Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
Astranis Projects USA LLC	)	File No. SAT-AMD-_____
Amendment to Application for Authority to Launch and Operate the ASTRANIS 157E GSO System at the Nominal 157º E.L. Orbital Location in Ka-band Frequencies	)	

AMENDMENT APPLICATION OF ASTRANIS PROJECTS USA LLC

Pursuant to Section 25.116 of the Federal Communications Commission's ("FCC" or "Commission") rules, 47 C.F.R § 25.116, Astranis Projects USA LLC ("Astranis") respectfully files this amendment to its Application for authority to launch and operate a geostationary satellite orbit ("GSO") fixed-satellite service ("FSS") system, operating in the Ka-band frequencies and collocated at the nominal 157º E.L. orbital location (the "ASTRANIS 157E GSO System").[1] Specifically, Astranis amends the Application to clarify that the ASTRANIS 157E GSO System will consist of a single "MicroGEO" satellite instead of the two satellites originally envisioned.[2]

[1] Astranis Projects USA, LLC, ICFS File No. SAT-LOA-20250618-00152 ("Application").

[2] Out of an abundance of caution, Astranis requests a waiver of Section 25.116(b)(5) of the Commission's rules to the extent necessary to allow the Commission to consider this amendment. In particular, waiver is appropriate where, as is the case here, the amendment to limit the ASTRANIS 157E GSO System to a single satellite resolves any potential procedural considerations by removing any questions regarding alignment of the application with the Commission's rules and otherwise streamlines the Commission's ability to consider the application.

Consistent with its request to reflect that the ASTRANIS 157E GSO System will be comprised of a single satellite, Astranis amends the Application as follows:

- All references to two MicroGEO satellites in the Application are amended to reflect a single satellite, and the service area is amended to reflect portions of Asia and Oceania, including the Philippines, Taiwan, Japan, Northern Marianas, Guam and surrounding waters.[3]
- Section E of the Narrative, discussing the multi-satellite request, is deleted as moot and the section number is reserved.
- The introduction to Section F of the Narrative and Section F.1 of the Narrative, requesting waiver of the surety bond, are amended and replaced with the text in Attachment A hereto.
- The following sections of Exhibit B, the Technical Appendix: Section 1; Section 6; Annex A (beam center points); and Annex C (orbital debris mitigation report); are amended to align with the coverage and discussion of a single satellite and replaced with the text in Attachment B hereto.
- The Associated gxt files are amended and replaced with updated files submitted concurrently with this amendment.

Unrelated to the amendment, the originally submitted Schedule S was significantly altered during migration to the new ICFS. For example, channels were distributed to any beam that had similar frequencies, regardless of the beam in which they were originally associated with. Changes were required (and made in the Schedule S attached to this amendment) to align the migrated Schedule S with the originally submitted version and to provide new required information elements in the new ICFS Schedule S form.

Except as set forth in this amendment and attachments, all other information previously provided in the Application remains unchanged. Astranis respectfully requests that the Commission grant the Application, as amended herein.

[3] For the avoidance of doubt, this amends relevant text in the Application Narrative at 1, 3-7; Application Exhibit B at 2, 6; Application Exhibit B, Annex C at 2-3, as detailed in Attachments A and B hereto.

Respectfully submitted,

/s/ Kimberly M. Baum

Kimbery M. Baum
Head of Regulatory
Astranis Space Technologies Corp.
575 20th St.
San Francisco, CA 94107

Dated: September 23, 2025

ATTACHMENT A

Amendments to Application Narrative

I. Replace the Narrative introduction section with the following text.

Astranis Projects USA LLC ("Astranis") respectfully files this application pursuant to Section 25.114 of the Federal Communications Commission's ("FCC" or "Commission") rules, 47 C.F.R § 25.114, for authority to launch and operate geostationary satellite orbit ("GSO") fixed-satellite service ("FSS") system, operating in the Ka-band frequencies and located at the nominal 157º E.L. orbital location (the "ASTRANIS 157E GSO System"). The ASTRANIS 157E GSO System will consist of one "MicroGEO" satellite capable of providing robust and advanced broadband services to portions of Asia and Oceania, including the Philippines, Taiwan, Japan, Northern Marianas, Guam and surrounding waters.

