

# Covered? Insurance Viability in the New Space Age

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## INTRODUCTION

In 1965, Lloyd's of London created the first satellite insurance policy.<sup>1</sup> By 2040, estimates show the commercial space industry will be a trillion-dollar business.<sup>2</sup> Regulatory support, commercial innovators, a small pool of insurers—each play a crucial role in maintaining and encouraging growth in the commercial space industry. An emerging concern within each sector is the presence and proliferation of orbital debris.<sup>3</sup> The *Kessler Syndrome* describes a future scenario of collisional cascading, and although debris mitigation is imperative, orbital debris will almost certainly increase.<sup>4</sup> Mitigating the increase in orbital debris, and therefore encouraging the continued use of space, is a “vital national interest.”<sup>5</sup>

In part, continued use of space is important because of the strategic and integrated role of satellites: from predicting crop yields to aiding search and rescue missions to bringing broadband communications to remote communities, satellite uses are widespread and deeply integrated in the economy.<sup>6</sup> Most satellites are owned by commercial operators.<sup>7</sup> As the proliferation of orbital debris forces

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1. LLOYD'S, *Pioneers of Travel*, <https://www.lloyds.com/about-lloyds/history/innovation-and-unusual-risks/pioneers-of-travel> [<https://perma.cc/6F2N-4BZM>] (last visited Feb. 22, 2022).

2. MORGAN STANLEY, <https://www.morganstanley.com/ideas/investing-in-space> [<https://perma.cc/7LRW-UCJL>] (last visited Nov. 22, 2021).

3. Paul B. Larsen, *Solving the Space Debris Crisis*, 83 J. Air L. & Com. 475, 476-77 (2018).

4. See generally Donald J. Kessler & Burton G. Cour-Palais, *Collision frequency of artificial satellites: The creation of a debris belt*, 83 J. GEOPHYSICAL RES.: SPACE PHYSICS 2637 (1978) (detailing the widely cited *Kessler Syndrome*, which describes a future scenario of collisional cascading). As recent as November 2021, Russia conducted an anti-satellite weapons test that almost immediately resulted 1,500 trackable pieces of debris. Elizabeth Howell, *Space Debris from Russian Anti-Satellite Missile Test Spotted in Telescope Images and Video*, SPACE.COM (Nov. 17, 2021), <https://www.space.com/russia-anti-satellite-test-space-debris-images> [<https://perma.cc/7VAV-UPN3>]. Currently, the Department of Defense tracks approximately 27,000 total orbital debris, most of which are ten centimeters or larger; objects smaller than ten centimeters pose collision risks all the same but are too small to track. NASA, SPACE DEBRIS AND HUMAN SPACECRAFT, [https://www.nasa.gov/mission\\_pages/station/news/orbital\\_debris.html](https://www.nasa.gov/mission_pages/station/news/orbital_debris.html) [<https://perma.cc/NU24-DWXC>] (last visited Nov. 22, 2021).

5. NAT. SPACE COUNCIL, EXEC. [OFF.] OF THE PRESIDENT, UNITED STATES SPACE PRIORITIES FRAMEWORK, DECEMBER 2021.

6. *Id.*

7. See Union of Concern Scientists, *UCS Satellite Database* (Jan. 1, 2022), <https://www.ucsusa.org/resources/satellite-database> [<https://perma.cc/P42S-BAK9>]; Dewsoft, *Every Satellite Orbiting Earth and Who Owns Them* (Jan. 18, 2022), <https://dewsoft.com/daq/every-satellite-orbiting-earth-and-who-owns-them> [<https://perma.cc/E6XF-6WZ2>].

the government and commercial operators to respond to this existential threat, recognizing where the law falls short and where ethical considerations help moving forward is necessary to address the orbital debris problem.

In 2018, The White House addressed the proliferation of orbital debris with Space Policy Directive-3.<sup>8</sup> Space Policy Directive-3 outlines explicit goals to “mitigate the effect of orbital debris on space activities” and “foster continued growth and innovation in the U.S. commercial space sector.”<sup>9</sup> Administrative agencies have made strides to fulfill these objectives,<sup>10</sup> but the particular challenges orbital debris pose to commercial operators and their insurers have not been fully addressed.

Simply put, insurance enables commercial space development, but collision risk and increasing debris could threaten to derail this growth.<sup>11</sup> Because insurance is inherently tied to both the proliferation and mitigation of orbital debris and is a crucial factor in enabling and “fostering continued growth and innovation in the U.S. commercial space sector,” ensuring insurance is viable fits within the instrumental objectives of Space Policy Directive-3.<sup>12</sup>

The Federal Communications Commission (FCC) sought comment to identify and address this very aim.<sup>13</sup> Specifically, the FCC inquired about “the availability and costs of insurance” at this time, demonstrating insurance considerations and regulations may be on the horizon.<sup>14</sup> Legal frameworks, collision risk, and a shrinking insurance pool have left insurers caught between high costs and a small pool, suggesting the viability of insurance is uncertain.

This Note ultimately argues that orbital debris are problematic, in part, because commercial operators and insurers bear acute and cumulative risks: collision risk is increasing, existing legal frameworks shift costs of in-orbit loss to operators or their insurers, and the insurance pool is shrinking. This Note will begin by examining the background and government response to orbital debris proliferation, followed by an examination of where the government has fallen short in addressing the problems orbital debris poses to insurers and commercial operators. In addressing this rapidly changing industry, this Note will argue that the *Model Rules of Professional Conduct* act a guidepost to addressing the orbital debris problem while remaining within the confines of Space Policy Directive-3.

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8. National Space Traffic Management Policy, 83 Fed. Reg. 28969.

9. *Id.*

10. *See, e.g.*, Mitigation of Orbital Debris in the New Space Age, 35 FCC Rcd. 4156, 4242 (Apr. 24, 2020) (codified at 47 C.F.R. pts. 5, 25, and 97).

