

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

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

**REPLY COMMENTS OF AT&T SERVICES, INC.**

May 6, 2019

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## EXECUTIVE SUMMARY

AT&T Services, Inc. (“AT&T”) appreciates the Federal Communications Commission’s (“Commission”) focus on orbital debris mitigation in light of the challenges presented by large-constellation nongeostationary orbit systems, as reflected in the Commission’s *Notice of Proposed Rulemaking* (“NPRM”) on *Mitigation of Orbital Debris in the New Space Age*. The record in this proceeding supports three overarching principles that should guide the Commission’s consideration of orbital debris mitigation issues as this or other Federal proceedings continue:

1. The Commission should coordinate with and leverage the expertise of other relevant Federal agencies in developing orbital debris mitigation policies.
2. The Federal government should work to avoid duplicative regulation and should vest ultimate responsibility for a given orbital debris issue in one regulator.
3. The resulting regulatory regime should account for differences among satellite systems and avoid placing unnecessary requirements on satellite operators, particularly with respect to geostationary orbit systems.

In addition, the record strongly supports the positions taken by AT&T in its opening comments, namely that the Commission should: (i) retain its existing process to evaluate license extension requests on a case-by-case basis rather than rely solely on mandatory certifications or impose arbitrary caps on duration of license term extensions; (ii) decline to impose an indemnification requirement on satellite licensees; and (iii) decline to impose mandatory standards for telemetry, tracking & command encryption.

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AT&T Services, Inc. (“AT&T”), on behalf of DIRECTV Enterprises LLC (“DIRECTV”) and its other affiliates, hereby submits reply 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.<sup>1</sup>

Commenters responding to the *NPRM* favor three overarching principles to guide future policy efforts on orbital debris mitigation issues: (i) relevant expert Federal agencies should coordinate their efforts on orbital debris issues; (ii) duplicative regulation should be avoided, and ultimate responsibility for a given orbital debris issue or operation should be vested in one regulator; (iii) the resulting regulatory regime should account for differences among satellite systems and avoid placing unnecessary requirements on satellite operators, particularly with respect to geostationary orbit (“GSO”) systems. AT&T supports adherence to these principles as the Commission considers the issues raised in this proceeding.

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<sup>1</sup> *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).

In addition, there is ample record support for the specific proposals AT&T advanced in its opening round comments.<sup>2</sup> Accordingly, the Commission should: (i) continue to evaluate license extension requests on a case-by-case basis; (ii) decline to impose an indemnification requirement on FCC satellite licensees; and (iii) decline to impose mandatory standards for telemetry, tracking & command (“TT&C”) encryption.

**I. AT&T SUPPORTS INTERAGENCY COORDINATION ON ORBITAL DEBRIS ISSUES AND URGES AGAINST DUPLICATIVE OR UNNECESSARY REGULATION.**

In initiating this proceeding, the Commission emphasizes its “shared role with other agencies in evaluating orbital debris mitigation plans associated with non-Federal space operations” and asks “whether there are any areas in which proposed requirements may overlap with requirements that are clearly within the authority of other agencies, so that [the FCC] may seek to avoid duplicative activities.”<sup>3</sup> AT&T commends the FCC for raising the issue of the overlapping roles of Federal agencies and for recognizing the need to avoid duplicative and unnecessary regulation in the course of serving policy goals related to orbital debris mitigation and space safety more generally.

There is resounding support for these ideas in the record. As the Satellite Industry Association explains in its comments, while the Commission plays a “unique role . . . as the regulator of interstate and international telecommunications, including non-federal satellite networks licensed by the United States . . . several other federal agencies also play an important

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<sup>2</sup> Comments of AT&T Services, Inc., IB Docket No. 18-313 (filed Apr. 5, 2019) (“AT&T Comments”).

