EXHIBIT 1

DESCRIPTION OF PROPOSED OPERATIONS
(Response to Question 43, Form 312)

Pursuant to 47 C.F.R. § 25.115, HNS License Sub, LLC ("Hughes") requests authorization to operate a network of beacon earth stations for telemetry, tracking, and command ("TT&C") communications with EchoStar XXIV (also known as "Jupiter 3") (Call Sign S3017), a Ka- and Q/V-band geostationary orbit ("GSO") satellite licensed at 95.2º W.L. to provide fixed satellite services.[1]

Proposed Beacon Operations. The proposed earth stations will employ 1.6-meter (in diameter) antennas to transmit and receive tracking beacons at 29.997 GHz (uplink) and 20.196 – 20.200 GHz (downlink) in order to: (i) maintain accurate pointing of EchoStar XXIV's spot beam antennas as well as the earth station antennas; and (ii) perform satellite in-orbit testing. Consistent with 47 C.F.R. § 25.202(g), these beacon stations will operate at authorized band edges from the following sites:

City, State	WGS84 Coordinates
Abilene, TX	32° 21' 35" N, 99° 44' 39" W
San Antonio, TX	29° 28' 18.34" N, 98° 40' 17.69" W
Midland, TX	31° 50' 49.56" N, 102° 19' 37.2" W
Casper, WY	42° 50' 58.56" N, 106° 19' 33.96" W
Minot, ND	48° 12' 12.96" N, 101° 16' 26.4" W

The technical parameters of the proposed operations are further specified in the accompanying Schedule B.

[1] *See* Hughes, *Stamp Grant*, File No. SAT-MOD-20200612-00072 (Sept. 3, 2020) (authorizing EchoStar XXIV satellite operations, including beacon and other TT&C communications).

Commission Policy and Public Interest Benefits. Commission authorization of the proposed beacon operations will permit deployment of key components of the overall EchoStar XXIV satellite network, thus enabling Hughes to offer unique and compelling public interest benefits, including additional and advanced broadband services to more than 1.5 million customers in North, Central, and South America. EchoStar XXIV, along with its capacity and speed capabilities, will join other satellites in the Hughes fleet to offer a true competitive broadband alternative across the country. The satellite will provide additional capacity, allowing Hughes to provide advanced broadband services with download speeds of 100 Mbps or higher to enterprises, the government, small businesses, and residential customers across the United States and the Americas, helping to solve the digital divide. EchoStar XXIV also will support a variety of applications, including broadband access, aeronautical services for in-flight connectivity, residential and business VOIP, and next generation communications services, including 5G.

Ensuring successful launch and operations of the EchoStar XXIV satellite network also will bolster Hughes' disaster relief efforts and capabilities. In many cases, satellite is the only reliable communications system following a natural disaster.[2] Indeed, Hughes has provided crucial broadband services in the wake of numerous disasters, including Hurricane Michael in 2018 and Hurricane Dorian in 2019.[3] Moreover, Hughes's ubiquitous service coverage and

[2] *See* Comments of Liga de Cooperativas de Puerto Rico, WC Dkt. No. 18-143 et al. at 1-2 (Jul. 2, 2018); *see also The Uniendo a Puerto Rico Fund and the Connect USVI Fund*, Report and Order and Order on Reconsideration, 34 FCC Rcd 9109, ¶ 46 (2019) ("We agree with numerous commenters that allowing inclusion of satellite providers is particularly valuable in the context of Puerto Rico and the U.S. Virgin Islands due to satellite's resilience and availability post-hurricanes.")

[3] *See, e.g.*, EchoStar Satellite Services, LLC, *Special Temporary Authorizations to Extend Service to the Bahamas for Emergency Operations*, File Nos. SAT-STA-20190925-00101 & SAT-STA-20190906-00088 (granted Nov. 14 & Sept. 6, 2019).

capacity remain key to meeting unprecedented consumer broadband demand resulting from the novel COVID-19 pandemic.