11. Marit Undseth, Claire Jolly & Mattia Olivari, *The Economics of Space Debris in Perspective*, OECD SCIENCE, TECHNOLOGY AND INDUSTRY POLICY PAPERS, No. 87 at 22-24 (2020).

12. National Space Traffic Management Policy, 83 Fed. Reg. 28969.

13. “Although the Order does not adopt an insurance requirement at this time, we seek comment on the availability and costs of insurance . . .” Mitigation of Orbital Debris in the New Space Age, 35 FCC Rcd. 4156, 4242 (Apr. 24, 2020) (codified at 47 C.F.R. pts. 5, 25, and 97).

14. *See* Mitigation of Orbital Debris in the New Space Age, 35 FCC Rcd. 4156, 4286 (Apr. 24, 2020) (codified at 47 C.F.R. pts. 5, 25, and 97).

Finally, this Note will propose adopting an insurance approach similar to the Commercial Space Launch Competitiveness Act of 1984.

## I. IN-ORBIT LIABILITY REGIME AND SHIFTING LEGAL RISKS TO COMMERCIAL OPERATORS

Although international and domestic legal frameworks ostensibly provide avenues of recovery for in-orbit loss, limitations in the frameworks ultimately shift legal risks to commercial operators. The international legal framework establishes liability for in-orbit collisions, but it has neither been tested nor does it adequately define fault.<sup>15</sup> Domestic frameworks, such as tort law, similarly fall short given inherent challenges in demonstrating causation and lack of precedent.<sup>16</sup>

Under the Outer Space Treaty (OST), a nation is responsible for the outer space activities of commercial operators within its jurisdiction, and the OST imposes international liability for in-orbit collisions.<sup>17</sup> The Liability Convention subsequently added to the OST liability framework. Under the Liability Convention, a commercial operator could ask a state to bring a claim on their behalf.<sup>18</sup> Importantly, for a Liability Convention signatory to be liable for in-orbit collisions, there must be some degree of “fault.”<sup>19</sup>

The Liability Convention never defined “fault,”<sup>20</sup> and despite international frameworks, this failure to define fault has made recovery under the Liability Convention extremely rare.<sup>21</sup> In practice, the Liability Convention has been

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15. See Convention on the International Liability for Damage Caused by Space Objects art. VIII, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 15 [hereinafter Liability Convention] (nothing in definitions defines fault); see, e.g., Larsen, *Solving the Space Debris Crisis*, J. AIR L. & COM., 475, 487 (2018) (“However, most damages are caused in outer space, which is governed by a liability regime based on proof of fault by the operator. Much space debris will be difficult to trace to any state and it may thus be impossible to hold states liable under the Liability Convention.”).

16. See, e.g., Luke Punnakanta, *Space Torts: Applying Nuisance and Negligence to Orbital Debris*, 86 UNIV. S. CA. L. REV. 163, 190 (2012).

17. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and other Celestial Bodies art. VI, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty] (“State Parties to the Treaty shall bear international responsibility for national activities in outer space . . . whether such activities are carried on by governmental agencies or by non-governmental entities . . .”); Outer Space Treaty, at art. VII (“Each State Party to the Treaty that launches or procures the launching of an object into outer space . . . and each State Part from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to is natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space.”).

18. Liability Convention art. VIII, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 15 [hereinafter Liability Convention] (“A State which suffers damage or whose natural or juridical persons suffer damage, may present to a launching State a claim for compensation for such damage.”).

19. *Id.* at art. III.

20. See Caley Albert, *Liability in International Law and the Ramifications on Commercial Space Launches and Space Tourism*, 36 LOY. L.A. INT’L & COMP. L. REV. 233, 245 (2014) (“It is important to note that this treaty does not establish a standard of fault.”).

21. The liability convention has only been invoked once. See Alexander P. Reinert, *Updating the Liability Regime in Outer Space: Why Spacefaring Companies Should Be Internationally Liable For Their Space Objects*, 62 WM. & MARY L. REV. 325, 336 (2020).

invoked once, liability was never admitted, and no state has been found liable for in-orbit damage.<sup>22</sup> To complicate matters, it is unclear whether orbital debris is even covered under the convention.<sup>23</sup> Assuming orbital debris does fit definitional requirements in the Liability Convention, the convention's failure to define fault and the subsequent dearth of precedent have nonetheless made liability claims difficult to establish and recovery uncertain.<sup>24</sup> A failure to define fault creates a legal shift: any costs caused by signatory nations—or by private parties within the jurisdiction of signatory nations—to commercial operators are, in practice, nonrecoverable. Ultimately, costs are treated as first party property damage, and therefore legal risks remain stuck on the commercial operators.

Bringing a claim is not without procedural hurdles, as well. To bring a claim under the Liability Convention, parties must first work to settle through diplomatic channels.<sup>25</sup> If parties cannot settle a dispute, the claim is submitted to a Claims Commission for decision.<sup>26</sup> Only if “the parties have so agreed” is a decision final and binding—in other words, a decision is only binding if the parties decide it is binding.<sup>27</sup>

Domestic law similarly poses challenges to commercial operators expecting to recover for in-orbit loss. Because the Liability Convention is not “self executing” and has not been adopted as law, operators probably cannot rely on it when pursuing a domestic claim for in-orbit damage to property.<sup>28</sup> Another avenue is tort law. However, establishing a negligence claim under tort law would probably fall short when either establishing a standard of care or proving causation, especially if orbital debris damages an operator's property.<sup>29</sup> No legally recognized standard of care exists for in-orbit activities, and it may be unclear what types of behavior

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22. Canada brought a claim for the Cosmos-954 satellite that crashed on its territory in 1978, but Russia paid damages without admitting liability. *See, e.g.,* Alexander Cohen, *Cosmos 954 and the International Law of Satellite Accidents*, 10 *YALE J. OF INT. L.* 78, 86 (1984) (noting dispute between Canada and U.S.S.R. was “never appraised” in a formal setting); Reinert, *supra* note 21, at 336-37.

