Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of Morehead State University Application for Earth Station Authorization	Call Sign _____ File No. SES-LIC_____

EXHIBIT A – APPLICATION FOR EARTH STATION AUTHORIZATION[1]

Morehead State University ("MSU" or "Applicant") herein seeks Federal Communications Commission ("FCC" or "Commission") authority to operate a 21.0-meter gateway Earth station ("Morehead State Gateway") at the Space Science Center at Morehead State University in Morehead, Kentucky ("Space Science Center") pursuant to a "baseline" license (the "Application").[2] The Morehead State Gateway will serve as one of the principal domestic points

[1] The involved Earth station antenna was previously operated pursuant to Part 5 experimental authority, including FCC Call Sign WW9XBA.

[2] Pursuant to the FCC's "baseline" Earth station licensing framework, Applicant does not designate a point of communication or include an associated link budget in its Application at this time. MSU acknowledges that it is required to modify this Application or grant to designate a point of communication before commencing operations by certifying that: (1) it has permission from the satellite operator to communicate with the satellite system; (2) it is not repointing the Earth station's antenna beyond any coordinated range; (3) adding a point of communication does not result in an increased risk of harmful interference; (4) it does not request any change to authorized frequencies; and (5) it does not request to communicate with a satellite that does not have market access (47 C.F.R. § 25.118(g)); *See*

of communication for the new National Aeronautics and Space Administration ("NASA") Near Space Network ("NSN"), for which Intuitive Machines, LLC ("IM") recently received multiple task order awards.[3]

MSU's proposed operations for the Morehead State Gateway will thoroughly protect incumbent spectrum users from harmful interference, as explained further below. Moreover, grant of this Application and issuance of a "baseline" license will serve the public interest. Expedited deployment of urgently needed ground infrastructure for communications with Federal and commercial near-space and lunar missions will help establish a permanent United States lunar presence that will serve as a logistical hub for future deep space exploration missions.

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I. BACKGROUND

The Space Science Center at Morehead State University is a state-of-the-art research facility encompassing 45,000 square feet of floor space and includes a control center for separate 21-meter and 12-meter satellite ground station antennas supporting various scientific missions.[4] The Space Science Center also contains radiofrequency and electronics laboratories, anechoic

Expediting Initial Processing of Satellite and Earth Station Applications, IB Docket No. 22-411, Second Report and Order, 40 FCC Rcd 6443 (rel. Aug. 8, 2025).

[3] Subcategory 2.2 GEO to Cislunar Relay Services contract; *See* Tiernan P. Doyle, *NASA Selects Lunar Relay Contractor for Near Space Network Services,* NASA (Sep. 17, 2024), https://www.nasa.gov/news-release/nasa-selects-lunar-relay-contractor-for-near-space-network-services/. Pursuant to commercial agreement between MSU and IM, MSU is retrofitting this antenna to support the NASA NSN and will operate it in support of IM's missions for the duration of any license granted pursuant to the instant Application.

[4] NASA has designated MSU as Space Grant University, and the Space Science Center serves as a cornerstone for MSU's space-based research programs. For additional information concerning NASA Space Grant institutions, please the National Space Grant and Fellowship Project portal at: https://www.nasa.gov/stem/spacegrant/home/index.html (last visited Aug. 4, 2026).

chambers that mimic the electromagnetic environment of space, a rooftop antenna test range, and a space systems development laboratory.

The Space Science Center has developed the Morehead State Gateway 21-meter class antenna system to be engaged in a rigorous research program in radio astronomy and to serve as an Earth station for satellite mission support, as well as a test bed for advanced radio frequency (RF) systems. MSU provides support for its own small satellite missions and provides support for NASA lunar missions (historically CAPSTONE, LRO) and will provide services to KSAT to the extent it has time not utilized by IM's NSN missions readily available. MSU and IM have commercially agreed to MSU operating the Morehead State Gateway in support of IM's NSN missions.

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II. ANTENNA CHARACTERISTICS

The Morehead State Gateway is a longstanding Earth station antenna located at the university's Space Science Center. The Morehead State Gateway's principal antenna characteristics follow below.

Table 1.0 – Morehead State Gateway Antenna Characteristics

Morehead State Gateway	
Make	Vertex-RSI
Model	21-Meter
Diameter (meters)	21.0
Maximum EIRP (dBW)	81.0 (S-band) 91.1 (X-band) 93.0 (Ka-band)

Transmit Gain (dBi)	49.2 (S-band) 60.3 (X-band) 69.0 (Ka-band)
Half-Power Beamwidth (degrees)	0.48 (S-band) 0.14 (X-band) 0.04 (Ka-band)
Minimum Elevation Angle	5 degrees

In support of the NSN, MSU will refurbish the Morehead State Gateway and retrofit it with a tri-band S-, X- and Ka-band feed. The specific frequencies that NASA requires for NSN communications, and which the Morehead State Gateway will support, are reflected in **Table 2.0** below.