As demonstrated below, Astranis is legally and technically qualified to launch and operate the proposed system. Additionally, grant of the application will serve the public interest by allow Astranis, a U.S. company to provide high-speed Ka-band satellite connectivity to consumers, government institutions, and enterprises in unserved and underserved areas across Southeast Asia and Oceania, including Guam. Astranis requests expeditious action on the application to ensure grant by December 2025, the current date for the scheduled launch of the ASTRANIS 157E GSO System.

As required by the Commission's rules, this application has been filed electronically and includes a completed Form 312, Schedule S, Technical Appendix (including orbital debris mitigation plan), and ownership information exhibit. Relevant International Telecommunication Union ("ITU") filings for the system will be provided to the Commission under separate cover.

II. Replace the Narrative Background section with the following text.

Astranis is a wholly owned subsidiary of Astranis Space Technologies Corp.,[1] an American satellite company with over 420 employees in the United States that designs, builds, and operates small satellites for geostationary orbits. Building satellites in its own factory in the United States, Astranis is revolutionizing the geostationary satellite market by drastically reducing the time to orbit for each satellite and enabling tailored spacecraft to meet each customer's needs. The company currently operates a fleet of five MicroGEO satellites.[2] In addition, Astranis has publicly announced a series of contracts for technology development,

[1] For ease of reference, the two companies are collectively referred to as "Astranis," except where context requires otherwise. More information regarding Astranis can be found at: https://www.astranis.com/.

[2] *See* Will Robinson-Smith*, SpaceX launches 4 Astranis satellites on Falcon 9 rocket from Cape Canaveral,* Space Flight Now (Dec. 29, 2024), https://spaceflightnow.com/2024/12/29/live-coverage-spacex-to-launch-4-astranis-satellites-on-falcon-9-rocket-from-cape-canaveral/.

demonstration, and next-generation system design with the U.S. Space Force and other parts of the U.S. Government.[3]

The ASTRANIS 157E GSO system is designed to better meet customer needs through operational and cost efficiencies associated with a modular approach to orbital capacity. As discussed in more detail in the Technical Appendix, the ASTRANIS 157E GSO System will provide high-speed, Ka-band satellite connectivity to consumers, government institutions, and enterprises in unserved and underserved areas across portions of Asia and Oceania, including the Philippines, Taiwan, Japan, Northern Marianas, Guam and surrounding waters.

III. Remove in its entirety Narrative Discussion Section E, Number of GSO Satellites Authorized, and replace with the following text.

[Reserved]

IV. Replace the introductory text of Narrative Discussion Section F, Waiver Requests and the text of Narrative Discussion Section F.1, Surety Bond with the following text.

F. WAIVER REQUESTS

The Commission may waive any of its rules if there is "good cause" to do so.[4] In general, waiver is appropriate if (1) special circumstances warrant a deviation from the general rule; and (2) such deviation would better serve the public interest than would strict adherence to the rule.[5] Generally, the Commission will grant a waiver of its rules in a particular case if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest.[6] Astranis submits that good causes exists to waive the rules identified below.

[3] *See* https://spacenews.com/astranis-demonstrates-gps-capability-in-race-for-space-force-contract/

[4] *See* 47 C.F.R. § 1.3; *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990); *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969).

[5] *See Northeast Cellular*, 897 F.2d at 1166.

[6] *See WAIT Radio*, 418 F.2d at 1157.

1. SURETY BOND

The FCC imposes a surety bond requirement on satellite operators to prevent licensees from warehousing spectrum and engaging in speculative behavior.[7] Astranis requests waiver of the GSO surety bond requirement, as the satellite in the ASTRANIS 157E GSO System is already under construction and is expected to be launched as early as December 2025.[8] Accordingly, there are no concerns about spectrum warehousing or speculation and no reason to impose the surety bond. The frequencies requested under this application will be in use in a much shorter time period than the five years required under the Commission's GSO milestone provisions.[9] In similar situations, where the launch of an authorized satellite system was imminent, the FCC has waived the bond requirement or otherwise relaxed the deadline for posting the bond. The FCC should do so here as well.