<sup>3</sup> *NPRM* ¶¶ 16-17.

role in developing and implementing U.S. orbital debris mitigation policies[.]”<sup>4</sup> OneWeb rightly observes that “[w]hile the Commission has done a remarkable job in managing the challenges of addressing orbital debris issues related to commercial communications satellite for the past fifteen years, the discussion—and resolution—of these complex issues must involve many more stakeholders and government bodies, both domestic and international.”<sup>5</sup>

In light of the shared authority of various Federal agencies over orbital debris mitigation issues, the record strongly supports formal coordination among relevant agencies. As one commenter explains, the Commission’s “role in regulating the mitigation of orbital debris by FCC licensees . . . must be coordinated closely with the findings of other U.S. federal agencies with targeted expertise in these areas.”<sup>6</sup> Another “emphasizes the importance of ensuring a fully-coordinated interagency framework, with each agency bringing its expertise, experience, and requirements into the process.”<sup>7</sup> The record makes clear that such coordination must be

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<sup>4</sup> Comments of the Satellite Industry Association, IB Docket No. 18-313, at 2-3 (filed Apr. 5, 2019) (“SIA Comments”).

<sup>5</sup> Comments of WorldVu Satellites Limited, IB Docket No. 18-313, at 1 (filed Apr. 5, 2019) (“OneWeb Comments”).

<sup>6</sup> Comments of the Boeing Company, IB Docket No. 18-313, at 5 (filed Apr. 5, 2019) (“Boeing Comments”).

<sup>7</sup> Comments of Lockheed Martin Corporation, IB Docket No. 18-313, at 4 (filed Apr. 5, 2016) (“Lockheed Comments”). *See also* SIA Comments at 2-3 (“The Commission should seek out and take into account the relevant technical expertise of other federal agencies and U.S. governmental bodies[.]”); Letter from Anne E. Sweet, NASA Representative to the Commercial Space Transportation Interagency Group Human Exploration and Operations Mission Directorate, Launch Services Office, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 18-313, at 8 (filed Apr. 4, 2019) (“NASA Letter”) (supporting “consultation between the respective Federal entities” where “another U.S. Government department/agency has effective oversight over a non-Federal operation in space”); Comments of Maxar Technologies Inc., IB Docket No. 18-313, at 3 (filed Apr. 5, 2019) (“Maxar Comments”) (“[T]he Commission must undertake a holistic review of orbital debris policies across all federal agencies with responsibilities for authorizing and licensing commercial space activities[.]”); Comments of the Duke Science Regulation Lab, IB Docket No. 18-313, at 6 (filed Apr. 5, 2019) (“The FCC should work with other federal agencies to develop an interagency task force to collectively provide perspectives

undertaken with an eye toward removing “duplication of effort,”<sup>8</sup> “eliminat[ing] redundant approval processes,”<sup>9</sup> and “avoid[ing] adding burdensome requirements that do not advance the goal of reducing orbital debris in the long term.”<sup>10</sup> In light of these objectives, the record supports vesting ultimate responsibility for a given orbital debris issue in a single regulator.<sup>11</sup> Under such an approach, while different regulators may retain regulatory responsibility for specific aspects of space debris mitigation issues (*e.g.*, the Federal Aviation Administration over debris concerns stemming from space launch operations), no one operation or aspect of orbital debris mitigation would be subject to multiple regulatory requirements, and the overall approach would be consistent and coordinated. Given the Commission’s authority over radiofrequency communications and its success regulating orbital debris mitigation for the past fifteen years through flexible, performance- and information-based requirements, AT&T supports the

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necessary to establishing uniform national standards and prospective plans for the future of orbital debris.”); Comments of the Commercial Smallsat Spectrum Management Association, IB Docket No. 18-313, at 3 (filed Apr. 5, 2019) (“CSSMA Comments”) (urging the Commission to “integrate relevant technical expertise of other U.S. Federal agencies or government bodies”).

<sup>8</sup> NASA Letter at 7.

<sup>9</sup> Maxar Comments at 3.

