File # SES-STA-20181115-03265

Call Sign N/A Grant Date 11/27/2018
(or other identifier)

Term Dates
From 11/27/2018 To: 1/26/2019

GRANTED
International Bureau

Approved:

Applicant: RBC Signals LLC
IBFS File Number: SES-STA-20181115-03265
Call Sign(s): Not Applicable

RBC Signals LLC is granted special temporary authority for 60 days beginning November 27, 2018 to operate two 2.4 meter Yagi antennas located at its Deadhorse, AK earth station located at 70° 12' 42.9" N, 148° 26' 15.2" W, to provided telemetry, tracking, and command support for the BRIO (Call Sign WJ2XPE) and the THEA (Call Sign WJ2XNV) non-geostationary satellite orbit (NGSO) cubesats in the 97.5° inclined 575 km x 575 km orbit on center frequencies: 399.95 MHz (Earth-to-space) and 400.575 MHz (space-to-Earth) under the following conditions.

1. Operations must comply with the earth station operational parameters authorized in the Experimental Licensing System authorizations for the BRIO (WJ2XPE) and the THEA (WJ2XNV) NGSO cubesats.

2. Operations, shall not cause harmful interference to or claim protection from other lawfully operating stations and it shall cease transmission(s) immediately upon notice of such interference.

3. In the event of any harmful interference under this grant of STA, RBC Signals LLC must cease operations immediately upon notification of such interference, and must inform the Commission, in writing, immediately of such an event.

4. The occupied bandwidth of any transmission shall not exceed the bandwidth of the 399.90-400.05 MHz band.

5. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future RBC Signals LLC or SpaceQuest, Ltd. applications.

6. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at RBC Signals LLC's risk.

This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. §0.261, and is effective immediately.

Approved by OMB
3060-0678

Date & Time Filed:
File Number: ---
Callsign/Satellite ID:

APPLICATION FOR EARTH STATION AUTHORIZATIONS FCC 312 MAIN FORM FOR OFFICIAL USE ONLY	FCC Use Only

APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
Draft form for 60-day STA request to provide TT&C for BRIO and THEA from Deadhorse.

1-8. Legal Name of Applicant

Name:	RBC Signals, LLC	Phone Number:	404-803-7734
DBA Name:		Fax Number:	
Street:	2205 152nd Ave NE	E-Mail:	crichins@rbcsignals.com
City:	Redmond	State:	WA
Country:	USA	Zipcode:	98052 -
Attention:	Mr Christopher Richins		

9-16. Name of Contact Representative

Name:	Carlos M. Nalda	Phone Number:	5713325626
Company:	LMI Advisors	Fax Number:	
Street:	2550 M. Street, NW, Ste. 320	E-Mail:	cnalda@lmiadvisors.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20037-
Attention:	Mr. Carlos Nalda	Relationship:	Other

CLASSIFICATION OF FILING

17. Choose the button next to the classification that applies to this filing for both questions a. and b. Choose only one for 17a and only one for 17b.

a.
◉ a1. Earth Station
(N/A) a2. Space Station

b.
◉ b1. Application for License of New Station
○ b2. Application for Registration of New Domestic Receive-Only Station
(N/A) b3. Amendment to a Pending Application
(N/A) b4. Modification of License or Registration
(N/A) b5. Assignment of License or Registration
(N/A) b6. Transfer of Control of License or Registration
(N/A) b7. Notification of Minor Modification
(N/A) b8. Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite
(N/A) b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States
○ b10. Other (Please specify)
○ b11. Application for Earth Station to Access a Non-U.S.satellite Not Currently Authorized to Provide the Proposed Service in the Proposed Frequencies in the United States.

17c. 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):

17d.

