Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Application of RBC Signals LLC for a 60-Day Special Temporary Authorization To Operate an Earth Station To Provide Tracking, Telemetry & Command To Foreign-Licensed Satellites	)))))	Call Sign: N/A File No.: SES-STA-_____

Expedited Consideration Requested

REQUEST FOR SPECIAL TEMPORARY AUTHORITY

RBC Signals LLC ("RBC Signals"), pursuant to Section 25.120 of the Commission's rules, 47 C.F.R. § 25.120, respectfully seeks a 60-day special temporary authorization ("STA") to recommence operations of an earth station (the "400 MHz Yagi") at its facility in Deadhorse, Alaska with certain foreign-licensed low-Earth orbit ("LEO") non-geostationary satellite orbit ("NGSO") cubesats (the "CICERO" spacecraft) operated by Tyvak Nano-Satellite Systems Inc. ("Tyvak"). RBC Signals seeks to perform tracking, telemetry and command ("TT&C") to provide housekeeping, coordination and subsystem control for the CICERO cubesats in the 401-401.3 MHz band (Earth-to-space/space-to-Earth).

RBC Signals seeks this STA to ensure reliable back-up TT&C support for the CICERO mission during the Commission's ongoing review of a related 60-day STA application to provide ground station support from a San Diego, California location.[1] Moreover, RBC Signals' previous authorization for identical operations recently lapsed,[2] and it has since identified the Deadhorse,

[1] *See* Tyvak Nano-Satellite Systems, Inc., File No. SES-STA-20180406-00327 (the "*San Diego STA*").

[2] *See* RBC Signals LLC, File No. SES-STA-20180330-00293 (expired on April 29, 2018) (the "*Deadhorse STA*").

Alaska facility as a viable long-term back-up site to support the CICERO mission.[3] Given its prior interference-free operation with the Cicero spacecraft from this site, RBC Signals seeks expedited grant of this 60-day STA to further support the CICERO mission and ensure reliable ground station facilities are available.

I. BACKGROUND

RBC Signals is based in Seattle, Washington and provides earth station services around the world. RBC Signals partners with other earth station operators and operates its own earth stations to efficiently support various LEO satellite missions and applications. RBC Signals currently operates from the Deadhorse, Alaska facility in the 401-402 MHz band without issues[4] and has a pending commercial application for long-term operations from the facility.[5]

As noted, RBC Signals was previously authorized to provide identical TT&C support for the CICERO spacecraft from the Deadhorse, Alaska facility following a mechanical failure of Tyvak's TT&C ground station in Norway.[6] RBC Signals successfully supported the CICERO spacecraft from Deadhorse during the *Deadhorse STA* term with no incidents or reports of interference. The TT&C operations proposed here are identical to those previously authorized at the Deadhorse facility and, accordingly, there is no material change in the potential for interference from RBC Signals' authorized operations at this location. In the instant request, RBC

[3] RBC Signals' commercial license application for the Deadhorse facility was recently taken off of Public Notice and remains pending. Upon final Commission action on the application, RBC Signals plans to request modification of the license to add long-term authority to support the CICERO mission. *See* RBC Signals, LLC, File Nos. SES-LIC-20180201-00081 & SES-AFS-20180321-00238, Call Sign E180010 (the "*Commercial License Application*").

[4] *See* RBC Signals, File No. SES-STA-20180302-00176 (granted on April 12, 2018).

[5] *Supra* n.3.

[6] *Supra* n.2.

Signals seeks short-term authority to conduct TT&C operations for the Norwegian-licensed CICERO spacecraft in the 401-401.3 MHz band (Earth-to-space/space-to-Earth).

The CICERO spacecraft are operated by Tyvak, a U.S. company that holds multiple experimental licenses from the Commission, including for the first demonstration satellite of the CICERO mission.[7] The subject Norwegian-licensed CICERO satellites, which operate pursuant to authority granted by the Norwegian Communications Authority ("Nkom"),[8] are technically identical versions of the 6U cubesat previously described to the Commission in the *CICERO Experimental License*.[9] The operations proposed herein are fundamentally similar to those previously approved by the Commission in the *CICERO Experimental License* and, to the extent applicable, RBC Signals will operate consistent with Tyvak's existing experimental authorization.

RBC Signals seeks this urgent 60-day STA out of an abundance of caution in the event of

[7] *See* Tyvak Nano-Satellite Systems Inc., File No. 0399-EX-PL-2016, Call Sign WI2XKJ (*"CICERO Experimental License*").

[8] *See* Technical Appendix, III. Pursuant to the regulatory procedures adopted by Nkom, the attached submission of Advance Publication Information from Nkom to the International Telecommunications Union ("ITU") constitutes the Nkom authorization action for the CICERO spacecraft.

[9] The CICERO satellites will operate under the Tyvak-0082 ITU NGSO system filings. RBC Signals acknowledges that authority for TT&C operations does not constitute market access to the United States for the Tyvak satellites and therefore is not providing the full technical information required by Sections 25.114 and 25.137 of the Commission's rules, 47 C.F.R. §§ 25.114 and 25.137. *See, e.g.*, SES Americom, Inc., File No. SES-MFS-20160624-00607, Call Sign E050287 (granting authority for an earth station to provide TT&C services to the foreign-licensed ASTRA 3A operating at 86.85° W.L.); Hawaii Pacific Teleport, L.P., File No. SES-MFS-20131030-00913, Call Sign E030115 (granting authority for an earth station to provide TT&C services to ASTRA 3A operating at 176.85° W.L.); SES Americom, Inc., File No. SES-STA-20161110-00884, Call Sign E050287 (granting authority for an earth station to provide TT&C services to ASTRA 3A during drift from 86.85° W.L. to 47.0° W.L.); Hawaii Pacific Teleport, L.P., File No. SES-STA-20131030-00914, Call Sign E030115 (granting authority for earth station to provide TT&C services to ASTRA 3A operating at 176.85° W.L).

another ground station failure in Norway, and also plans to file an application for regular authority for the operations to serve as a permanent back-up site.[10] Although the Norway ground station malfunction has been resolved, Tyvak remains unable to provide reliable TT&C support for the CICERO mission from the United States (or anywhere in the western hemisphere), which is critical to maintain effective communications with the satellites during orbit. Thus, Tyvak requires TT&C support from RBC Signals because it can provide immediate support for the CICERO spacecraft from the previously authorized Deadhorse, Alaska facility.