<sup>10</sup> Lockheed Comments at 12. *See also* CSSMA Comments at 3 (urging against “creating piecemeal and potentially duplicative regulation”)

<sup>11</sup> *See* Comments of the Consortium for the Execution of Rendezvous and Servicing Operations, IB Docket No 18-313, at 3 (filed Apr. 4, 2019) (urging the U.S. government to “consider consolidating the orbital debris mitigation guidelines into a single framework under a single agency”); OneWeb Comments at 1 (assuming that one U.S. agency will end up being the “Responsible Agency” for orbital debris); Comments of the Association of Space Explorers, IB Docket No. 18-313, at 3 (filed Apr. 5, 2019) (“The FCC through its licensing and regulatory authority can provide . . . initial leadership and management oversight while the government decides which agency should be the Central Controlling Authority for the long term.”)

Commission being the sole regulator for the orbital debris issues stemming from commercial satellite operations.<sup>12</sup>

In addition to recognizing the need for interagency coordination, the *NPRM* also rightfully acknowledges that different types of satellite systems may merit different regulatory approaches – in particular, that nongeostationary orbit (“NGSO”) systems pose new challenges that GSO systems do not. The *NPRM* thus proposes a number of requirements related to NGSO systems while proposing to leave the framework applicable to GSO systems largely unchanged.<sup>13</sup> As AT&T laid out in its opening comments, this regulatory approach is appropriate “[g]iven 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[.]”<sup>14</sup>

In light of the foregoing, AT&T urges the Commission to pursue three principles as it continues to consider issues related to orbital debris mitigation:

1. The FCC should coordinate with and leverage the expertise of other relevant Federal agencies.
2. The Federal government should work to avoid duplicative regulation and should vest ultimate responsibility for a given orbital debris issue in one regulator.
3. The resulting regulatory regime should account for differences among satellite systems and avoid placing unnecessary requirements on satellite operators, particularly with respect to GSO systems.

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<sup>12</sup> See also CSSMA Comments at 3 (urging the Commission to “own the regulation of orbital debris guidelines if the Commission ends up taking on full jurisdiction”).

<sup>13</sup> See, e.g., *NPRM* ¶¶ 24-43 (proposing to adopt a number requirements only for NGSO applicants related to safe flight profiles, encompassing issues including quantifying collision risk, orbit selection, tracking and data sharing, maneuverability, multi-satellite deployments, and design reliability).

<sup>14</sup> AT&T Comments at 8.



Adherence to these principles will ensure regulatory frameworks for orbital debris mitigation that are streamlined, developed from significant expertise, and appropriate given the risks posed by specific operations.

## **II. THE RECORD SUPPORTS MAINTAINING A FLEXIBLE APPROACH TO GSO LICENSE TERM EXTENSIONS.**

In response to the *NPRM*'s proposal to adopt a regime for GSO license term extensions that would include both mandatory certifications and cap the duration of extensions,<sup>15</sup> AT&T proposed that the Commission instead (i) focus on the reliability of the satellite rather than a mandatory certification regarding single points of failure; and (ii) maintain flexible standards for the duration of license term extensions. There is ample support for each of these positions in the record.

### **A. The Record Supports AT&T's Position on the Requisite Showings for Applicants Seeking License Term Extensions for GSO Satellites.**

Multiple commenters agree with AT&T that the *NPRM*'s proposed license term extension certification requirement regarding satellite function—which would require an applicant seeking a license term extension for a GSO satellite to certify that the satellite has “no single point of failure or other malfunctions, defects, or anomalies during its operations that could affect its ability to conduct end-of life procedures”<sup>16</sup>—could unduly restrict the ability of operators to obtain extensions for satellites with years of useful life remaining.<sup>17</sup> Sirius XM explains that “[a] simple loss of redundancy should not be the sole basis for a decision to deny a license extension for an otherwise healthy satellite. There are many examples of satellites

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<sup>15</sup> *NPRM* ¶¶ 63-67.

<sup>16</sup> *NPRM* ¶ 65.