No Significant Interference Risk. Pursuant to 47 C.F.R. §§ 25.115(g)(2) and 25.132(a)(1), Hughes certifies that authorized representatives have reviewed the results of radiation pattern tests performed by the antenna manufacturer on representative equipment in representative configurations, and the test results demonstrate that the equipment meets applicable off-axis gain limits under 47 C.F.R. § 25.209. Additionally, as demonstrated in a related, Commission-approved application to modify the EchoStar XXIV satellite license,[4] the proposed Ka-band beacon uplink operations at 29.997 GHz will comply with applicable off-axis equivalent isotropically radiated power ("EIRP") density limits under 47 C.F.R. § 25.218(i), except to the extent coordinated with U.S.-authorized GSO satellite operations within six degrees of EchoStar XXIV's orbital location at 95.2º W.L. Indeed, the EIRP density levels specified in Schedule B of this application are consistent with off-axis EIRP density limits that are required under 47 C.F.R. § 25.218(i) or that have been coordinated with operators of U.S.-authorized GSO satellites within six degrees, including AT&T, DISH, and Intelsat. Accordingly, the proposed beacon operations will create no significant interference risk to other GSO satellite operations authorized on a primary basis.

Radiation Hazard Analysis. Radiation hazard analysis was conducted using the predictive methodology identified in OET Bulletin 65, and calculations are provided in Attachment A (Radiation Hazard Analysis). As shown in Attachment A, except for the region between the feed horn and reflector, the maximum exposure levels in nearly all regions in the

[4] *See* Hughes, Application for Modification, File No. SAT-MOD-20200612-00072, Exh. 1 (Description) at 4 (granted Sept. 3, 2020) (certifying compliance with Section 25.218(i)'s off-axis EIRP density limits, unless coordinated with U.S.-authorized GSO satellite operations).

vicinity of the earth station antennas (*i.e.*, the near field, far field, transition field, near reflector surface, and between the reflector and the ground) are below the Commission's maximum permissible exposure limit for an occupational/controlled environment. To ensure protection of the general public, the antennas will be located on private commercial property with limited access. Technicians responsible for operating these antennas will be trained to shut down and secure the transmitter before performing any maintenance or repair work.

Conclusion. Based on the foregoing, Commission licensing of the proposed operations will serve the public interest without significant interference risk to other services.

ATTACHMENT A

RADIATION HAZARD CALCULATIONS FOR 1.60 METER BEACON EARTH STATION			
Nomenclature	**Formula**	**Value**	**Unit**
INPUT PARAMETERS			
D = Antenna Diameter		1.60	meters
d = Diameter of Feed Mouth		0.033	meters
P = Max Power into Antenna		13.5	Watts
n = Apperture Effeciency		65%	
k = Wavelength @ 29.997 GHz		0.0100	meters
CALCULATED VALUES			
A = Area of Reflector	PI*D^2/4	2.011	meters^2
l = Length of Near Field	D^2/4k	64	meters
L = Beginning of Far Field	0.6D^2/k	154	meters
G = Antenna Gain @ 29.997 GHz	n(PI*D/k)^2	164,219	52.2 dBi
a = Area of Feed Mouth	PI*d^2/4	0.0009	meters^2

POWER DENSITY CALCULATIONS

Region	Maximum Power Density in Region		Hazard Assessment (FCC MPE Limit = 5 mW/cm^2)
	Formula	Value (mW/cm^2)	
1 Near Field	4nP/A	1.75	< FCC MPE Limit
2 Far Field	GP/(4(PI)L^2)	0.75	< FCC MPE Limit
3 Transition	<= Nr Fld Region	1.75	< FCC MPE Limit
4 Near Reflector Surface	4P/A	2.69	< FCC MPE Limit
5 Between Reflector & Ground	P/A	0.67	< FCC MPE Limit
6 Between Reflector and Feed	4P/a	6313.6	< FCC MPE Limit