Fee Classification BAX - Fixed Satellite Transmit/Receive Earth Station

18. If this filing is in reference to an existing station, enter: (a) Call sign of station:	19. If this filing is an amendment to a pending application enter: (a) Date pending application was filed:	(b) File number of pending application:
Not Applicable	Not Applicable	Not Applicable

TYPE OF SERVICE

20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Select all that apply:

☐ a. Fixed Satellite
☐ b. Mobile Satellite
☐ c. Radiodetermination Satellite
☐ d. Earth Exploration Satellite
☐ e. Direct to Home Fixed Satellite
☐ f. Digital Audio Radio Service
☒ g. Other (please specify)
NGSO

21. STATUS: Choose the button next to the applicable status. Choose only one.

○ Common Carrier ◉ Non-Common Carrier

22. If earth station applicant, check all that apply.

☒ Using U.S. licensed satellites
☐ Using Non-U.S. licensed satellites

23. If applicant is providng INTERNATIONAL COMMON CARRIER service, see instructions regarding Sec. 214 filings. Choose one. Are these facilities:

○ Connected to a Public Switched Network ○ Not connected to a Public Switched Network ◉ N/A

24. FREQUENCY BAND(S): Place an "X" in the box(es) next to all applicable frequency band(s).

☐ a. C-Band (4/6 GHz) ☐ b. Ku-Band (12/14 GHz)
☒ c.Other (Please specify upper and lower frequencies in MHz.)
Frequency Lower: 399.90 Frequency Upper: 400.65

TYPE OF STATION

25. CLASS OF STATION: Choose the button next to the class of station that applies. Choose only one.

◉ a. Fixed Earth Station
○ b. Temporary-Fixed Earth Station
○ c. 12/14 GHz VSAT Network
○ d. Mobile Earth Station
(N/A) e. Geostationary Space Station
(N/A) f. Non-Geostationary Space Station
○ g. Other (please specify)

26. TYPE OF EARTH STATION FACILITY: Choose only one.

◉ Transmit/Receive ○ Transmit-Only ○ Receive-Only ○ N/A

PURPOSE OF MODIFICATION

27. The purpose of this proposed modification is to: (Place an 'X' in the box(es) next to all that apply.)

Not Applicable

ENVIRONMENTAL POLICY

28. Would a Commission grant of any proposal in this application or amendment have a significant environmental impact as defined by 47 CFR 1.1307? If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the Commission's rules, 47 C.F.R. §§ 1.1308 and 1.1311, as an exhibit to this ○ Yes ◉ No

application.A Radiation Hazard Study must accompany all applications for new transmitting facilities, major modifications, or major amendments.

ALIEN OWNERSHIP Earth station applicants not proposing to provide broadcast, common carrier, aeronautical en route or aeronautical fixed radio station services are not required to respond to Items 30-34.

29. Is the applicant a foreign government or the representative of any foreign government?	○ Yes ◉ No
30. Is the applicant an alien or the representative of an alien?	○ Yes ◉ No ○ N/A
31. Is the applicant a corporation organized under the laws of any foreign government?	○ Yes ◉ No ○ N/A
32. Is the applicant a corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?	○ Yes ◉ No ○ N/A
33. Is the applicant a corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?	○ Yes ◉ No ○ N/A
34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as an exhibit an identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote.	