23. *See* Lawrence D. Roberts, *Addressing the Problem of Orbital Space Debris: Combining International Regulatory and Liability Regimes*, 15 *B.C. INT'L & COMP. L. REV.* 51, 64 (1992) (noting Article I of the Liability Convention defines space objects to include “component parts of a space object as well as its launch vehicle and parts therefore,” and commentators disagree whether—and to what extent—orbital debris fit this definition).

24. The Liability Convention has not been invoked since 1978, despite numerous instances of satellite reentry damage and in-orbit collisions. For example, a NASA space station crashed into Australia in 1979; a falling rocket hit a woman in Oklahoma in 1997; a NASA satellite fell in the Pacific Ocean in 2011; an American satellite collided with a defunct Russian satellite in 2009. Reinert, *supra* note 21, at 337-38.

25. Liability Convention at art. II.

26. *Id.* at art. XIV.

27. *Id.* at art. XIX (“The decision of the Commission shall be final and binding if the parties have so agreed; otherwise the Commission shall render a final and recommendatory award, which the parties shall consider in good faith.”).

28. Swiss Re, *Space Debris: On a Collision Course for Insurers?* at 26 (2018), [https://www.swissre.com/dam/jcr:b359fb24-857a-412a-ae5c-72cdf0eaa94/Publ11\\_Space+debris.pdf](https://www.swissre.com/dam/jcr:b359fb24-857a-412a-ae5c-72cdf0eaa94/Publ11_Space+debris.pdf) [<https://perma.cc/9TZE-6E6W>].

29. *See* Punnakanta *supra* note 16, at 178.

are considered, for instance, negligent or reckless.<sup>30</sup> Further, an operator would not only face a lack of precedent for in-orbit collision cases, but limitations in situational awareness and debris tracking render causation exceedingly difficult.<sup>31</sup> To be sure, a failure to comply with FCC licensing or disclosure related to orbital debris mitigation could establish negligence *per se*, but causation is still required.<sup>32</sup> Commercial operators probably cannot turn to domestic or international law to recover losses for an in-orbit collision, and therefore what recourse remains turns on the availability of insurance products underwritten by viable commercial insurers.

## II. RULEMAKING, INDUSTRY RESPONSE, AND THE INSURANCE GAP

Following the release of Space Policy Directive-3 (SPD-3) in 2018, it is clear orbital debris poses an increasing risk to national interests and commercial operators. SPD-3 tasked executive departments to update standard practices for orbital debris mitigation,<sup>33</sup> and the FCC responded in 2019<sup>34</sup> with its document, *Mitigation of Orbital Debris in the New Space Age*. The Final Rule<sup>35</sup> requires disclosure and preventative measures,<sup>36</sup> but it leaves considerations of the availability and costs of insurance for further notice.<sup>37</sup> Contentious areas along the regulatory path forward will include government indemnification and surety bonds, and, inherently tied to these economic incentives and risks for in-orbit activity, the viability of insurance.<sup>38</sup> Although the FCC did not implement regulations related to operator insurance and government indemnification, it prompted

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30. Lauren Bressack, *Addressing the Problem of Orbital Pollution: Defining a Standard of Care to Hold Polluters Accountable*, 45 GEO. WASH. INT'L L. REV. 741, 744-45 (2011).

31. Over 25,000 orbital debris are known and tracked, but an estimated 500,000 debris ranging 1-10 centimeters are in orbit. NASA, FREQUENTLY ASKED QUESTIONS, <https://orbitaldebris.jsc.nasa.gov/faq/> [<https://perma.cc/VZ62-4LVU>] (last visited Nov. 22, 2021).

32. Punnakanta *supra* note 16, at 180-81 (discussing treaties and laws that could allow a negligence *per se* claim).

33. National Space Traffic Management Policy, 83 Fed. Reg. 28969.

34. *See* *Mitigation of Orbital Debris in the New Space Age*, 84 Fed. Reg. 4742-01 (proposed Feb. 19, 2019) (to be codified at 47 C.F.R. pts. 5, 25, and 97).

35. *See* *Mitigation of Orbital Debris in the New Space Age*, 35 FCC Rcd. 4156, 4266 (Apr. 24, 2020) (codified at 47 C.F.R. pts. 5, 25, and 97).

36. The most notable changes include disclosure related to any deployment device or liquid that may become orbital debris, disclosure related to ability to identify and maneuver deployment devices, and a 0.001 (1 in 10,000) probability assessment of accidents. *See* *Mitigation of Orbital Debris in the New Space Age*, 35 FCC Rcd. 4156, 4266 (Apr. 24, 2020) (codified at 47 C.F.R. pts. 5, 25, and 97).

37. Prompting consideration of insurance was the FCC's proposed indemnification requirements. The FCC discussed, but did not adopt, a government indemnification requirement out of concern for international treaty liability and concern for shifting liability costs to taxpayers. *Id.* at 4238-39. In regard to insurance, the FCC noted, "Although the Order does not adopt an insurance requirement at this time, we seek comment on the availability and costs of insurance . . ." *Id.* at 4242.

38. *Id.* at 4286 ("But let me make clear that I plan on bringing these issues [indemnification, surety bonds, insurance] to closure once we have received additional feedback.") (Statement of Chairman Ajit Pai).

an important discussion by commercial operators regarding their thoughts on the viability of insurance.

Insurance viability underscores industry concerns. Indemnifying the government for loss or liability under international agreements is unpopular among the industry.<sup>39</sup> In part, untested liability standards probably do not justify additional regulation; but even more so, commercial operators opposed liability because insurance premiums, which protect against liability exposure, are unaffordable.<sup>40</sup> As a consequence, industry leaders suggested, or perhaps threatened, indemnification could lead to forum shopping.<sup>41</sup>

Mitigating orbital debris is in the public and private interest, but even if indemnification furthered this goal, shifting the costs of insurance to commercial operators could stifle the industry. For instance, industry comments suggest necessary insurance to cover government indemnification could reach upwards of \$1.5 million for a 15-year life of a satellite,<sup>42</sup> only a small percentage of low-Earth orbiting satellites are insured,<sup>43</sup> and without insurance, defaults on liability payments could happen easily.<sup>44</sup> Liability frameworks have pinned costs on commercial operators, and rule makers are starting to acknowledge potential concerns surrounding insurance viability, but the connection between these considerations and orbital debris remains unaddressed.

