Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
OUTPOST TECHNOLOGIES CORPORATION	)	File No. SAT-LOA-2023_____
	)	
Application for Authority to Launch and Operate a Non-Geostationary Orbit Satellite in the Space Operation Service	)	Call Sign _____

APPLICATION

George V. John
Ashley J. Mills
HOGAN LOVELLS US LLP
555 Thirteenth Street NW
Washington, DC 20004
george.john@hoganlovells.com
+1-202-637-6989

Counsel for Outpost Technologies Corporation

Vanessa Kuroda
Leslie Baker Lyon
OUTPOST TECHNOLOGIES CORPORATION
1601 Colorado Avenue
Santa Monica, CA 90404

February 9, 2023

Table of Contents

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
OUTPOST TECHNOLOGIES CORPORATION	)	File No. SAT-LOA-2023_____
	)	
Application for Authority to Launch and Operate a Non-Geostationary Orbit Satellite in the Space Operation Service	)	Call Sign _____

APPLICATION

Outpost Technologies Corporation ("Outpost")[1] requests authority to launch and operate one non-geostationary orbit ("NGSO") 3U cubesatellite, Outpost Mission 0 ("Mission 0"),[2] under the streamlined licensing procedures for small satellites.[3] Given Mission 0's no-earlier-than launch date of June 10, 2023, the requested licensing start date is April 26, 2023.

* * *

Outpost hopes to reduce space debris and lower costs for satellite operators by developing reusable satellites. Such satellites returning to Earth post-mission can be refurbished, repaired, and upgraded before being relaunched into space to deliver revamped existing or innovative new service. They will reduce not only orbital debris risk by not lingering in Earth's orbit after the mission ends but also manufacturing costs and space entry barriers.

---

[1] Outpost is incorporated in Delaware with headquarters in California.

[2] The FCC authorization should identify the satellite name as Outpost Mission 0.

[3] *See* 47 C.F.R. § 25.122; *see also Streamlining Licensing Procedures for Small Satellites*, Report and Order, 34 FCC Rcd 13077 (2019) ("*Smallsat R&O*").

Mission 0 will not carry or test reusability features. It will only trial the flight software, avionics, power system, and radiofrequency links that could support future reusable satellites.[4] Authorizing Mission 0 will inform reusable satellite technology development, advance FCC space sustainability goals, and showcase American leadership in the space industry.[5]

I. FREQUENCY PLAN

Table 1 captures Mission 0's frequency plan.

Frequency Band	Link Direction	Activity
401-402 MHz	space-to-Earth	telemetry downlink
449.75-450.25 MHz	Earth-to-space	command uplink

Table 1: Frequency Plan[6]

Mission 0 will use existing space operations service frequency allocations. The space operation service supports "the operation of spacecraft, in particular space tracking, space telemetry and space telecommand."[7] Outpost will transmit commands to and receive telemetry from Mission 0 to test satellite functionality, monitor satellite health, and ensure safe space operations. Mission 0, therefore, qualifies as a space operation service.

[4] Mission 0 will also have one global positioning system ("GPS") receiver. The GPS payload will support on-orbit determination and atmospheric and Earth-surface sensing (temperature mapping occultations and precipitation, sea state, wind profile, and ocean current scatterometry). It will only passively monitor the readily accessible GPS L1 (center frequency of 1575.42 MHz) and L2 (center frequency of 1227.60 MHz) signals without decoding or decrypting any encrypted content within these waveform modulations.

[5] *See generally Space Innovation et al.*, Second Report and Order, IB Docket No. 22-271 et al., FCC 22-74 (rel. Sept. 30, 2022) ("*Post-Mission Disposal R&O*").

[6] Reception of the GPS L1 and L2 signals is with pre-existing signals that have not been altered to provide service to Mission 0. Such operations are permissible. *See, e.g.*, Loft Orbital Solutions Inc., Stamp Grant, IBFS File No. SAT-LOA-20220606-00057, at n.4 (granted Nov. 15, 2022); Spire Global, Inc., Stamp Grant, IBFS File No. SAT-MOD-20200603-00065, at 3 (granted Nov. 9, 2022).

[7] ITU RR No. 1.23.

A. 401-402 MHz (Space-to-Earth)

The 401-402 MHz band hosts primary space operations service allocations (space-to-Earth) in the international and U.S. frequency allocation tables.[8] Mission 0's proposed operations meet this service allocation definition as described in section I.A.