BASIC QUALIFICATIONS

35. Does the Applicant request any waivers or exemptions from any of the Commission's Rules? If Yes, attach as an exhibit, copies of the requests for waivers or exceptions with supporting documents.	○ Yes ◉ No
36. Has the applicant or any party to this application or amendment had any FCC station authorization or license revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? If Yes, attach as an exhibit, an explination of circumstances.	○ Yes ◉ No
37. Has the applicant, or any party to this application or amendment, or any party directly or indirectly controlling the applicant ever been convicted of a felony by any state or federal court? If Yes, attach as an exhibit, an explination of circumstances.	○ Yes ◉ No
38. Has any court finally adjudged the applicant, or any person directly or indirectly controlling the applicant, guilty of unlawfully monopolizing or attemptiing unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement or any other means or unfair methods of competition?If Yes, attach as an exhibit, an explanation of circumstances	○ Yes ◉ No
39. Is the applicant, or any person directly or indirectly controlling the applicant, currently a party in any pending matter referred to in the preceding two items? If yes, attach as an exhinit, an explanation of the circumstances.	○ Yes ◉ No
40. If the applicant is a corporation and is applying for a space station license, attach as an exhibit the names, address, and citizenship of those stockholders owning a record and/or voting 10 percent or more of the Filer's voting stock and the percentages so held. In the case of fiduciary control, indicate the beneficiary(ies) or class of beneficiaries. Also list the names and addresses of the officers and directors of the Filer.	
41. 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. *See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes.*	◉ Yes ○ No
42a. Does the applicant intend to use a non-U.S. licensed satellite to provide service in the United States? If Yes, answer 42b and attach an exhibit providing the information specified in *47 C.F.R. 25.137, as appropriate*. If No, proceed to question 43.	○ Yes ◉ No
42b. What administration has licensed or is in the process of licensing the space station? If no license will be issued, what administration has coordinated or is in the process of coordinating the space station?	

43. Description. (Summarize the nature of the application and the services to be provided). 60-day STA request to provide TT&C for SpaceQuest's BRIO and THEA satellites from the Deadhorse, Alaska site.

43a. Geographic Service Rule Certification

By selecting A, the undersigned certifies that the applicant is not subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25. (●) A

By selecting B, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will comply with such requirements. ( ) B

By selecting C, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will not comply with such requirements because it is not feasible as a technical matter to do so, or that, while technically feasible, such services would require so many compromises in satellite design and operation as to make it economically unreasonable. A narrative description and technical analysis demonstrating this claim are attached. ( ) C

CERTIFICATION

The Applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. The applicant certifies that grant of this application would not cause the applicant to be in violation of the spectrum aggregation limit in 47 CFR Part 20. All statements made in exhibits are a material part hereof and are incorporated herein as if set out in full in this application. The undersigned, individually and for the applicant, hereby certifies that all statements made in this application and in all attached exhibits are true, complete and correct to the best of his or her knowledge and belief, and are made in good faith.

44. Applicant is a (an): (Choose the button next to applicable response.)

- ( ) Individual
- ( ) Unincorporated Association
- ( ) Partnership
- ( ) Corporation
- ( ) Governmental Entity
- (●) Other (please specify)

LLC

45. Name of Person Signing	46. Title of Person Signing
Christopher Richins	CEO

47. Please supply any need attachments.

Attachment 1:	Attachment 2:	Attachment 3:

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).

SATELLITE EARTH STATION AUTHORIZATIONS
FCC Form 312 - Schedule B:(Technical and Operational Description)

FOR OFFICIAL USE ONLY

Location of Earth Station Site

E1: Site Identifier:	RBC-Deadhorse	E5. Call Sign:	
E2: Contact Name	Christopher Richins	E6. Phone Number:	6507468744
E3. Street:	DS12 Access Road	E7. City:	Deadhorse

		E8. County:	North Slope Borough
E4. State	AK	E9. Zip Code	99734
E10. Area of Operation:		Deadhorse, AK	
E11. Latitude:	70 ° 12 ' 45.0 " N		
E12. Longitude:	148 ° 24 ' 29.0 " W		
E13. Lat/Lon Coordinates are:		○ NAD-27	◉ NAD-83 ○ N/A
E14. Site Elevation (AMSL):		15.0 meters	

E15. If the proposed antenna(s) operate in the Fixed Satellite Service (FSS) with geostationary satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a) and (b) as demonstrated by the manufacturer's qualification measurement? If NO, provide asa technical analysis showing compliance with two-degree spacing policy.	○ Yes ○ No ◉ N/A
E16. If the proposed antenna(s) do not operate in the Fixed Satellite Service (FSS), or if they operate in the Fixed Satellite Service (FSS) with non-geostationary satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a2) and (b) as demonstrated by the manufacturer's qualification measurements?	◉ Yes ○ No ○ N/A
E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	◉ Yes ○ No
E18. Is frequency coordination required? If YES, attach a frequency coordination report as	○ Yes ◉ No
E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as	○ Yes ◉ No
E20. FAA Notification - (See 47 CFR Part 17 and 47 CFR part 25.113(c)) Where FAA notification is required, have you attached a copy of a completed FCC Form 854 and or the FAA's study regarding the potential hazard of the structure to aviation? FAILURE TO COMPLY WITH 47 CFR PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION.	○ Yes ◉ No

