Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Mitigation of Orbital Debris in the New Space Age	)	IB Docket No. 18-313
	)	
	)	

COMMENTS OF AT&T SERVICES, INC.

AT&T Services, Inc. ("AT&T"), on behalf of DIRECTV Enterprises LLC ("DIRECTV") and its other affiliates, hereby submits comments on the *Notice of Proposed Rulemaking and Order on Reconsideration* ("*NPRM*") in the above-referenced proceeding in which the Federal Communications Commission ("FCC" or "Commission") seeks comment on proposals to revise its rules governing the mitigation of orbital debris by space station licensees.[1]

AT&T appreciates the Commission's attention to orbital debris issues as the space industry has evolved, and agrees with the Commission's approach of focusing mainly on the unique risks and issues presented by non-geostationary orbit ("NGSO"), and particularly low-earth orbit ("LEO"), operations in this *NPRM*. Given that the existing orbital debris mitigation requirements have worked well for the geostationary orbit ("GSO") segment of the satellite industry, the Commission should decline to adopt new rules applicable to GSO systems unless such a rule change is absolutely necessary to meet the Commission's objectives regarding orbital debris. To that end, the Commission should: (i) continue evaluating GSO license term extension requests on a case-by-case basis; (ii) decline to impose an indemnification requirement; and (iii)

[1] *Mitigation of Orbital Debris in the New Space Age*, Notice of Proposed Rulemaking and Order on Reconsideration, IB Docket Nos. 18-313 and 02-54 (Terminated), FCC 18-159 (2018).

decline to impose any encryption requirements for telemetry, tracking, and command ("TT&C") communications.

I. THE COMMISSION SHOULD NOT UNDULY RESTRICT THE ABILITY OF GSO OPERATORS TO OBTAIN LICENSE TERM EXTENSIONS.

The Commission seeks comment on a number of proposed and potential changes to its rules regarding the ability of GSO licensees to obtain license extensions.[2] Given the success of the Commission's case-by-case approach to processing requests for extensions of GSO license terms, the Commission should avoid adopting overly prescriptive regulations that would force premature disposal of functioning satellites or impose unnecessary burdens on GSO operators or the Commission. Accordingly, the Commission should largely decline to adopt its proposals regarding license term extensions.

A. The Commission Should Enable Licensees Seeking Extensions to Demonstrate the Reliability of Satellites that Have Single Points of Failure.

As a general matter, AT&T does not oppose the Commission's proposal to "codify [its] current practice of requesting certain types of information from GSO licensees requesting license term extensions," including information regarding the duration of the requested license extension, the total remaining satellite lifetime, and the health of the satellite.[3] However, AT&T is concerned that the Commission's proposal to require licensees seeking extensions to "certify that the satellite has no single point of failure or other malfunctions"[4] may unduly restrict a licensee's ability to obtain an extension for a functional, reliable satellite, and therefore encourages the Commission to focus instead on the overall reliability of the spacecraft.

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2 *NPRM* ¶¶ 63-67.

3 *Id.* ¶ 65.

4 *Id.*

The existence of a single point of failure does not necessarily indicate that a satellite will fail either while in orbit or in the process of deorbiting, or even that there is a reasonable probability of such a failure. Indeed, given the reliability of redundant component parts, in many cases it is highly probable that a satellite with a single point of failure will operate exactly as designed for the remainder of its useful life and will be successfully deorbited. Accordingly, the Commission should avoid creating any sort of automatic limitation on license extensions based on a mandatory certification related to single points of failure. To the extent the Commission adopts such a certification requirement, it should also permit applicants to demonstrate that a license extension is still warranted, for instance, because of the reliability of the component for which there is a single point of failure. The FCC should continue to evaluate such showings on a case-by-case basis.

A flexible standard that permits operators to demonstrate that a license extension is warranted will avoid unnecessarily restricting the license terms of satellites that are able to operate reliably and provide valuable services that benefit the public interest. Moreover, this approach would be consistent with the Commission's past practice. Also consistent with past practice, an operator's identification of a component that no longer has redundancy and any information provided to show spacecraft reliability should be entitled to confidential treatment. Confidentiality should also be preserved for any other narratives to justify license term extensions or any anomaly reporting generally.