B. 449.75-450.25 MHz (Earth-to-space)

The 449.75-450.25 MHz band hosts a space operations service allocation (Earth-to-space), subject to coordination, in the international frequency allocation table and a space telecommand allocation (Earth-to-space), on a case-by-case basis, in the U.S. frequency allocation table.[9] Mission 0's proposed operations meet this service allocation definition as described in section I.A. Consistent with the U.S. frequency allocation table, Outpost will take all practical steps to keep the telecommand carrier frequency close to 450 MHz.[10]

C. Spectrum Sharing Capabilities

A small satellite operating under the streamlined rules is exempt from the Part 25 processing round and default service requirements.[11] Such a satellite is "designed to serve its purpose within a limited, relatively short period of time [and] have more limited frequency use characteristics than more traditional operations licensed under part 25."[12] In the absence of processing round rules, an applicant must "(a) certify that operations of its satellites will not interfere with those of existing operators, (b) certify that it will not materially constrain future operators from using the assigned frequency band(s), and (c) provide a brief narrative description

[8] *See* 47 C.F.R. § 2.106.

[9] *See* 47 C.F.R. § 2.106 and nn.5.286, US87.

[10] *Id.* at n.US87.

[11] *Smallsat R&O* ¶ 80.

[12] *Id*.

illustrating the methods by which both current and future operators will not be materially constrained."[13] The small satellite certifications table in section II explain how Mission 0 complies.

II. SMALL SATELLITE CERTIFICATIONS

Outpost certifies that Mission 0 meets the following streamlined processing criteria for small satellites.

Streamlined Requirement	Outpost Compliance
(1) The space station(s) will operate only in non-geostationary orbit.	Mission 0, an NGSO small satellite, will be deployed into a sun-synchronous orbit at 525 km ± 25 km.
(2) The total in-orbit lifetime for any individual space station will be six years or less.	Mission 0 satisfies this requirement. See Technical Annex.
(3) The space station(s): (i) Will be deployed at an orbital altitude of 600 kilometers or below; or (ii) Will maintain a propulsion system and have the ability to make collision avoidance and deorbit maneuvers using propulsion.	Mission 0 will operate at 525 km ± 25 km (below 600 km) and, therefore, does not need to maintain a propulsion system.
(4) Each space station will be identifiable by a unique signal-based telemetry marker distinguishing it from other space stations or space objects.	Mission 0 will have a unique transmitting telemetry channel distinguishing it from other space stations or space objects.
(5) The space station(s) will release no operational debris.	Mission 0 will not release any operational debris.
(6) The space station operator has assessed and limited the probability of accidental explosions, including those resulting from the conversion of energy sources on board the space station(s) into energy that fragments the spacecraft.	Outpost has assessed and limited the probability of accidental explosions, including those resulting from the conversion of energy sources on board Mission 0 into energy that fragments the spacecraft.
(7) The probability of a collision between each space station and any other large object (10 centimeters or larger) during the orbital lifetime of the space station is 0.001 or less as calculated using current NASA software or other higher fidelity model.	Mission 0 satisfies this requirement. See Technical Annex.
(8) The space station(s) will be disposed of post-mission through atmospheric re-entry. The probability of human casualty from portions of the spacecraft surviving re-entry and reaching the surface of the Earth	Mission 0 satisfies this requirement. See Technical Annex.

[13] *Id.* ¶ 81.

Streamlined Requirement	Outpost Compliance
is zero as calculated using current NASA software or higher fidelity models.	
(9) Operation of the space station(s) will be compatible with existing operations in the authorized frequency band(s). Operations will not materially constrain future space station entrants from using the authorized frequency band(s).	Mission 0 will not interfere with existing operations and will not materially constrain future operators from using the authorized frequency bands. See Technical Annex.
(10) The space station(s) can be commanded by command originating from the ground to immediately cease transmissions and the licensee will have the capability to eliminate harmful interference when required under the terms of the license or other applicable regulations.	Mission 0 can be commanded by Outpost to immediately cease transmissions and to eliminate harmful interference. See Technical Annex.
(11) Each space station is 10 cm or larger in its smallest dimension	Mission 0's smallest dimension is 10 cm.
(12) Each space station will have a mass of 180 kg or less, including any propellant.	Mission 0's mass is approximately 4.045 kg.

III. PUBLIC INTEREST

The Commission has made clear its goal of promoting space sustainability and encouraging competition and innovation. As FCC Chairwoman Jessica Rosenworcel said, "[t]he second space age is here. For it to continue to grow, we need to do more to clean up after ourselves so space innovation can continue to respond."[14] To that end, the Commission has recognized that "it is no longer sustainable to leave satellites in [low-Earth orbit] to deorbit over decades."[15] Reducing the amount of debris in orbit will protect the $279-billion satellite and launch industries.[16]

Outpost's mission to develop reusable satellites supports the Commission's goal. Outpost's satellites will deorbit quickly and, in the process, reduce the risk of in-space collisions by satellites sitting in orbit years after their missions have ended. Once back on Earth, operators

[14] *Post-Mission Disposal R&O*, Statement of Chairwoman Jessica Rosenworcel, at 23.

[15] *Post-Mission Disposal R&O* ¶ 4.