POINTS OF COMMUNICATION

Satellite Name:OTHER | OTHER | If you selected OTHER, please enter the following:	
E21. Common Name: THEA	E22. ITU Name:
E23. Orbit Location: NGSO	E24. Country: USA

Satellite Name:OTHER | OTHER | If you selected OTHER, please enter the following:	
E21. Common Name: BRIO	E22. ITU Name:
E23. Orbit Location: NGSO	E24. Country: USA

POINTS OF COMMUNICATION (Destination Points)

E25. Site Identifier:	
E26. Common Name:	E27. Country:

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size	E41/42. Antenna GainTransmint and/or Recieve(____dBi at ____GHz)
RBC-Deadhorse	YAGI	2	M2 Antenna Systems	400CP30A	3.57	16.2 dBi at 0.400

E28. Antenna Id	E33/34. Diameter Minor/Major(meters)	E35. Above Ground Level (meters)	E36. Above Sea Level (meters)	E37. Building Height Above Ground Level (meters)	E38. Total Input Power at antenna flange (Watts)	E39. Maximum Antenna Height Above Rooftop (meters)	E40. Total EIRP for al

							carriers (dBW)
YAGI	0.025/3.57	15.0	0.0	0.0	8.93	0.0	25.7

FREQUENCY

E28. Antenna Id	E43/44. Frequency Bands(MHz)	E45. T/R Mode	E46. Antenna Polarization(H,V,L,R)	E47. Emission Designator	E48. Maximum EIRP per Carrier(dBW)	E49. Maximum ERIP Density per Carrier(dBW/4kHz)
YAGI	400.50 400.65	R	Right Hand Circular	33K0G1D	0.0	0.0
E50. Modulation and Services TT&C Downlink						
YAGI	400.50 400.65	R	Right Hand Circular	4K13G1D	0.0	0.0
E50. Modulation and Services TT&C Downlink						
YAGI	400.50 400.65	R	Right Hand Circular	99K1G1D	0.0	0.0
E50. Modulation and Services TT&C Downlink						
YAGI	399.90 400.05	T	Right Hand Circular	33K0G1D	25.7	16.5
E50. Modulation and Services TT&C Uplink						
YAGI	399.90 400.05	T	Right Hand Circular	4K13G1D	25.7	25.6
E50. Modulation and Services TT&C Uplink						
YAGI	399.90 400.05	T	Right Hand Circular	99K1G1D	25.7	11.8
E50. Modulation and Services TT&C Uplink						

FREQUENCY COORDINATION

E28. Antenna Id	E51. Satellite Orbit Type	E52/53. Frequency Limits(MHz)	E54/55. Range of Satellite Arc E/W Limit	E56. Earth Station Azimuth Angle Eastern Limit	E57. Antenna Elevation Angle Eastern Limit	E58. Earth Station Azimuth Angle Western Limit	E59. Antenna Elevation Angle Western Limit	E60. Maximum EIRP Density toward the Horizon(dBW/4kHz)
YAGI	Non-Geostationary	400.50 400.65	0.0/ 0.0	0.0	5.0	360.0	5.0	0.0
	Non-Geostationary	399.90 400.05	0.0/ 0.0	0.0	5.0	360.0	5.0	25.6