B. The Commission Should Not Impose Caps on the Duration or Number of Extensions that a Licensee Can Receive.

The *NPRM* proposes to "limit extensions to no more than five years in a single modification application for any satellite originally issued a 15-year license term."[5] A five-year limit on the duration of license extensions has no technical basis and would add unnecessary costs for licensees and the Commission. Indeed, there is nothing inherently more dangerous about a satellite operating in year 21 versus year 20. Further, because the useful life of a satellite is highly specific to that satellite and does not manifest in five-year increments, licensees will be forced to file—and the Commission will be forced to review and process—multiple requests for extension to obtain authority to operate the satellite for its entire useful life.

Instead of adopting an arbitrary limit on the duration of license extension terms, the Commission should retain its case-by-case approach to license term extensions. Under such a process, the Commission would be able to evaluate the information provided by licensees regarding the health and useful life of the satellite, and subsequently grant authorization for extensions that are commensurate with these factors. The case-by-case process, which has worked well to enable GSO license term extensions since its inception, is a much better approach that meets the Commission's safety objectives while also maximizing the efficiency of the licensing process and avoiding unnecessary costs to operators and the Commission.

C. Should the Commission Adopt a Cap on the Duration of License Extensions, It Should Permit an Initial License Term Extension Equal to Ten Years for GSO DBS Satellites.

In putting forth its proposal to limit the duration of GSO license term extensions to five years, the *NPRM* also "seek[s] comment on what approach [the FCC] should take with respect to

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5 *NPRM* ¶ 66.

satellites with initial license terms of less than 15 years."[6] To make this proposed license extension regime equitable, to the extent the Commission adopts a five-year limit on the duration of license extensions, it should enable one initial ten-year extension for GSO direct broadcast satellite ("DBS") space stations.

DBS space stations are currently authorized for an initial license term of ten years.[7] However, as the Commission recently acknowledged in its *DBS Modernization* proceeding, "[t]here are no technical or engineering considerations that render the operating life of a DBS satellite shorter than the operating life of a non-DBS satellite, such as those used to provide GSO FSS,"[8] which currently have initial license terms of 15 years.[9] Accordingly, to the extent the FCC adopts a five-year license term extension duration for GSO systems, the Commission should enable any DBS licenses still subject to initial ten-year terms to obtain one ten-year license term extension, with subsequent extension terms of five years. Such an approach would harmonize the FCC's approach to DBS and GSO FSS license terms, consistent with the objectives identified in the *DBS Modernization* proceeding.[10]

II. THE COMMISSION SHOULD NOT IMPOSE INDEMINIFICATION OBLIGATIONS ON GSO OPERATORS.

In the NPRM, the Commission seeks comment on whether "Commission space station licensees should indemnify that United States against any costs associated with a claim brought

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6 *NPRM* ¶ 66.

7 47 C.F.R. § 25.121(a)(2).

8 *Amendment of the Commission's Policies and Rules for Processing Applications in the Direct Broadcast Satellite Service*, Second Notice of Proposed Rulemaking, IB Docket No. 06-160, FCC 18-157, ¶ 19 (2018) ("*DBS Modernization Second NPRM*").

9 47 C.F.R. § 25.121(a)(1).

10 *DBS Modernization Second NPRM* ¶ 19 (proposing to extend initial non-broadcast DBS license terms to fifteen years to better reflect the useful life of such space stations and to "make DBS space station license terms consistent with the terms of most other space stations").

against the United States related to the authorized facilities."[11] AT&T submits that, should the Commission decide to adopt this proposal, the indemnification requirement should apply only to NGSO licensees.

As a threshold matter, AT&T opposes an indemnification requirement, as it would impose unnecessary burdens on operators while failing to meaningfully change licensee behavior (indeed, the tremendous cost of building and deploying satellites, coupled with the importance and value of the services provided via those satellites, already compel operators to avoid satellite failure or other events leading to liability claims). However, to the extent the Commission nonetheless decides to adopt this proposal, the indemnification requirement should apply only to NGSO licensees. Limiting the indemnification rules to NGSO licensees would be appropriate, as NGSO constellations comprised of hundreds to thousands of satellites represent a substantially greater orbital debris risk than GSO space station operations.

III. THE COMMISSION SHOULD NOT IMPOSE TT&C ENCRYPTION REQUIREMENTS.

The Commission "seek[s] comment on whether to include any provisions in [its] rules concerning encryption for telemetry, tracking, and command communications for satellites with propulsion capabilities, and propose[s] to add a requirement to [its] operational rules."[12] Such a requirement would be ill-advised, and the Commission should decline to adopt it.