If insured operators have any recourse to recover loss for in-orbit collisions, it is with their insurer. Outer space is often dubbed “inherently risky,” and the insurance market for in-orbit activities is probably no exception.<sup>45</sup> A small pool of roughly thirty insurers provides in-orbit coverage.<sup>46</sup> In 2018 and 2019, losses outpaced premiums by substantial margins and resulted from just a handful of

39. See, e.g., Boeing Company, Further Notice Comments on Mitigation of Orbital Debris in the New Space Age (Oct. 9, 2020), at 20, [https://www.fcc.gov/ecfs/file/download/DOC-5d43e656db400000-A.pdf?file\\_name=Boeing%20Orbital%20Debris%20Further%20Notice%20Comments%2010%209%202020%20final.pdf](https://www.fcc.gov/ecfs/file/download/DOC-5d43e656db400000-A.pdf?file_name=Boeing%20Orbital%20Debris%20Further%20Notice%20Comments%2010%209%202020%20final.pdf) [<https://perma.cc/7HMH-E5MX>] (“... an indemnification requirement would not advance the public interest and should be abandoned.”).

40. See Hogan Lovells, Further Notice Comments on Mitigation of Orbital Debris in the New Space Age (Oct. 9, 2020), at 17, [https://www.fcc.gov/ecfs/file/download/DOC-5d43e1e77ac00000-A.pdf?file\\_name=AS%20FILED%20-%20Hogan%20Lovells%20-%20Orbital%20Debris%20FNPRM%20Comments.pdf](https://www.fcc.gov/ecfs/file/download/DOC-5d43e1e77ac00000-A.pdf?file_name=AS%20FILED%20-%20Hogan%20Lovells%20-%20Orbital%20Debris%20FNPRM%20Comments.pdf) [<https://perma.cc/GCS4-7C7X>] [hereinafter Hogan Lovells Comment].

41. Mitigation of Orbital Debris in the New Space Age, 35 FCC Rcd. at N.620 (listing commercial operators concerned with forum shopping.)

42. Hogan Lovells Comment, *supra* note 40, at 17.

43. Global Newspace Operators, Comments on Proposed Rule on Mitigation of Orbital Debris in the New Space Age (Apr. 5, 2019), at 19, [https://www.fcc.gov/ecfs/file/download/DOC-5a7b9aa085400000A.pdf?file\\_name=Global%20NewSpace%20Operators\\_FCC\\_NPRM.pdf](https://www.fcc.gov/ecfs/file/download/DOC-5a7b9aa085400000A.pdf?file_name=Global%20NewSpace%20Operators_FCC_NPRM.pdf) [<https://perma.cc/M4DH-A8J8>].

44. ORBCOMM Inc., Further Notice Comments on Mitigation of Orbital Debris in the New Space Age (Apr. 5, 2019), at 19, [https://www.fcc.gov/ecfs/file/download/DOC-5a7bfe31de800000-B.pdf?file\\_name=ORBCOMM%20Comments-IB%20DocketNo.18-313-FINAL-Signed-5Apr19.pdf](https://www.fcc.gov/ecfs/file/download/DOC-5a7bfe31de800000-B.pdf?file_name=ORBCOMM%20Comments-IB%20DocketNo.18-313-FINAL-Signed-5Apr19.pdf) [<https://perma.cc/YTN4-S8DC>].

45. NASA, Of Safety and Mission Insurance, *Risk Management*, Risk Management (nasa.gov).

46. Caleb Henry, BIG CLAIMS, RECORD-LOW RATES: RESHAPING THE SPACE INSURANCE GAME SPACENEWS, <https://spaceneews.com/big-claims-record-low-rates-reshaping-the-space-insurance-game/> [<https://perma.cc/LBH3-ZGHU>] (last visited Nov. 22, 2021).



operational failures (five and two each year, respectively).<sup>47</sup> The recent advent of satellite constellations has substantially increased the number of small low-Earth orbit (LEO) satellites,<sup>48</sup> and lawmakers are streamlining launch and licensing requirements.<sup>49</sup> The commercial space market is growing, but insurer capacity is decreasing.<sup>50</sup> To be sure, more accurate premiums will help because premiums accurately calculating risk of loss will prevent large or catastrophic losses to the industry.<sup>51</sup> However, even insurers heavily involved and committed to the industry are concerned.<sup>52</sup>

Others have left altogether. Reinsurance giant Swiss Re stopped covering space in 2019,<sup>53</sup> and a year later, insurer Asure Space ceased covering collision risk or operations in LEO.<sup>54</sup> Bespoke policies are emerging for satellite constellations in LEO, and while insurers may be able to equip for risk, further crowding in LEO will—at current capabilities—necessarily increase risk of loss.<sup>55</sup> Operators may also encounter legal risks associated with untested insurance policies.

Insurance encourages growth and innovation in the space industry by shifting the risk of such loss to insurers. At the same time, more in-orbit activity, and therefore more opportunities for catastrophic loss, can discourage insurers.<sup>56</sup> For

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47. Christopher T.W. Kunstader, *SPACE INSURANCE AND COLLISION RISK* (Mar. 4, 2021), <https://spacenews.com/big-claims-record-low-rates-reshaping-the-space-insurance-game/> [<https://perma.cc/LXN4-K8PC>]; Matt Wilson, *Seradata Space Conference 2021 Review: Space Debris risk & cyber extortion dominate threats; reprogramming payloads & reusing satellites are the opportunities* (July 2, 2021), <https://www.seradata.com/seradata-space-conference-2021-review/> [<https://perma.cc/8889-6HZR>]

48. In 2019, all satellite launches totaled to slightly over 500. In 2020, launches totaled roughly 1,280. Kunstader, *supra* note 47.