REMOTE CONTROL POINT LOCATION

REMOTE CONTROL POINT LOCATION

E61. Call Sign NOTE: Please enter the callsign of the controlling station, not the callsign for which this application is being filed.			E65. Phone Number 6507468744
E62. Street Address 2205 152nd Street NE			
E63. City Redmond	E67. County King	E64/68. State/Country WA/ USA	E66. Zip Code 98052

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

The public reporting for this collection of information is estimated to average 0.25 - 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the required data, and completing and reviewing the collection of information. If you have any comments on this burden estimate, or how we can improve the collection and reduce the burden it causes you, please write to the Federal Communications Commission, AMD-PERM, Paperwork Reduction Project (3060-0678), Washington,

DC 20554. We will also accept your comments regarding the Paperwork Reduction Act aspects of this collection via the Internet if you send them to PRA@fcc.gov. PLEASE DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.

Remember - You are not required to respond to a collection of information sponsored by the Federal government, and the government may not conduct or sponsor this collection, unless it displays a currently valid OMB control number or if we fail to provide you with this notice. This collection has been assigned an OMB control number of 3060-0678.

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.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Application of RBC Signals LLC for a	)	Call Sign:
60-Day Special Temporary Authorization	)	File No.: SES-STA-
To Provide TT&C to U.S.-Licensed	)	
Experimental Satellites	)	

Expedited Consideration Requested

REQUEST FOR SPECIAL TEMPORARY AUTHORITY

RBC Signals LLC ("RBC Signals"), pursuant to Section 25.120(b)(3) of the Commission's rules,[1] respectfully seeks a 60-day special temporary authorization ("STA") to operate the currently authorized Yagi antennas (the "400 MHz Yagis") at its existing earth station site in Deadhorse, Alaska, to provide telemetry, tracking, and command ("TT&C") support for two U.S.-licensed, non-geostationary satellite orbit ("NGSO") cubesats – the BRIO and THEA satellites – operated by SpaceQuest, Ltd. ("SpaceQuest").[2] RBC Signals seeks to perform TT&C operations in the 400.50-400.65 MHz band (space-to-Earth) and 399.90-400.05 MHz (Earth-to-space), consistent with the SpaceQuest Licenses. Grant of this request will ensure the timely initiation of TT&C operations following the impending launch of SpaceQuest's satellite and thus will serve the public interest.

I. DISCUSSION

RBC Signals seeks to support the SpaceQuest spacecraft using the 400 MHz Yagis (the M2 Antenna Systems Model 400CP30A) at its existing earth station facility in Deadhorse, Alaska.[3] RBC Signals currently operates in various segments of the 400 MHz band in Alaska with no

[1] 47 C.F.R. § 25.120(b)(3). A 60-day STA is appropriate in this instance because RBC Signals intends to apply for regular, longer-term authority to provide TT&C support for the subject satellites.

[2] *See* SpaceQuest, Ltd., File No. 0176-EX-CN-2018, Call Sign WJ2XNV; *see also* SpaceQuest, Ltd., File No. 0220-EX-CN-2018, Call Sign WJ2XPE (collectively, the "SpaceQuest Licenses").

[3] *See, e.g.,* RBC Signals, LLC, File No. SES-STA-20180607-01103 (60-day STA request to provide TT&C support in the 401-402 MHz band).

reported cases of interference, and this request will not increase the potential for interference because the limited operations are similar to those previously authorized by the Commission.[4]

RBC Signals provides the attached draft FCC Form 312 Schedule B for information relating to the proposed earth station operations. In addition, RBC Signals incorporates by reference the technical information submitted by SpaceQuest in support of the experimental licenses granted by the Commission for the BRIO and THEA spacecraft.[5] As discussed below, grant of the requested STA will serve the public interest, convenience, and necessity.