Table 2.0 – Morehead State Gateway Frequency Use

NSN Earth Station Contract Requirements		
Band	**Frequencies**	**Description**
S-band	2025-2120 MHz	Uplink/Transmit (E-s)
S-band	2200-2300 MHz	Downlink/Receive (s-E)
X-band	7145-7235 MHz	Uplink/Transmit (E-s)
X-band	8400-8500 MHz	Downlink/Receive (s-E)
Ka-band	22.55-23.15 GHz	Uplink/Transmit (E-s)
Ka-band	25.5-27.0 GHz	Downlink/Receive (s-E)

MSU will monitor the antenna on a 24/7/365 basis and maintain "kill switch" control. Kill switch control contact details follow below in Section IV.B.

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III. PUBLIC INTEREST STATEMENT

Grant of this Application unambiguously serves the public interest. Promoting lunar and deep space missions are longstanding U.S. policy goals reinforced last year in the 2025 Executive Order titled "Ensuring American Space Superiority," where the President reaffirmed his administration's priority to "return[ ] Americans to the Moon by 2028 through the Artemis Program,[5] to assert American leadership in space, lay the foundations for lunar economic development, prepare for the journey to Mars, and inspire the next generation of American explorers."[6]

The Morehead State Gateway will serve as part of U.S. infrastructure for the NASA Artemis lunar initiative and serve as a beachhead for a new era of U.S. space exploration and interests in space. As former NASA administrator Jim Bridenstine recognized, the Artemis lunar program will enable "humanity ... [to] explore regions of the Moon never visited before, uniting people around the unknown, the never seen, and the once impossible."[7] The program will bring humans back to the surface of the Moon, enable a long-term human presence on the Moon by the

[5] Artemis is the twin sister of Apollo, and the Goddess of the Moon. *See The Artemis Plan: NASA's Lunar Exploration Program Overview,* NASA (Sept. 2020), https://www.nasa.gov/sites/default/files/atoms/files/artemis_plan-20200921.pdf ("Artemis Plan").

[6] Exec. Order No. 14369, 90 FR 60537 (2025).

[7] *See Artemis Plan*.

end of the decade, and serve as jumping off point for further exploration of our solar system.[8] A key enabler of this broad effort is the development of capable and reliable Earth station infrastructure, and the NSN and the Morehead State Gateway represent the first building blocks necessary to achieve this goal.

MSU's proposed operations under the pending Application will not interfere with incumbent spectrum uses,[9] and involve radiofrequencies defined in the LunaNet Interoperability Specification ("LunaNet") developed collaboratively by NASA, the European Space Agency (ESA) and the Japan Aerospace Exploration Agency (JAXA) to facilitate international harmonized and readily coordinated lunar communications.[10]

IV. OTHER MATTERS

A. Waiver Requests

The Commission may waive any of its rules if there is "good cause" to do so.[11] In general, waiver is appropriate if (i) special circumstances warrant a deviation from the general rule; and (ii) such deviation would better serve the public interest than would strict adherence to the rule.[12] Generally, the Commission will grant a waiver of its rules in a particular case if the relief requested

[8] *Id*.

[9] MSU appreciates that all involved bands have Federal primary or coprimary allocations, and Federal incumbent spectrum users enjoy priority under FCC rules. Accordingly, operations under any license granted pursuant to the instant "baseline" Application will occur only after coordination with Federal spectrum users and Interdepartment Radio Advisory Committee concurrence.

[10] *LunaNet Interoperability Specification Document, Version 5*, NASA (Jan. 29, 2025), https://www.nasa.gov/wp-content/uploads/2025/02/lunanet-interoperability-specification-v5-baseline.pdf?emrc=606f95.

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

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

would not undermine the policy objective of the rule in question and would otherwise serve the public interest.[13] Good cause exists to waive the following rules under the special circumstances presented in this Application.

1. U.S. Table of Frequency Allocations

a. 2025 – 2120 MHz

The 2025-2120 MHz band is allocated to Federal space research and other Federal uses on a co-primary basis with fixed and mobile commercial uses.[14] This band may be allocated to non-Federal Earth-to-space transmission in the space research service subject to such conditions as may be applied on a case by case basis, and the limitation that any use may not cause harmful interference to authorized Federal operations, as well as to non-Federal operations consistent with the Commission's rules of general applicability as promulgated in Parts 26, 74F, 78 and 101J.[15]

MSU will coordinate with Federal and non-Federal operators in this band to ensure its operations will not cause harmful interference, consistent with the Commission's prior authorization of Earth-to-space uplinks in this band.[16] The nature of proposed uplinks also reflects an inherently compatible service with existing incumbent operations. The Morehead State Gateway is enabled with auto-track features that allow carefully timed and rapid adjustment of azimuth and elevation to avoid conjunction events with Federal space missions operating in the band, and MSU maintains the ability to mute transmissions altogether if necessary. With respect

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

[14] *See* 47 C.F.R. § 2.106.