49. *See, e.g.*, Streamlining Licensing Procedures for Small Satellites, 34 FCC Rcd. 13077 (Aug. 2, 2019); Streamlined Launch and Reentry License Requirements, 86 FR 13558 (Dec. 10, 2020).

50. WILLIS TOWERS WATSON, <https://www.wtwco.com/en-US/Insights/2019/11/insurance-marketplace-realities-2019-fall-update-aerospace> [<https://perma.cc/L65Y-X32W>] (last visited Nov. 22, 2021) (“Capacity is declining, with some insurers withdrawing from this sector entirely and others reassessing their participation levels.”)

51. *See* Sandeepa Bhat, *Space Liability Insurance: Concerns and Way Forward*, ATHENS J. OF L. No. 6 at 37, 40-43 (2020).

52. Matt Wilson, *Seradata Space Conference 2021 Review: Space Debris risk & cyber extortion dominate threats; reprogramming payloads & reusing satellites are the opportunities* (July 2, 2021), <https://www.seradata.com/seradata-space-conference-2021-review/> [<https://perma.cc/8889-6HZR>] (“He [Christopher Kunstader] stated that while 2020 was technically profitable, it was only just so, and he was concerned about the lack of profitability of the market.”)

53. Caleb Henry, *SPACE INSURER SWISS RE LEAVES MARKET*, <https://spacenews.com/space-insurer-swiss-re-leaves-market/> [<https://perma.cc/GYE9-RET7>] (last visited Nov. 21, 2021).

54. Debra Werner, *ASSURE SPACE WON'T COVER COLLISION RISK IN LOW EARTH ORBIT*, <https://spacenews.com/assure-space-leaves-leo/> [<https://perma.cc/7T7S-MTAE>] (last visited Nov. 21, 2021).

55. Swiss Re, *How Satellite Constellations Impact Space Risk*, at 23, 39 (2018), <https://www.swissre.com/dam/jcr:8bb6ac1d-a158-4b46-b32e-903ae5f89964/how-satellite-%20constellations-impact-space-risk.pdf> [<https://perma.cc/HG6B-THLN>].

56. Noor Zainab Hussain and Carolyn Cohn, *LAUNCHING INTO SPACE? NOT SO FAST. INSURERS BALK AT NEW COVERAGE.*, <https://www.reuters.com/lifestyle/science/launching-into-space-not-so-fast-insurers-balk-new-coverage-2021-09-01/> [<https://perma.cc/5EW6-UTEF>] (last visited 3/20/2022).

instance, if a scenario creating catastrophic loss in Low-Earth Orbit were presented—like a large debris cloud created by an anti-satellite (ASAT) missile decimating a satellite constellation—then commercial operators could find insurance premiums too costly or not available at all in LEO. Commercial operators providing, for instance, broadband internet connectivity or television or climate monitoring would ultimately be left bearing the full costs for any loss. Some social scientists have categorized current trends as part of a pattern: space insurance rates are cyclical and claims are volatile.<sup>57</sup> The concerns over insurance viability, to be sure, could merely be explained by a “hardening” insurance market.<sup>58</sup> However, sheer increases in satellite numbers coupled with growing orbital debris probably suggest claims may be more volatile moving forward; and coverage availability, low.

Liability laws do not provide a path of recourse for in-orbit loss. Regulatory frameworks are moving towards disclosure and technical assessments to mitigate orbital debris but have left liability and insurance questions unanswered. And although insurance policies are available, some insurers are leaving the market.<sup>59</sup> The insurance industry’s future in underwriting LEO risks is certainly not certain. Emerging commercial space innovators providing, for example, orbital debris cleanup may find market access too difficult, expensive, or risky.<sup>60</sup> Amidst efforts to mitigate orbital debris and enhance commercial investment, insurance is the last source of recourse for in-orbit loss. However, shifting legal risks and increasing collision risk could create a very real situation where no commercial operator can obtain insurance, at least not in low-Earth orbit.

### III. MODEL RULES, WHAT COVID-19 LITIGATION CAN TEACH US, AND ETHICAL APPROACHES

The *Model Rules of Professional Conduct* provide a launch point for addressing in-orbit insurance disputes and policy considerations. Because the satellite industry is neither guided by a firm liability regime nor comes with the benefit of legal precedent, it may be difficult for lawyers to navigate adequately and

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57. Piotr Manikowski & Mary A. Weiss, *Cyclicity or volatility? The satellite insurance market*, 28 J. SPACE POL’Y 192, 196-97 (2012).

58. In a “hard” market, prices are high and coverage availability is low. For instance, the shock to the insurance market after 9/11, in which aviation and space insurance capital was pooled, created a hard market with high premiums. In contrast, the past decade was profitable for insurers. Robert Williams, *Covering the Increased Liability of New Launch Markets*, 32nd Space Symposium, Technical Track, Colorado Springs (2016).

59. Noor Zainab Hussain and Carolyn Cohn, LAUNCHING INTO SPACE? NOT SO FAST. INSURERS BALK AT NEW COVERAGE., <https://www.reuters.com/lifestyle/science/launching-into-space-not-so-fast-insurers-balk-at-new-coverage-2021-09-01/> [<https://perma.cc/5EW6-UTEP>] (last visited 3/20/2022).

60. See Matt Weinzierl and Mehak Sarang, *The Commercial Space Age is Here*, Harvard Business Review (2021), <https://hbr.org/2021/02/the-commercial-space-age-is-here> [<https://perma.cc/4YZE-52A9>] (noting that fostering opportunities in outer space depends on the government helping to increase private industry’s capacity for risk).



ethically advising clients within the field. Increasing in-orbit activity and orbital debris make conflict and liability more likely, and the *Model Rules* may provide some guidance for constructing legal advice and solutions moving forward.