First, a TT&C encryption requirement is unnecessary. Just as with preventing satellite failure as discussed above, there is sufficient market incentive to adequately protect command and control of space stations, given both the significant investment required to build and deploy satellites and the need for continued operation to support the services being provided. Second,

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11 *NPRM* ¶ 78.

12 *Id.* ¶ 75.

because cybersecurity threats, standards, and technologies are constantly evolving, a TT&C requirement imposed by the Commission would likely be obsolete before it even goes into effect. Accordingly, in lieu of a prescriptive regulatory requirement on TT&C encryption, the Commission should leave this issue to the market, standards development organizations, and expert agencies such as NIST.[13]

To the extent the Commission moves forward with a TT&C encryption requirement, it is imperative that any such requirement apply only to future satellites, and that the Commission grandfather from the rules any space stations that are existing or under construction. The Commission frequently grandfathers existing satellites and other telecommunications facilities from new requirements to avoid placing undue burden on licensees.[14] Grandfathering is particularly appropriate here because it would be impossible or, at a minimum, extremely burdensome or difficult, for operators to equip existing satellites with encryption capabilities. Because the decision to include encryption capabilities on a space station is made at the time the manufacturing contract is negotiated and thus well before it is even constructed, let alone placed into orbit, it is essential that the grandfathering for any new TT&C encryption requirements apply to all satellites that are in-orbit, licensed, or for which construction has begun when the

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[13] *See, e.g., Framework for Improving Critical Infrastructure Cybersecurity, Version 1.1*, NIST (Apr. 26, 2018), https://nvlpubs.nist.gov/nistpubs/CSWP/NIST.CSWP.04162018.pdf.

[14] *See, e.g., Mitigation of Orbital Debris*, Second Report and Order, 19 FCC Rcd 11567, ¶ 80-81 (2004) (grandfathering "all on orbit GEO spacecraft that were launched as of the release of the *Notice* in this proceeding" from the orbital debris mitigation and post-mission disposal rules adopted in the *Second Report and Order*); *The Establishment of Policies & Serv. Rules for the Broad.-Satellite Serv. at the 17.3-17.7 GHz Frequency Band & at the 17.7-17.8 GHz Frequency Band Internationally, & at the 24.75-25.25 GHz Frequency Band for Fixed Satellite Servs. Providing Feeder Links to the Broad.-Satellite Serv. & for the Satellite Servs. Operating Bi-Directionally in the 17.3-17.8 GHz Frequency Band*, Third Report and Order, 32 FCC Rcd 3705, ¶¶ 5-6 (2017) (grandfathering existing DBS feeder-link earth stations from new interference mitigation requirements).

new requirements are adopted. To implement this grandfathering provision with respect to satellites under construction, the Commission could provide a window of time—perhaps four months after the Federal Register publication of the *Report and Order* in this proceeding—to file a certification that a satellite was under construction at the time of Federal Register publication of the *Report and Order*, and that the construction was at an advanced enough stage such that the satellite should receive grandfathering.

IV. ADDITIONAL REQUIREMENTS FOR GSO SYSTEMS ARE UNNECESSARY.

Finally, the Commission must ensure that any new orbital debris mitigation requirements adopted for NGSO systems are not inadvertently or inappropriately imposed on GSO operators. Given the success of the existing orbital debris mitigation requirements in the GSO context, the enhanced orbital debris risks posed by increasing NGSO and LEO operations, and the lack of a robust orbital debris scheme for NGSO operators, the Commission was correct to focus on requirements for NGSO operators in this *NPRM*. However, the Commission must ensure that revisions of the orbital debris requirements applicable to NGSO systems do not inadvertently create unnecessary requirements, including additional disclosure or reporting, for GSO operators.

V. CONCLUSION

AT&T respectfully urges the Commission to consider the proposals in its *NPRM* on *Mitigation of Orbital Debris in the Space Age* consistent with the comments provided herein.

Respectfully Submitted,

AT&T Services, Inc.

/s/ Jessica B. Lyons
Jessica B. Lyons
AT&T Services, Inc.
1120 20th Street NW, Suite 1000
Washington, DC 20036

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