RBC Signals provides the attached Technical Appendix, including a draft FCC Form 312 Schedule B, for information relating to the proposed earth station operations and the CICERO spacecraft.[11] RBC Signals will conduct these earth stations in accordance with the Commission's rules and interagency requirements governing fixed earth station operations in the subject band, and acknowledges that any of the STA authority requested herein is without prejudice to other requests for authority to communicate with the Cicero spacecraft. As discussed below, grant of the requested STA will serve the public interest, convenience and necessity.

II. DISCUSSION

RBC Signals seeks to operate a 400 MHz Yagi[12] in the 401-401.3 MHz band (Earth-to-space/space-to-Earth) to provide immediate, near-term support for the CICERO spacecraft. The proposed TT&C operations are identical to those authorized in the *Deadhorse STA*, which caused no interference to other users of the band. The CICERO spacecraft, launched in mid-2017, have a

[10] RBC Signals acknowledges that any action on the requested STA will not affect the Commission's ultimate determination with respect to its application for long-term TT&C earth station operating authority.

[11] RBC Signals also updates the geographic coordinates of the Deadhorse facility in order to accurately reflect the *Commercial License Application*.

[12] The M2 Antenna Systems Model 400CP30A.

mission life of over two years and an orbit period of approximately 1.6 hours. The spacecraft operate in a sun-synchronous orbit with an at an orbital altitude of approximately 550 km and an inclination of 97.8°. RBC Signals incorporates by reference the CICERO satellite technical specifications previously provided in the *CICERO Experimental License*[13] and provides the Nkom Email Authorization[14] for additional information relating to the CICERO spacecraft.

The goal of the CICERO mission is to perform GPS Radio Occultation ("RO") measurement demonstrations in support of Tyvak's development of atmospheric sensors of earth exploration satellite services ("EESS"). The collection of RO data will be used to validate the mission and quality of data collected. Grant of this STA request is critical for the ongoing reliability of the CICERO mission and will allow for reliable short-term TT&C services during the Commission's review of Tyvak's proposed San Diego ground station operations.

A. TT&C Frequency 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 and space operations services. RBC Signals seeks to perform TT&C uplink and downlink operations in the 401-401.3 MHz band pursuant to the co-primary space operations allocation in this band.[15]

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[13] The Commission has previously reviewed the Orbital Debris Assessment Report for the CICERO spacecraft in context of Tyvak's experimental license application. To the extent the Commission seeks addition information, RBC Signals will provide such supplemental information at earliest possible time.

[14] Attached to the Nkom Email Authorization is the ITU SpacePub submission reflecting the CICERO information available on the ITU website.

[15] *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.").

RBC Signals understands that there are certain U.S. government meteorological aids and earth exploration operations conducted in the 401-402 MHz band.[16] RBC will operate on an unprotected, non-interference basis and, if it learns that its operations are causing harmful interference to other operations, it will suspend or modify its operations to immediately resolve such interference. The Deadhorse, Alaska facility currently supports ground station operations in the 401-402 MHz band with no reported cases of interference and RBC Signals believes its similar TT&C operations in this band will not present a potential for interference into other authorized users. In addition, previous CICERO operations at this location suggests that expedited processing and grant of this request would not adversely affect other users of the spectrum.

B. STA Request & Public Interest Considerations

RBC Signals respectfully seeks this 60-day STA pursuant to Section 25.120 of the Commission's rules, 47 C.F.R. § 25.120. To the extent the Commission finds "extraordinary circumstances" surrounding this request (i.e., the critical need for a U.S.-based back-up TT&C site and the delay of the *San Diego STA*), RBC Signals requests that the Commission authorize operations under this STA at the earliest practicable time and will coordinate with Commission staff accordingly.[17] RBC Signals understands that the unique circumstances here, including the previous authorization for identical operations from the site, may warrant temporary authority for near-term TT&C from the Deadhorse, Alaska facility.

Grant of this STA request is in the public interest because it will facilitate the safe operation

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

[17] 47 C.F.R. § 25.120(a). The Commission may authorize RBC Signals to commence operations under this STA sooner than 3 working days "upon due showing of extraordinary reasons for the delay." As discussed herein, given the unique and unpredictable circumstances of this request an expedited grant of this STA is warranted.

of the CICERO satellites in the near-term by ensuring reliable TT&C back-up functions and providing the global ground station support for the mission. Grant of this STA request will also promote U.S. leadership in the development next-generation satellite technologies by enabling a U.S. ground station to support the evaluation of the benefits and commercial viability of Tyvak's EESS and atmospheric monitoring services.

III. CONCLUSION

In view of the foregoing, including the Commission's previous grant of identical authority in the *Deadhorse STA*, the public interest would be served by a grant at the earliest practicable time of a 60-day STA to allow RBC Signals to perform TT&C functions for the CICERO spacecraft using the 400 MHz Yagi from Deadhorse, Alaska.