Moreover, the surety bond is crippling to innovation in space, and, in particular, to smaller American companies, such as Astranis. Obtaining and maintaining a space station license is more expensive in the United States than anywhere else, especially as the FCC now applies its substantial, annual regulatory fees to authorized—but not yet operational—satellites. Regardless of the conditions or duration of the bond, the requirement imposes a disproportionate, capital-constraining burden on new entrants, like Astranis. Companies without long-term banking relationships or large balance sheets must not only pay a fee to a bank to issue the bond but also set aside substantial collateral—capital that could otherwise support U.S.-based business activities, such as hiring engineers, expanding manufacturing capacity, or building satellites. Commenters in the Delete Delete Delete proceeding agree with Astranis.[10] The Commission should not continue applying rules that are jeopardizing U.S. leadership in space and penalizing American companies that seek to license their satellites here in the United States. A waiver is warranted for these reasons and because of the near-term deployment of the ASTRANIS 157E GSO System.

Further, the facts surrounding the waiver request by Astranis draw from principles the Commission has applied in similar situations (the FCC's provisions for small satellites), and the

---

[7] *See, e.g., Comprehensive Review of Licensing and Operating Rules for Satellite Services*, Second Report and Order, 30 FCC Rcd. 14713, 14735 ¶ 53 (2015) (*citing*, *e.g.*, *TMI Communications and Company, Limited Partnership and TerreStar Networks Inc.*, *Application for Review and Request for Stay*, Memorandum Opinion and Order, 19 FCC Rcd. 12603, 12604 ¶ 2 (2004); *PanAmSat Licensee Corp.*, A*pplication for Authority to Construct, Launch, and Operate a Ka-Band Communications Satellite System in the Fixed-Satellite Service at Orbital Locations 58° W.L. and 125° W.L.*, Memorandum Opinion and Order, 16 FCC Rcd. 11534, 11537 ¶ 12 (2001)).

[8] With use of electric thrusters for orbit raising, the satellite would then be on station within approximately six months.

[9] 47 C.F.R. § 25.164(a).

[10] *See, e.g.*, Comments of Pixxel Space Technologies, Inc., GN Docket No. 25-133, at 4 (filed Apr. 11, 2025) ("As a practical matter, the cost for posting a surety bond is significant for emerging space companies and imposes unnecessary expenses."); *see also* Comments of Capella Space Corp., GN Docket No. 25-133, at 4 (filed Apr. 11, 2025) ("[N]obody benefits from the surety bond rules except the brokers and insurers who issue the bonds.").

resulting effect of the waiver request is consistent with the Commission's rules for those similar situations. The Commission already gives small satellite operators a longer period to post the bond – one year and 30 days.[11] Astranis is situated as these small satellite companies with less deep pockets than their larger competitors, and providing the requested waiver is equivalent to providing Astranis a longer period such as a year from grant to post the bond.

[11] 47 C.F.R. § 25.165(a). "Space station licensed in accordance with § 25.122 or § 25.123 must post a bond within one year plus 30 days of the grant of the license."

ATTACHMENT B

Amendments to Application Exhibit B (Technical Appendix)

I. Replace Exhibit B, Section 1.0 Overall Description (§ 25.114(d)(1)) with the following text.

This technical appendix is submitted in support of the application of Astranis Projects US LLC ("Astranis") for authority to operate the ASTRANIS 157E GSO System at 157° E.L. The satellite's Ka-band transponders will provide coverage of portions of Asia and Oceania, including the Philippines, Taiwan, Japan, Northern Marianas, Guam and surrounding waters, via a series of spot beams. The ASTRANIS 157E GSO System will also utilize the Ka-band spot beams to provide gateway functions, through use of the on-board software defined radio.

II. Replace Section 6.0, Satellite Antenna Gain Contours (§ 25.114(c)(4)(vi)(A)&(vii)), with the following text.

6.0 Satellite Antenna Gain Contours (§ 25.114(c)(4)(vi)(A)&25.114(c)(4)(vii)(C))

The Schedule S and accompanying gxt files provide the typical antenna gain contours for the ASTRANIS 157E GSO System beams at 157° E.L. Considering the large number of spot beams utilized in the Ka-band payload, the predicted antenna gain contours and associated performance characteristics are provided for a representative set of beams called User Beam Group in the Ka-band frequencies (called beams KADL, KADR, KAUL and KAUR in Schedule S). Any of the Ka-band user beams can also be used as a gateway beam (called beams KGDL, KGDR, KGUL and KGUR in Schedule S). Pursuant to Section 25.114(c)(4)(vii)(C) of the Commission's rules, Astranis is providing the predicted antenna gain contours for one transmit and receive antenna beam, together with a map of the isolines formed by combining all of the spot beams into one or more composite beams.