#### A. MODEL RULE 1.1, MODEL RULE 1.3, AND COVID-19

In a rapidly changing industry where risks are often unknown, competent representation is at a premium. To be sure, operators could incorporate risk of loss into the overall project and therefore mitigate dependency on insurers as a final source of recourse.<sup>61</sup> This may be appealing, but it does little to address the root concern facing the in-orbit insurance industry: increasing orbital debris posing increased risk to operators and a small pool of insurers. Rule 1.1 states, “A lawyer shall provide competent representation to a client. Competent representation requires the legal knowledge, skill, thoroughness, and preparation reasonably necessary for the representation.”<sup>62</sup> Merely pricing-in satellite loss that later turns into debris does not alleviate key concerns with the industry. Instead, ascertaining the particular legal problem involved—orbital debris amidst current liability laws and a small insurance pool— permeates through all aspects of in-orbit operations.<sup>63</sup> Recognizing the impact of increasing orbital debris, a shrinking insurance pool, and current legal frameworks is instrumental to adequately representing and advising clients in the New Space Age and under Rule 1.1.

Incorporating the confluence of debris, insurers, and legal frameworks into coherent advice and advocacy—or, in other words, incorporating these factors with “commitment and dedication to the interest of the client and with zeal in advocacy . . .”—poses challenges to lawyers.<sup>64</sup> From an industry perspective, insurers and commercial operators have a close and insular relationship, and a move towards more consensus rather than zealous adversity might be prudent. The *Model Rules* seem to encourage some balance between zealous advocacy and professional, if not collaborative, relationships.<sup>65</sup> Rule 1.3 is instructive:

A lawyer shall act with reasonable diligence and promptness in representing a client. [Comment 2 states:] A lawyer should pursue a matter on behalf of a client despite opposition, obstruction or personal inconvenience to the lawyer, and take whatever lawful and ethical measures are required to vindicate a client’s cause or endeavor. A lawyer must also act with commitment and

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61. See Swiss Re, *How Satellite Constellations Impact Space Risk*, at 41 (2018), [<https://perma.cc/BE88-4QDK>]; see generally Boley & Byers, *Satellite mega-constellations create risk in Low Earth Orbit, the atmosphere and on Earth*, 11 NATURE 10672 (2021).

62. MODEL RULES OF PROF’L CONDUCT R. 1.1 (2018) [hereinafter MODEL RULES].

63. MODEL RULES R. 1.1. See generally, Paul B. Larsen, *Solving the Space Debris Crisis*, 83 J. AIR L. & COM. 475 (2018).

64. MODEL RULES R. 1.3. See also John Lande, *Principles for Policymaking about Collaborative Law and Other ADR Processes*, 22 OHIO ST. J. ON DISP. RESOL. 619, 682 (2007).

65. John Lande, *Principles for Policymaking about Collaborative Law and Other ADR Processes*, 22 OHIO ST. J. ON DISP. RESOL. 619, 681-82 (2007).

dedication to the interests of the client and with zeal in advocacy upon the client's behalf.<sup>66</sup>

However, in a high-risk industry, and an industry where legal regimes are still forming, the shape and flavor of advocacy and advice is likely to impact large sections of the industry moving forward. Because costly claims beget costly disputes, there may be instances where insurers facing tight bottom-lines and operators facing immense losses would have every incentive to fight tooth-and-nail. A case of first impression would likely leave lasting impacts on the space insurance and satellite operator sectors of the industry.<sup>67</sup>

COVID-19 business interruption and event cancellation disputes help clarify potential litigation dynamics in areas like in-orbit insurance disputes, as the law either did not anticipate the type of disputes or had not definitively defined legal frameworks surrounding pandemics.<sup>68</sup> In such a scenario, cases of first impression either opened a flood of litigation or entirely precluded large classes of claimants from seeking recovery.<sup>69</sup> Surveys of COVID-19 business interruption claims demonstrate that a small percentage of cases, usually one to three percent, will cover business interruption.<sup>70</sup> In general, courts rejected initial claims on grounds that viruses cause no physical loss, or a virus exclusion existed in the policy.<sup>71</sup> Many businesses and lawyers were quick to file claims, but as initial decisions rejecting these claims became common, insurers no longer acted as a source of recourse.<sup>72</sup>

A more recent iteration of this is event cancellation insurance policies, which could prove more promising because insurance policies were generally able to anticipate event cancellation as a covered event.<sup>73</sup> Much like business interruption

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66. MODEL RULES R. 1.3. cmt. 2.

67. See Emerson H. Tiller & Frank B. Cross, *What Is Legal Doctrine*, 100 NW. U. L. REV. 517, 525 (2006) (noting new legal precedents can dictate structure of subsequent decisions).

68. See Paul E. Traynor, *The "Business Interruption" Insurance Coverage Conundrum: Covid-19 Presents A Challenge*, 19 DEPAUL BUS. & COM. L.J. 65, 78 (2022) (noting caselaw has been equivocal about COVID-19 coverage and is further complicated because not all policies contained or anticipated virus-exclusion provisions); *COVID-19 Business Interruption Claims State Law Survey*, LEXISPLUS (2021) (last visited Apr. 21, 2022) (noting "significant" and "far reaching" impacts of cases determining whether COVID-19 business interruption is covered by insurers).

69. See, e.g., Joe Forward, COVID LITIGATION: FLOODGATES OPEN ON BUSINESS INTERRUPTION INSURANCE, <https://www.wisbar.org/NewsPublications/InsideTrack/Pages/Article.aspx?Volume=12&Issue=21&ArticleID=28071> [<https://perma.cc/8NNB-2ZWU>] (discussing rapid increases in business interruption litigation following COVID-19 pandemic); *COVID-19 Business Interruption Claims State Law Survey*, LEXISPLUS (2021) (last visited Apr. 21, 2022) (graphing sharp decrease in business interruption claim filings from 2020 to 2021).