A. Satellites and TT&C Earth Stations

The BRIO and THEA satellites are 3U cubesats, each with a mass of approximately 5 kg. BRIO and THEA will be launched on November 19, 2018, on the SSO-A mission from Vandenberg Air Force Base in California.[6] The satellites will operate in a circular, sun-synchronous orbit at 575 km with an inclination from the equator of 97.52°. The expected mission lifetime of the satellites is five years.[7]

The BRIO and THEA satellites are operated by SpaceQuest, which recently received experimental licenses for their operation.[8] The primary mission of the BRIO satellite is to investigate, identify and resolve potential technical and implementation issues with SpaceQuest's advanced software defined radio ("SDR") satellite design. The primary mission of the THEA satellite is to test experimental payloads from U.S.-based Aurora Insight to validate the ability of its

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[4] *See, e.g.,* RBC Signals, LLC, File No. SES-STA-20170731-00848 (authority to operate in the 399.926-399.950 MHz and 401.05-401.25 MHz bands); RBC Signals, LLC, File No. SES-STA-20171213-01333 (authority to operate in the 401.43-401.57 MHz, 449.93-450.07 MHz and 450.2-450.25 MHz bands); RBC Signals, LLC, File No. SES-STA-20180430-00416 (authority to operate in the 401.24-401.36 MHz band). This authority included NASA coordination conditions to avoid interference to ISS EVA operations.

[5] *See* SpaceQuest Licenses.

[6] *See* http://spaceflight.com/sso-a/.

[7] RBC Signals is working with the Commission staff to develop appropriate approaches to secure longer-term authority for TT&C operations during this mission period.

[8] *See* SpaceQuest Licenses.

flight computer firmware to monitor, process, and generate relevant measurements using a novel wideband antenna.

The SpaceQuest Licenses indicate a grant of authority for a number of associated ground stations to communicate with the BRIO and THEA satellites. To date, however, only the Fairfax, Virginia ground station is operational. Given their polar orbits, this single location cannot provide sufficient TT&C support for the SpaceQuest satellites. For this reason, SpaceQuest seeks TT&C support from RBC Signals established earth station facilities in Alaska, which maximize communications with its polar-orbiting satellites.

RBC Signals seeks to provide reliable TT&C support for BRIO and THEA, which is important to maintain effective communications with and control of the satellites during orbit. It is especially important to be able to provide initial TT&C for early mission communications, operation optimization and other program-related issues. RBC Signals is well positioned to provide TT&C support using its existing earth stations at the Deadhorse, Alaska site.

RBC Signals' TT&C operations will be conducted on an unprotected and non-interference basis intermittently and as-needed approximately two or three times per day when the satellites pass over the earth station. RBC Signals will conduct these operations in accordance with the Commission's rules and interagency requirements governing fixed earth station operations in the subject bands. In addition, RBC Signals expressly acknowledges that any grant of this STA request is without prejudice to Commission action on other requests for authority to provide TT&C support for the SpaceQuest satellites.

B. TT&C Spectrum Use

RBC Signals seeks to operate the 400 MHz Yagis with the SpaceQuest satellites in the 399.90-400.05 MHz (Earth-to-space) and 400.50-400.65 MHz (space-to-Earth) bands to communicate with the BRIO and THEA satellites to provide TT&C support. RBC Signals

understands that there is limited U.S. government use of the 399.90-400.05 MHz band,[9] but acknowledges that there is a pending FCC rulemaking addressing further use of this band.[10] 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 399.90-400.05 MHz band is used on a primary basis by the federal and non-federal mobile-satellite service ("MSS") and radionavigation-satellite service ("RNSS"). Thus, RBC Signals must conduct its limited TT&C uplink operations in the band on an unprotected, non-harmful-interference basis as a non-conforming use. RBC Signals' prior operations in the band[11] without interference incident confirm that near-term authority for the similar operations proposed herein can be granted.

The 400.50-400.65 MHz band is used, among other things, for federal and non-federal space operations.[12] RBC Signals is working with NASA to ensure compatibility of the proposed downlink transmissions, in particular, with the International Space Station operations. RBC Signals is unaware of any additional, near-term interference concerns with the proposed TT&C downlink operations. RBC Signals will continue to 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 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.

