Windham, New York.[4] The Radix cubesat was deployed from the International Space Station ("ISS") on July 11, 2018 into a nominal 400 km circular orbit with an inclination of approximately 51.6°. The Radix satellite operations were recently authorized by the Commission to demonstrate ASI's optical data relay network technology.[5]

For information on the proposed ground station operations, RBC Signals incorporates by reference the draft FCC Form 312 Schedule B and radiation hazard analysis provided with the *Fairbanks STA* application. Moreover, to the extent applicable, RBC Signals incorporates by reference the satellite technical specifications and mission overview information previously provided by ASI in the *Radix Experimental STA* application, and will perform the proposed TT&C operations consistent with the terms and conditions imposed by the Commission in the *Radix Experimental STA* and *Fairbanks STA*. RBC Signals has identified the Fairbanks site as a viable secondary ground station location to support the Radix mission, and plans to provide as-needed backup TT&C functions for the Radix cubesat from the site. Accordingly, RBC Signals files this 180-day STA extension of the *Fairbanks STA* to ensure appropriate longer-term authority during the Radix mission.[6]

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[3] *See* Astranis Space Technologies Corp, File No. 1624-EX-ST-2017, Call Sign WL9XAF.

[4] *See* RBC Signals LLC, File No. SES-STA-20180430-00416 (grant reissued with an effective date of June 22, 2018) ("*Windham STA*").

[5] *See* Analytical Space, Inc., File No. 0044-EX-ST-2017, Call Sign WL9XLY ("*Radix Experimental STA")* (expires Dec. 2, 2018).

[6] The anticipated expiration of the *Radix Experimental STA*, and the maximum orbital lifetime of the Radix cubesat (approximately 1.27 years), do not warrant regular commercial authority (i.e., a 15-year license). RBC Signals notes that the requested 180-day STA period may extend beyond the *Radix Experimental STA* period, but that ASI could potentially seek an extension of its experimental authority. RBC Signals acknowledges it can provide TT&C support for the Radix

II. DISCUSSION

RBC Signals seeks to operate the 400 MHz Yagi with the Radix cubesat in the 401.24-401.36 MHz band (Earth-to-space/space-to-Earth) pursuant to the terms of the *Fairbanks STA*, which includes a Condition 4 addressing transmissions towards the International Space Station ("ISS"). As the Commission is aware, RBC Signal is coordinating closely with the National Aeronautics and Space Administration ("NASA") and the National Oceanic and Atmospheric Administration ("NOAA") to ensure its TT&C operations do not cause interference to U.S. government users of the band.[7] Moreover, RBC Signals will continue to work with FCC, NASA, NOAA and other U.S. government agencies to ensure that the proposed operations create no potential for interference to current or future government users 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 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,[8] and TT&C

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mission only for as long as ASI is authorized to operate the Radix cubesat, and reserves the right to request an additional extension of temporary authority should ASI's experimental authority be extended.

[7] *See, e.g.*, Letter to Marlene H. Dortch, "RBC Signals – Section 1.65 Submission, File No. SES-STA-20180430-00416", filed on June 18, 2018 (agreeing with NASA to cease radio line-of-sight transmissions from the Windham site towards the ISS during extravehicular activities ("EVAs")).

[8] *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.").

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.[9] Specifically, NASA raised concerns relating to ground station interference to equipment used during EVAs on the ISS. Thus, RBC Signals and NASA agreed to Condition 4 in the *Fairbanks STA*, which now states that the radio line-of-sight transmissions from the Windham site towards the ISS cannot occur *while any EVA is taking place*.[10] In addition to continuing to adhere to Condition 4, RBC Signals agrees to abide by additional post-grant restrictions or conditions that the Commission imposes, to the extent any unanticipated issues arise.

In addition, 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. In any event, 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.

B. STA Request & 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. Section 25.120(a) provides that STA requests should be filed at least three working days prior to the date of commencement of the proposed operations.

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

[10] RBC Signals is to be notified of scheduled EVAs so that transmission towards the ISS in the subject band can be suppressed during these periods. *See Fairbanks STA*, Condition 4.

Here, RBC Signals seeks grant and operation under the 180-day STA consistent with the Commission's processing rules, which includes a 30-day public notice period for this STA request. Pursuant to Commission rules and precedent, RBC Signals understands that this timely filed extension request will effectively extend its current temporary authority until the Commission acts on the instant request, affording sufficient time for it to be placed on public notice and enabling RBC Signals to continue to support the Radix mission in the interim.[11]

RBC Signals has been operating the 400 MHz Yagi with the Radix from Fairbanks, Alaska on a temporary basis with no reported instances of interference. RBC Signals believes that these temporary operations can continue to be conducted on a non-interference basis, and it has no basis to conclude otherwise. Thus, the Commission can grant a limited extension of operating authority as requested herein.

Grant of this STA request is in the public interest because it will allow RBC Signals to provide secondary ground station support for the Radix mission, ensuring it is able to provide effective and safe TT&C support for the mission. In turn, this will allow RBC Signals to reliably assist ASI in demonstrating the significant benefits of its satellite communication technology. As noted, RBC Signals agrees to abide by additional post-grant restrictions or conditions that the Commission imposes, to the extent any unanticipated issues arise. RBC Signals acknowledges that any action on the requested STA will not affect the Commission's ultimate determination with respect to any future application for further earth station operating authority.

[11] *See* 47 C.F.R. §§ 25.120 & 25.163(b); Administrative Procedure Act § 9(b). *See also* 47 C.F.R. §1.955(b); *In the Matter of Marc D. Sobel Application for Consent to Assign the License for Conventional 800 MHz SMR Station KKT934, Montrose, California*, Memorandum Opinion & Order, FCC 05-90, ¶¶ 2 & 6; Intelsat License LLC, File Nos. SAT-STA-20171016-00139 (30-day STA to drift and operate Intelsat 16 in TT&C frequencies) and SAT-STA-20171016-00140 (180-day extension of 30-day STA operations).

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 continue to provide backup TT&C support for the Radix cubesat mission from the Fairbanks, Alaska location.