70. *COVID-19 Business Interruption Claims State Law Survey*, LEXISPLUS (2021) (last visited Apr. 21, 2022).

71. *Id.*

72. See Paul E. Traynor, *The "Business Interruption" Insurance Coverage Conundrum: Covid-19 Presents A Challenge*, 19 DEPAUL BUS. & COM. L.J. 65, 66-67, 88 (2022)

73. *COVID-19 Event Cancellation Claims Litigation*, LEXISPLUS (2020) (last visited Apr. 21, 2022); *COVID-19 Event Cancellation Claims Pre-Litigation*, LEXISPLUS (2020) (last visited Apr. 21, 2022).

claims, cases of first impression will likely have large impacts on the litigation moving forward.<sup>74</sup> The need for zealous advocacy will be at a premium; however, an insular industry like space that consists of a small pool of insurers handling only a few claims each year might need a different approach. Otherwise, common law solutions could stifle the industry rather than help it handle the increasing orbital debris problem. Model Rule 3.1 arguably outlines an approach that would put the in-orbit industry on more stable ground moving forward.

#### B. MODEL RULE 3.1

Rule 3.1 tempers the type of zealous advocacy and commitment required by lawyers. Rule 3.1 requires meritorious claims to modify existing laws.<sup>75</sup> An operator-insurer dispute brought in court would be a case of first impression and therefore implicate some modification of law. Given the current dearth of domestic and international legal avenues, a common law approach could wield large sway over the industry.<sup>76</sup> Because lawyers must act competently within the industry, and because lawyers must act with commitment to a client's case, lawyers could find themselves in an ethical bind where zealous advocacy clashes with meritorious claims that may modify existing law.<sup>77</sup> Rule 3.1 may be instructive. Because a lawyer is limited in their representation insofar as they may not "bring or defend a proceeding . . . unless there is a basis in law and fact for doing so that is not frivolous, which includes a good faith argument for an extension, modification or reversal of existing law . . ." Rule 3.1 would necessarily be implicated in an in-orbit controversy or attempt to modify existing law.<sup>78</sup>

Just as a lawyer might risk discipline if the lawyer continuously filed business interruption claims where a virus exclusion applied, early decisions related to in-orbit insurance coverage may also pose similar challenges. In a scenario where either an operator or insurer will face crippling losses, a "good faith" modification of the law might not be clear cut.<sup>79</sup> Pursuant to SPD-3 and recent FCC initiatives, an ethical modification of the law that would also mitigate costly litigation moving forward could likely center on previous approaches to the outer space insurance.

When SPD-3 tasked administrations with the goals to "mitigate the effect of orbital debris on space activities" and "foster continued growth and innovation in

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74. See Emerson H. Tiller & Frank B. Cross, *What Is Legal Doctrine*, 100 NW. U. L. REV. 517, 525 (2006) (noting new legal precedents can dictate structure of subsequent decisions).

75. MODEL RULES R. 3.1.

76. See Emerson H. Tiller & Frank B. Cross, *What Is Legal Doctrine*, 100 NW. U. L. REV. 517, 525 (2006) (noting new legal precedents can dictate structure of subsequent decisions).

77. See generally Kristina A. Reliford and Judea Davis, *Real Zeal: The Thin Line Between Zealous Advocacy and Unethical Conduct* (2019), <https://www.bradley.com/-/media/files/insights/events/2019/12/real-zeal-the-thin-line-between-zealous-advocacy-and-unethical-conduct-kristina-reliford-judea-davis.pdf> [https://perma.cc/M65Z-DYEE].

78. MODEL RULES R. 3.1.

79. MODEL RULES R. 3.1. (requiring "good faith" argument for extension or modification of law).

the U.S. commercial space sector,” the FCC responded in part by noting “we seek comment on the availability and costs of insurance.”<sup>80</sup> The availability and costs of insurance face potential challenges, and lawmakers and advocates in the commercial space legal regime will have the opportunity to shape and modify the direction of existing law. Orbital debris is an existential challenge to operators, insurers, and the industry alike, and devising legal advice and approaches to mitigate the impact of orbital debris on growth and innovation in the commercial space sector will require careful attention to the professional responsibilities of lawyers as advocates and lawmakers.

#### IV. FIX THE RISK: IN A HIGH-COST SITUATION IN A SMALL POOL, GROW THE POOL

Imperative to mitigating the effects of orbital debris in the commercial space industry is recognizing that orbital debris are a risk to insurers and operators, a small pool of insurers currently face high-cost claims, and legal frameworks leave risk of loss on commercial operators. The nascent industry will necessarily face new legislation and cases of first impression. Zealous advocacy balanced with meritorious approaches rooted in precedent and space-specific solutions will place the industry within the limits and goals of SPD-3.

##### A. PREVIOUS SOLUTIONS

Commentators have suggested numerous options related to managing the risks of orbital debris: some degree of international agreement,<sup>81</sup> or an environmental law model like CERCLA,<sup>82</sup> or a market-share liability risk pool scheme based on some proportion of market presence or debris contribution.<sup>83</sup> Each approach depends on establishing liability, but for liability to attach, a more robust legal framework is needed. Solutions dependent on international agreement similarly fall short because, while theoretically possible, international agreement related to space activities remains murky as best. Insurance in itself may not solve the orbital debris crisis or, arguably, even incentivize responsible behavior.<sup>84</sup> However, using domestic law and rulemaking offers a concrete, comparatively efficient, and binding avenue to prepare the commercial space insurance industry for the risk of loss, or actual loss, moving forward.

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80. National Space Traffic Management Policy, 83 Fed. Reg. 28969; Mitigation of Orbital Debris in the New Space Age, 35 FCC Rcd. 4156, 4242 (Apr. 24, 2020) (codified at 47 C.F.R. pts. 5, 25, and 97).

81. See Generally Gershon Hasin, *Confronting Space Debris Through the Regime Evolution Approach*, 97 INT'L L. STUD. 1073 (2021).