Consistent with § 25.114(c)(4)(vi)(A) of the Commission's rules, Astranis is not providing the gain characteristics for the global omni antennas (beams CLDL, CLDR, CLRL and CRRR in Schedule S) in a GIMS-readable format because the 8 dBi contours of these beams fall beyond the edge of the visible Earth.

III. Remove in its entirety Annex A, Tables of Maximum Antenna Gain Point(s) in Latitude and Longitude of the User Beam Group and Gateway beams, and replace with the following text.

[Reserved]

IV. Replace Annex C, Orbital Debris Mitigation Assessment, with the following text.

1.0 Introduction

This Annex describes the space debris mitigation measures that Astranis will implement with respect to the ASTRANIS 157E GSO System, which consists of one satellite to be located and operated at the 157˚ E.L. orbit location.

The ASTRANIS 157E GSO System is designed and manufactured by Astranis Space Technologies Corp. ("Astranis") using its proprietary MicroGEO bus. The satellite design leverages flight heritage hardware, utilizes architectures and design practices common to geostationary orbit ("GSO") spacecraft, and utilizes the SMC-S-016 industry standard as a basis for qualification and acceptance test plans and levels.[1] The Astranis satellite is three-axis stabilized, uses monopropellant chemical propulsion for north-south station-keeping, and uses a xenon Hall-effect thruster for east-west station-keeping.

As described below, the ASTRANIS 157E GSO System will comply with § 25.114(d)(14) of the Commission's rules, and Astranis will seek to comply with other rules that the Commission may adopt in the future.

2.0 ASTRANIS 157E GSO System Operations

Astranis will operate the satellite to control and limit the amount of debris released during normal operations,[2] and has assessed and limited the probability of the satellite becoming a source of debris by collisions with small debris or meteoroids that could cause loss of control and prevent post-mission disposal.[3] In addition, fault-tolerant components are spatially separated from each other and housings for electronic components contain significant shielding to further limit the effects of meteoroids.

Astranis has further assessed and limited the probability of the satellite becoming a source of debris by collisions with large debris or other operational space stations and has determined the probability of such collisions with the Astranis satellite to be negligible.[4]

The Astranis satellite is designed to avoid creating any debris during nominal on-orbit operations. A safe operational configuration is ensured due to the hardware design and concept of operations procedures. The Astranis satellite is designed such that high levels of thruster activity and orbit perturbation do not result when foreseeable onboard events occur. The satellite also incorporates significant redundancy for on-station operations and post-mission disposal.

---

[1] *Space and Missile Systems Center Standard, Test Requirements for Launch, Upper-Stage, and Space Vehicles, SMC-S-016,* Air Force Space Command (Sept. 5, 2014), https://explorers.larc.nasa.gov/2019APSMEX/MO/pdf_files/SMC-S-016_05SEP2014.pdf.

[2] *See* 47 C.F.R. § 25.114(d)(14)(i).

[3] *See* 47 C.F.R. § 25.114(d)(14)(ii).

[4] *See* 47 C.F.R. § 25.114 (d)(14)(iv).

The satellite will be controlled within its station-keeping box (157° W.L. +/- 0.05°) by routine, periodic orbit correction maneuvers. The satellite is fully trackable by existing ground stations and via radio ranging.[5]

There are no other spacecraft with station-keeping volume that will overlap with the station-keeping volume of the ASTRANIS 157E GSO System. Physical coordination of the satellite's on-orbit operations will be performed during orbit raise, graveyard transfer, and other appropriate circumstances and mission phases.

Astranis has designed the satellite to limit the probability of accidental break-up or explosion both during and after the completion of mission operations and of release of liquids that will persist in droplet form.[6] Systems that may potentially experience such an event (*i.e.,* propulsion hardware and batteries) utilize components that are designed with significant margins, thereby ensuring that energy sources onboard the satellite are contained and controlled during an event, so that they will not convert system components into fragments. Operating conditions in the satellites' batteries and tanks will be monitored by telemetry.