<sup>17</sup> See AT&T Comments at 2-3.

continuing to provide service for years on a single control processor or a single command receiver, even though such satellites could potentially be characterized as having experienced a ‘single point of failure.’”<sup>18</sup> Intelsat similarly observes that the proposed certification “could result in an environment where a random early life failure on a very valuable asset could lead to a single point of failure that would not ultimately prevent the successful de-orbit of the satellite but would nonetheless prevent an operator from obtaining a license extension.”<sup>19</sup>

Further, the record supports AT&T’s proposed solution to the problem presented by the single points of failure certification: namely, to adopt a flexible standard which enables license term extension applicants to demonstrate the reliability of a satellite that has a single point of failure. Telesat explains that “[s]hould . . . the Commission determine that there is a benefit to codification of its current practice” with respect to providing certain information with requests to extend license terms, “it is critical that codification expressly provide for the ability to submit a narrative explanation in lieu of a mandatory certification.”<sup>20</sup> Sirius XM likewise advocates for a “holistic approach to license extensions that accounts for the actual risk of future failures, rather than relying on generalized criteria.”<sup>21</sup> No commenter in the record opposes AT&T’s proposed solution to the limitations created by a single point of failure certification.<sup>22</sup> Accordingly,

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<sup>18</sup> Comments of Sirius XM Radio Inc., IB Docket No. 18-313, at 4 (filed Apr. 5, 2019) (“Sirius XM Comments”).

<sup>19</sup> Comments of Intelsat, IB Docket No. 18-313, at 9.

<sup>20</sup> Comments of Telesat Canada, IB Docket No. 18-313, at 6 (filed Apr. 5, 2019).

<sup>21</sup> Sirius XM Comments at 4.

<sup>22</sup> While some commenters are generally supportive of the *NPRM*’s proposal to “request[] certain types of information from GSO licensees seeking license term extensions,” *see* Comments of Space Exploration Technologies Corp., IB Docket No. 18-313, at 13 (filed Apr. 5, 2019) (“SpaceX Comments”), including, presumably the single points of failure certification, these commenters did not discuss that requirement specifically or suggest that the proposed certifications should be the exclusive means to assess license extension requests. *See id.*, Comments of Viasat Inc. IB Docket No. 18-313, at 8 (filed Apr. 5, 2019) (“Viasat Comments”);

AT&T's position should be adopted to the extent the Commission imposes new requirements on licensees seeking extensions for GSO satellites.

**B. The Record Unanimously Opposes Capping the Duration of License Term Extensions.**

Numerous commenters in the record oppose the *NPRM*'s proposal to adopt 5-year limits on the duration of license extension terms, and thus agree with AT&T's position that the Commission should maintain its case-by-case approach for evaluating license extension requests.<sup>23</sup> As Telesat explains, "[A] five-year cap would unnecessarily restrict the Commission's flexibility to approve longer license extensions where consistent with the estimated remaining satellite lifetime. The current case-by-case approach to license extensions provides the Commission with discretion to determine an appropriate extension term, which may be shorter or longer than 5 years. This flexible approach minimizes regulatory proceedings and costs for the Commission and licensees."<sup>24</sup> Several other commenters in the record share this position.<sup>25</sup>

Moreover, multiple commenters who support a five-year limit take the position that such a limit should only be presumptive, and that licensees should have the opportunity to

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Comments of EchoStar Satellite Operating Corporation and Hughes Network Systems, LLC, IB Docket No. 18-313, at 7 (filed Apr. 5, 2019) ("EchoStar Comments"). Moreover, these commenters all referred to the Commission's proposal as "codify[ing] its current practice." Viasat Comments at 8; *see also* SpaceX Comments at 13; EchoStar Comments at 7. The Commission's current practice with respect to GSO license term extensions affords licensees flexibility to demonstrate that satellites with single points of failure are still reliable.

<sup>23</sup> AT&T Comments at 4.

<sup>24</sup> Telesat Comments at 9.

<sup>25</sup> *See* Comments of Eutelsat S.A., IB Docket No. 18-313, at 4-5 (filed Apr. 5, 2019); Intelsat Comments at 10-11; Lockheed Martin Comments at 15; SIA Comments at 6.

demonstrate that a longer term is warranted.<sup>26</sup> Thus, the record strongly supports AT&T's proposal that the Commission continue to rely on the current flexible license term extension process, in which the Commission evaluates each application on a case-by-case basis. The Commission should heed the record and decline to impose arbitrary five-year terms on GSO license extensions.