[16] *Id.* ¶ 3.

can upgrade their satellites with the latest technologies. Proceeding this way promotes competition by decreasing costs for operators, which will no longer need to build replacement satellites, and lowers the barriers to entry by new and innovative companies.

Mission 0 is the first step toward achieving these goals. It will provide Outpost with important data necessary for its technology development of important avionics equipment and potential future backup telemetry, tracking, and command links while helping advance the Commission's goals of increasing space sustainability and encouraging innovation and competition.

IV. OTHER MATTERS

A. ITU Requirements

When issuing launch-and-operational authority, the Commission submits advance publication information ("API") and coordination requests ("CR/C") to the International Telecommunication Union ("ITU").[17] In concert with this application, Outpost submits the ITU API for the 401-402 MHz band and ITU CR/C for the 449.75-450.25 MHz band and, in Attachment 1, unconditionally accepts all associated cost recovery responsibilities.[18]

B. Ownership Information

Outpost's ownership structure appears in Attachment 2.

[17] *See* 47 C.F.R. § 25.111.

[18] The API is necessary for bands not subject to mandatory coordination under ITU RR Art. 9. The CR/C is necessary for bands subject to mandatory coordination under ITU RR Art. 9.

V. CONCLUSION

Authorizing Mission 0 will serve the public interest by providing Outpost valuable information for developing reusable satellites and advancing FCC goals for space sustainability and competition.

Respectfully submitted,

/s/ Vanessa Kuroda

Vanessa Kuroda
Leslie Baker Lyon
OUTPOST TECHNOLOGIES CORPORATION
1601 Colorado Avenue
Santa Monica, CA 90404

George V. John
Ashley J. Mills
HOGAN LOVELLS US LLP
555 Thirteenth Street NW
Washington, DC 20004
george.john@hoganlovells.com
+1-202-637-6989

Counsel for Outpost Technologies Corporation

February 9, 2023

Attachment 1
(ITU Cost Recovery Declaration)

February 9, 2023

Federal Communications Commission
Office of the Secretary
45 L Street, NE
Washington, DC 20554

Subject: ITU Cost Recovery Declaration for the Outpost Non-Geostationary Orbit Satellite, USASAT-30U, in Non-Planned Frequency Bands

Dear FCC Secretary,

Outpost Technologies Corporation (Outpost) is aware that in accordance with Resolution 88 of the International Telecommunication Union (ITU) Plenipotentiary Conference (Marrakech, 2002), and ITU Council Decision 482, as modified, cost-recovery fees will apply to satellite network filings received by the Radiocommunications Bureau after November 7, 1998. As a consequence, Commission applicants are responsible for any and all fees charged by the ITU to process their satellite network filings. Outpost hereby states that it is aware of this requirement and unconditionally accepts all cost recovery responsibilities associated with the ITU filings for the Outpost satellite. Please address all cost-recovery inquiries, and ITU correspondence and filings, related to the Outpost satellite to the following point of contact. We understand that should there be any change in the point of contact information we will inform the Commission within 30 days of the foreseen event.

Point of Contact Name: Marilee Jooste

Organization Name: Outpost Technologies Corporation

Address: 1601 Colorado Avenue
Santa Monica, CA 90404

E-Mail: marilee@outpost.space

Telephone Number: 424-276-0754

Outpost understands that it must remit payment of any resultant cost-recovery fee to the ITU by the due date specified in the ITU invoice, unless an appeal filed prior to the due date is pending with the ITU. We fully understand that a license granted in reliance on such a commitment will

be conditioned upon discharge of any such cost-recovery obligation. We also acknowledge that, in accordance with 47 C.F.R. § 25.111, should we have an overdue ITU cost-recovery fee and have no appeal pending with the ITU, the Commission may dismiss any application associated with that satellite.

Respectfully submitted,

/s/ Vanessa Kuroda

Vanessa Kuroda
Lead Missions Systems Engineer
OUTPOST TECHNOLOGIES CORPORATION
1601 Colorado Avenue
Santa Monica, CA 90404

Attachment 2
(Ownership Information)

Outpost Technologies Corporation ("Outpost") is a privately held corporation. The following individuals hold 10% or more of the equity and/or voting interest in Outpost.

Shareholder	Citizenship or Country of Incorporation	Equity and/or Voting Interest Percentage
Dunn McShane 2019 Revocable Trust for the Separate Property Account of Jason J. Dunn	United States of America	36.4%
Michael Vergalla	United States of America	13.2%
Moonshots Capital	United States of America	10%

The following individuals are Outpost's board directors.

Name	Citizenship
Jason Dunn	United States of America
Craig Cummings	United States of America
Aaron Kemmer	United States of America

The following individuals are Outpost's officers.

Name	Title	Citizenship
Jason Dunn	CEO	United States of America
Michael Vergalla	CTO	United States of America

All Outpost board directors and officers may be reached at the address below.

Outpost Technologies Corporation
1601 Colorado Avenue
Santa Monica, CA 90404