[15] *See id.*, n.US347.

[16] *See generally* Call Signs S3156, S3152, and S3087, among others.

to non-Federal incumbent operations, the broadcast and cable industry operations in the band involve largely point-to-point communications with high-gain, directional antennas aimed horizontally at modest uptilt or downtilt.[17] In contrast, the Morehead State Gateway will employ significant elevation to point at overhead spacecraft. Accordingly, it is unlikely that the disparate services will experience conjunction events. Moreover, the Morehead State Gateway's remote rural location in Kentucky makes it unlikely that non-Federal incumbent spectrum users come into close proximity with the Earth station.

Accordingly, good cause exists for a waiver of the Table of Allocations to enable MSU to conduct uplink-only operations in the 2025-2120 MHz band. Grant of the requested waiver, and deviation from the rule would not undermine the contemplated protections to authorized users of the band.

b. 7145 – 7235 MHz

Good cause exists to grant a waiver authorizing uplink in the 7145-7235 MHz frequency band. While no current allocation exists for non-Federal users in the United States in the 7145-7235 MHz, and the FCC has not promulgated rules of general applicability for Earth-to-space communications, approving MSU to transmit Earth-to-space communications in the band does not prejudice any incumbent spectrum user and is consistent with global operations in the band.

MSU will coordinate with Federal operators in this band to ensure its operations will not cause harmful interference. The nature of proposed uplinks also reflects an inherently compatible service with existing incumbent operations. As discussed in the prior section, the Morehead State

[17] *See* 47 C.F.R. §§ 74.602(a), 78.18(a)(6), 101.803(b).

Gateway is enabled with auto-track features that allow carefully timed and rapid adjustment of azimuth and elevation to avoid conjunction events with Federal space missions operating in the band, and MSU maintains the ability to mute transmissions altogether if necessary.

Grant of this waiver is further warranted because MSU's use of the 7145-7235 MHz band is required by NASA to support the NSN. The Federal government has determined that IM's use of these specific frequencies is essential to the fulfillment of critical mission requirements that directly serve Federal objectives. Denying the requested waiver would effectively preclude MSU from performing its obligations to IM under its commercial agreement, thereby frustrating the very Federal mission interests that the domestic allocation of the 7145-7235 MHz band to Federal services is intended to advance.

In this context, non-Federal operations act as an extension of the Federal user's authorized mission activities. Accordingly, authorization of Applicant's transmit operations under these circumstances is not only consistent with the purposes underlying the Federal allocation but affirmatively serves those purposes by enabling the Federal government to leverage commercial capabilities to meet its operational requirements in a cost-effective and efficient manner.

Accordingly, good cause exists for the FCC to grant a waiver of the Table of Allocations to enable MSU to conduct uplink operations in the 7145-7235 MHz band. Grant of the requested waiver, and deviation from the rule would not undermine the contemplated protections to authorized users of the band.

c. 22.55 – 23.15 GHz Band

To the extent that the FCC requires a waiver for Applicant's proposed operations in the 22.55-23.15 GHz band, MSU submits that good cause exists to grant such waiver. The 22.55-23.15 GHz band is allocated for shared space research Earth-to-space transmission. Accordingly, Applicant will not prejudice incumbent operations in this band by coordinating its operations, and its use of the frequency band will be consistent with global operations.

MSU will coordinate with Federal and non-Federal operators in this band to ensure its operations will not cause harmful interference. The nature of proposed uplinks also reflects an inherently compatible service with existing incumbent operations. As previously discussed, the Morehead State Gateway is enabled with auto-track features that allow carefully timed and rapid adjustment of azimuth and elevation to avoid conjunction events with Federal and non-Federal space missions operating in the band, and MSU maintains the ability to mute transmissions altogether if necessary.

Additionally, the Applicant's proposed Earth station transmit operations are technically comparable and operationally consistent with established international uses. Grant of this waiver would facilitate Applicant's participation in space communication and data relay activities that are conducted on a global basis and ensure that the United States maintains its leadership in the utilization of Ka-band spectrum for space operations.

Moreover, as discussed in the prior section, this frequency band is required by IM's contract to deliver services to NASA. Therefore, grant of the waiver is in the public interest in that non-Federal use of these frequencies supports Federal objectives and incumbent users will be sufficiently protected.

B. Kill Switch Operator Details

The kill switch operator contact information is as follows:

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Ground Station Engineer/Operations Lead
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V. CONCLUSION

Prompt grant of this Application will accelerate the deployment of cislunar communications and deep space communications in support of NASA's NSN and U.S. leadership in space.