### **III. THE RECORD STRONGLY OPPOSES FCC-IMPOSED INDEMNIFICATION REQUIREMENTS.**

The record is similarly consistent with AT&T's position regarding the *NPRM*'s proposal to require satellite licensees to indemnify the United States.<sup>27</sup> As AT&T made clear in its opening comments, such a requirement would "impose unnecessary burdens on operators while failing to meaningfully change licensee behavior"; thus, at a minimum, any such requirement should apply only to NGSO systems, which "represent a substantially greater orbital debris risk that GSO space station operations."<sup>28</sup>

The record reflects resounding opposition to indemnification requirements. Numerous commenters have weighed in against the proposal, for a variety of reasons. One deems an indemnification requirement "entirely unnecessary" and "a very complex solution in search of a non-existent problem," pointing out that "the *NPRM* fails to reference any example where the U.S. government has faced liability or incurred damages as a result of orbital debris from a commercial satellite system licensed by the Commission."<sup>29</sup> Other commenters raise practical

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<sup>26</sup> See Boeing Comments at 34; EchoStar Comments at 7.

<sup>27</sup> *NPRM* ¶ 78.

<sup>28</sup> AT&T Comments at 6.

<sup>29</sup> Boeing Comments at 37. See also EchoStar Comments at 7 (pointing out that "[t]he Commission previously considered and declined to impose indemnification requirements upon satellite licensees," and opposing adoption of such requirements now "[a]bsent any changed circumstances").

concerns, including that the proposal is “vague and untenable,”<sup>30</sup> and that “[i]t is not clear whether it will be possible for satellite system operators to obtain insurance at reasonable rates,” and as such “it is very likely that defaults on such obligations could easily occur, rendering such a requirement ineffective and unenforceable.”<sup>31</sup> Other commenters express concerns that the indemnification proposal is “anti-competitive”<sup>32</sup> and, accordingly, that its adoption “would unnecessarily increase costs for U.S. GSO satellite licensees, impeding domestic industry growth and technological development and potentially steering satellite investment abroad.”<sup>33</sup> Further, numerous commenters in the record question whether the Commission even has the requisite authority to adopt the proposed indemnification requirements.<sup>34</sup> And finally, the record reflects concern that even if the Commission were authorized to impose indemnification requirements, such requirements would not “advanc[e] orbital debris mitigation in any specific way.”<sup>35</sup>

Moreover, even commenters who do not outright condemn indemnification requirements either (i) oppose them for a specific service while offering no comment on such requirements

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<sup>30</sup> SIA Comments at 9.

<sup>31</sup> Comments of ORBCOMM INC., IB Docket No. 18-313, at 19 (filed Apr. 5, 2019) (“ORBCOMM Comments”).

<sup>32</sup> OneWeb Comments at 29.

<sup>33</sup> Comments of Space Logistics, LLC, IB Docket No. 18-313, at 9 (filed Apr. 5, 2019) (“Space Logistics Comments”).

<sup>34</sup> See OneWeb Comments at 29; Telesat Comments at 11; Intelsat Comments at 12-15; SIA Comments at 8-9; EchoStar Comments at 7.

<sup>35</sup> Telesat Comments at 11.

generally<sup>36</sup>; or (ii) do not take a position on the *NPRM*'s proposal.<sup>37</sup> Thus, given the significant opposition to FCC-imposed indemnification requirements, and the lack of support for any such requirements, the Commission should decline to adopt rules requiring satellite licensees to indemnify the United States.

#### **IV. THE RECORD DOES NOT SUPPORT THE ADOPTION OF TT&C ENCRYPTION REQUIREMENTS.**

As AT&T explained in its opening comments, TT&C encryption requirements are unnecessary and best left to the market and standards bodies.<sup>38</sup> There is significant record support for this position. Moreover, with respect to comments that support FCC regulation in this area, the record lacks consensus on what such regulation should look like. Thus, the Commission should decline to adopt TT&C encryption requirements at this time.