As described below, at post-mission disposal and after the satellite has been raised to graveyard orbit, energy sources will be rendered inactive by venting remaining propellant (via opening all valves) and by leaving the batteries in a permanent state of discharge. Considering its design safety margins, the probability of accidental explosion of the satellite is negligible.

3.0 ASTRANIS 157E GSO System End-of-Life Disposal

The orbit altitude of the ASTRANIS 157E GSO System will be raised by 350 km to ensure that the satellite will not re-enter the GSO protected region (GSO altitude +/- 200 km within +/- 15 degrees of inclination) in the long term. To ensure sufficient margin, 0.3 kg of xenon propellant has been allocated and reserved to carry out the post-mission disposal maneuver. This equates to 14 m/s of delta-v, or enough delta-v to raise the orbit roughly 350 km. The Commission will be informed of any material change to the above quantity of propellant.

The minimum perigee altitude to avoid re-entering the GSO protected region can be computed using the IADC formula[7] applied to the satellite:

Delta_H (km) = 235 + 1000 * C_R * (A/m) where

- 235 accounts for the 200 km GEO protected region and 35 km for gravitational perturbations
- C_R is the solar radiation pressure coefficient
  - C_R = 2 in the most conservative case
- A/m is the aspect area (m^2) to dry mass (kg) ratio
  - A/m = 11.18/271.4 = 0.041 for the ASTRANIS 157E GSO System

[5] *See* 47 C.F.R. § 25.114 (d)(14)(v).

[6] *See* 47 C.F.R. § 25.114(d)(14)(iii).

[7] *See also* Recommendation ITU-R S.1003-2, Environmental Protection of the Geostationary Orbit (2010).

Therefore, a conservative Delta_H for the satellite is calculated as follows:

- Delta_H = 235 + 1000 * 2 * 0.041 = 317

The planned 350 km above GSO altitude (along with additional fuel margin) is sufficient to satisfy the 317 km requirement. Astranis will monitor the remaining propellant to ensure that sufficient fuel remains in the tanks to reach the minimum perigee.

As part of the end-of-life activities, energy sources on the ASTRANIS 157E GSO System will be rendered inactive such that debris generation will not result from the conversion or dissipation of energy sources onboard the satellite.[8] Such actions involve the following:

a. Discharge the batteries and isolate them from the solar arrays to prevent further electrical energy storage.

b. Switch off the reaction wheels.

c. Deplete and vent the propellant tanks, to the extent possible, which allows depressurizing during passivation operations and results in only negligible residuals remaining in the tanks.

   i. Xenon in the electric propulsion system, which is contained in two tanks, will be vented, and proportional flow control valve-based pressure regulation allows nearly complete evacuation (as compared to using a mechanical regulator). Additionally, the pressure relief valve prevents catastrophic failure regardless of venting.

   ii. During end-of-life deorbiting, the monopropellant is nearly entirely consumed via depletion burns. Small residuals of less than 1 kg may remain in propellant lines and would be contained by normally closed dual-seat solenoid valves after system passivation.

   iii. Monopropellant pressurant (helium) remains in diaphragm tank at low pressure. The tank has a total capacity of 91L, containing 0.1 kg of helium, which has a pressure of ~5 bar at the expected disposal temperature of -50 C.

The monopropellant tank has a burst pressure of 49.3 bar and the xenon tanks have a burst pressure of 772.4 bar. All tanks are validated against MIL-STD-1522A.[9] The satellite contains no pyrotechnic systems to passivate.

[8] *See* 47 C.F.R. § 25.114(d)(14)(vi)-(vii).

[9] *See Standard General Requirements for Safe Design and Operation of Pressurized Missile and Space Systems, MIL-STD-1522A*, Department of Defense (May 28, 1984) (superseding MIL-STD-1522).

DECLARATION

I, Kimberly Baum, hereby certify under penalty of perjury that I am the technically qualified person responsible for preparation of the technical information contained in the foregoing exhibit; that I am familiar with the technical requirements of Part 25; and that I either prepared or reviewed the technical information contained in the exhibit and that it is complete and accurate to the best of my knowledge, information and belief.

/s/ Kimberly M. Baum

Kimberly M. Baum
Head of Regulatory
Astranis Space Technologies Corp.

Dated: September 23, 2025