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[9] *See* Federal Government Spectrum Use Report, 225 MHz – 7.125 GHz at https://www.ntia.doc.gov/files/ntia/publications/compendium/0399.90-0400.05_01DEC15.pdf.

[10] Use of the 399.9-400.05 MHz Band; and Allocation of Spectrum for Non-Federal Space Launch Operations, ET Docket No. 13-115, RM-11341; *see also* https://www.fcc.gov/items-on-circulation.

[11] *See* RBC Signals, LLC, File No. SES-STA-20170731-00848.

[12] *See* 47 C.F.R. § 2.1 ("space operations" are defined as "a radiocommunication service concerned exclusively with the operation of spacecraft, in particular space tracking, space telemetry, and space telecommand"); *See also* Federal Government Spectrum Use Report, 225 MHz – 7.125 GHz at https://www.ntia.doc.gov/files/ntia/publications/compendium/0400.15-0401.00_01DEC15.pdf.

In addition, RBC Signals and SpaceQuest are working with launch service provider Spaceflight and other satellite operators aboard the SSO-A mission to ensure spectrum compatibility of cubesat and launcher operations. Satellite and earth station operators have regulatory/spectrum management contact information from other relevant operators to coordinate and resolve any interference issues, as necessary or appropriate. In addition, virtually all of the operators participate in the Commercial SmallSat Spectrum Management Association ("CSSMA"), which provides another vehicle for addressing potential interference concerns. Although additional consultation and coordination mechanisms may be useful and the SSO-A mission involves a large number of operators, the informal industry approaches described above have worked well in similar circumstances and RBC Signals expects them to be equally effective for the SSO-A launch.

C. STA Request & Public Interest Considerations

RBC Signals respectfully seeks this 60-day STA pursuant to Section 25.120(b)(3) of the Commission's rules, 47 C.F.R. § 25.120(b)(3). Extraordinary circumstances exist to grant this request (i.e., the critical need for TT&C earth stations to support near-term launch and operation of U.S.-licensed satellites). Consistent with Commission practice, RBC Signals requests that the Commission grant this STA request with the proposed commencement date at the earliest practicable time.

Grant of this STA request is in the public interest because (i) SpaceQuest has limited earth station facilities that can provide essential TT&C support for their polar-orbit satellites; (ii) grant will facilitate the safe operation of the SpaceQuest satellites by ensuring reliable TT&C functions for the launch and operation of the satellites; (ii) it will promote U.S. leadership in the development of next-generation satellite technologies being tested by the SpaceQuest satellites; and (iv) grant will also facilitate U.S. leadership in earth station services by enabling RBC Signals to provide critical NSGO TT&C support.

Because RBC Signals seeks to use the 399.90-400.05 MHz band on a non-conforming basis, waiver of the U.S. Table of Frequency Allocations is required. Section 1.3 of the Commission's Rules[13] provides that any Commission rule may be waived for "good cause" shown.[14] In general, good cause exists if grant of a waiver would not undermine the purposes of the rule and would otherwise serve the public interest.[15]

In this case, a waiver is warranted because there is no material potential for interference from the proposed TT&C uplink operations. RBC Signals limited operations will occur only when the satellite is within view of the relevant earth station for brief periods of time. In addition, RBC Signals has operated in the band previously without interference incident.[16] Because the proposed operations can be conducted on an unprotected, non-harmful interference basis, a waiver of the U.S. Table of Allocations is warranted here.

III. CONCLUSION

In view of the foregoing, including the critical nature of TT&C services and the impending launch of the SpaceQuest satellites, the public interest would be served by a grant by November 19, 2018, of a 60-day STA to allow RBC Signals to perform TT&C functions using the 400 MHz Yagis from its existing earth station facilities in Deadhorse, Alaska.

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[13] 47 C.F.R. § 1.3

[14] *See* 47 C.F.R. § 1.3; *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969).

[15] *See id.*

[16] *See supra* n. 11. RBC Signals prior operations were under the MSS allocation in the band and therefore did not require a waiver.