There is significant record support for AT&T's position that the Commission should not impose mandatory requirements on satellite licensees governing TT&C encryption. Multiple commenters agree with AT&T that "there is sufficient market incentive to adequately protect command and control of space stations," and as such the matter of encryption should be left to the industry.<sup>39</sup> Some commenters oppose TT&C encryption requirements for other reasons,

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<sup>36</sup> See Comments of ARRL, the National Association for Amateur Radio, IB Docket No. 18-313, at 4-5 (filed Apr. 5, 2019) ("ARRL Comments") (taking the position that indemnification requirements should exempt amateur satellites); Eutelsat Comments at 12 (taking the same position with respect to foreign-licensed satellites).

<sup>37</sup> See Comments of LeoSat MA, Inc., IB Docket No. 18-313, at 9 (filed Apr. 5, 2019) ("Although LeoSat generally supports the Commission's objective to require Commission-authorized operators to enter into indemnification agreements, LeoSat requires further information regarding the Commission's approach to such indemnification agreements to enable LeoSat to take a firm position regarding the matter.").

<sup>38</sup> AT&T Comments at 6-8 (responding to *NPRM* ¶78).

<sup>39</sup> See Boeing Comments at 36-37; Eutelsat Comments at 7-8; Intelsat Comments at 12; CSSMA Comments at 20; Telesat Comments at 11.

including that “[e]ncryption is one type of security, but is not the only means of maintaining secure communications and operational control of a satellite”<sup>40</sup>; that “other mechanisms or operational procedures” could better “satisfy the [Commission’s] intent” in proposing TT&C encryption requirements<sup>41</sup>; that in some circumstances “encryption can result in extended service outages in the case of on-orbit anomalies with the TT&C system”<sup>42</sup>; and the fact that, as a practical matter, “it would be extraordinarily difficult to commandeer a satellite and use it to intentionally harm another spacecraft if it were not designed to do so.”<sup>43</sup>

Further, even where commenters do not oppose the adoption of FCC regulations related to satellite cybersecurity, the record is mixed on the appropriate solution and scope of such requirements. For instance, multiple commenters argue that only command links, and not telemetry or tracking communications, should be required to be encrypted.<sup>44</sup> Similarly, multiple commenters argue for requirements or standards other than mandatory encryption to ensure spacecraft security.<sup>45</sup> Given the opposition in the record to prescriptive encryption requirements and the lack of consensus on the appropriate standards or regime for TT&C security, the

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<sup>40</sup> Sirius XM Comments at 9.

<sup>41</sup> Comments of the Global NewSpace Operators, IB Docket No. 18-313, at 19 (filed Apr. 5, 2019).

<sup>42</sup> Comments of Intelsat at 12.

<sup>43</sup> Comments of the Aerospace Corporation, IB Docket No. 18-313, at 18 (filed Dec. 9, 2018).

<sup>44</sup> See ARRL Comments at 5; Comments of Radio Amateur Satellite Corporation, IB Docket No. 18-313, at 7 (filed Apr. 5, 2019); Viasat Comments at 6.

<sup>45</sup> See, e.g., ORBCOMM Comments at 13 (advocating for flexible standard that allows operators to demonstrate the inclusion of adequate “anti-hijacking safeguards”); Comments of Professors Charles Clancy and Jonathan Black, IB Docket No. 18-313, at 2 (file Apr. 5, 2019) (advocating for satellite licensing conditioned on the “submission and approval of cybersecurity management plans consistent with the established best practices”); Sirius XM Comments at 8 (stating nonobjection to a requirement that would require operators to certify that TT&C communications are “secure” rather than encrypted).

Commission should decline to adopt TT&C encryption requirements at this time. At a minimum, the Commission should issue a subsequent NPRM or initiate a separate proceeding to address this issue.

Finally, AT&T notes that there is record support for AT&T's position that if the Commission were to nonetheless adopt encryption requirements, it, should grandfather all satellites launched or under construction at the time the new rules go into effect.<sup>46</sup>

## **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 its opening round comments as well as the reply comments provided herein.

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<sup>46</sup> See Sirius XM Comments at 9.