82. Edwin Kisiel, *Law as an Instrument to Solve the Orbital Debris Problem*, 51 LEWIS & CLARK ENV'T. L. REV. 223, 233-36 (2021).

83. Mark J. Sundahl, *Unidentified Orbital Debris: The Case for a Market-Share Liability Regime*, 24 HASTINGS INT'L & COMP. L. REV. 125, 138-49 (2000).

84. Victoria A. Samson, Joshua D. Wolny & Ian Christensen, *Can the Space Insurance Industry Help Incentivize the Responsible Use of Space?*, INT'L ASTRONAUTICAL CONGRESS, 4-6 (2018), [https://swfound.org/media/206275/iac-2018\\_manuscript\\_e342.pdf](https://swfound.org/media/206275/iac-2018_manuscript_e342.pdf) [<https://perma.cc/FR2W-4BYE>].

## B. BUILDING FROM A SPACE SPECIFIC FRAMEWORK

While in-orbit regulation is a relatively new area of concern for lawmakers, it is not an unfamiliar problem. The space industry has dealt with insurance concerns before.<sup>85</sup> And even before a commercial space sector existed, lawmakers have intervened where private insurers incurred losses and started to withdrawal from a market.<sup>86</sup> The Commercial Space Launch Competitiveness Act of 1984 (CSLA), much like SPD-3, anticipated growth in the commercial space industry and established a framework to encourage investment and jumpstart the launch industry. The CSLA established an insurance scheme where operators must either obtain third-party launch insurance or demonstrate financial responsibility, the government indemnifies after 500 million (indemnification up to 1.5 billion added in 1994), and operators are then required to cover losses or claims in excess of the government indemnification layer.<sup>87</sup> The CSLA was “intended to facilitate development of the U.S. commercial launch industry . . . by providing to launch participants certain protections against the risk of catastrophic losses that could result from hazardous launch activities.”<sup>88</sup> In attempting to mitigate potentially crippling risks, the FAA explicitly acknowledged that clear and predictable insurance and risk allocation was important because it would provide the commercial launch industry with “the information and certainty it requires to make informed risk management decisions that affect relationships with customers and suppliers.”<sup>89</sup>

Similarly, in-orbit operators and insurers are concerned with the “risk of catastrophic loss” and concerned that “information and certainty require[d] to make informed risk management decisions” is inadequate.<sup>90</sup> In response to these exact concerns, the FAA made insurance predictable and stable. The FCC should consider establishing a similar framework to the CSLA to make insurance in LEO viable.<sup>91</sup> Operators would have to obtain insurance or provide proof they would

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85. See, e.g., US Commercial Space Law Act 51 U.S.C. § 50914(a).

86. For example, after a series of losses following Hurricane Betsy (1965), insurers started to withdrawal from the flood insurance market and lawmakers passed the National Flood Insurance Program so that insurance remained a viable and affordable option for homeowners. Coastal states like Texas and Florida have passed laws to a similar effect, where the government intervenes to either offer a pool of last resort or require participation. See John McAneney, Delphine McAneney, Rade Musilin, George Walker & Ryan Crompton, *Government-sponsored natural disaster insurance pools: A view from down-under*, 15 INT’L J. DISASTER RISK REDUCTION 1, 3-4 (2016).

87. 51 U.S.C. § 50914(a).

88. 14 C.F.R. § 440 (1998).

89. *Id.*

90. *Id.*

91. Further research is needed related to the FCC’s authority to enact insurance regulations, but for purposes of this analysis, the authority of the FCC will be assumed given their jurisdiction over satellite communications. Some scholars suggest the FCC does have administrative authority to enact substantive changes and not merely disclosure requirements. See Clement Hearey, *When you Wish Upon a “Starlink”: Evaluating the FCC’s Actions to Mitigate the Risk of Orbital Debris in the Age of Satellite “Mega-Constellations”*, 72 ADMIN. L. REV. 751, 764 (2021).

remain solvent after maximum probable loss of property, and the government would indemnify beyond an estimate of maximum probable loss, up to a defined threshold. It would be subject to a sunset clause in anticipation the insurance pool will grow and stabilize. A similar approach to the CSLA will mitigate risks for insurers and encourage reinsurers by protecting against excessive loss; it will enable industry to make informed risk decisions and offset debris risks they did not create; it will serve government interests by encouraging commercial space operators to license with the United States. In addition, this approach benefits from precedent, legal certainty, and historical success.

To be sure, the FAA used insurance to protect the unassuming third-party public, and not for the protection of operators or spaceflight participants. In-orbit is fundamentally different because there is no unassuming public. A legal regime has instead shifted the cost and risk of debris, which are mostly a result of state actors thus far, to operators. In that respect, operators are assuming risks and costs of third parties where the law tells operators they will not take on risks and costs. In a high-cost situation in a small pool, and in a similar situation spurring insurance under the CSLA, there is not only precedent for government to stabilize industry and standardize risk but also an existing framework for the FCC.

### CONCLUSION

Commercial space law will continue to develop with the industry, and the industry is growing rapidly. Collision risk from orbital debris is a looming concern among commercial operators and government lawmakers. As the White House establishes priorities for debris mitigation and the FCC continues to develop rulemaking, commercial operators will need to change to fit with broader objectives aimed at mitigating debris and fostering a robust industry. Existing legal frameworks pose challenges to operators and their insurers because the risk of loss remains pinned on commercial operators. As a result, if any viable recourse remains for commercial operators, it is with their insurers.

The FCC has made strides to address these concerns; however, the viability of insurance has not yet been fully addressed. The results here suggest insurance, at the very least, faces uncertainty. In the wake of that uncertainty, the *Model Rules* may outline a path forward. COVID-19 litigation demonstrated that a flood of costly claims, especially in an area of first impression, may incentivize insurers to litigate fiercely and ultimately risk no longer serving as a source of recourse. This meritorious advocacy, however, might be productively tempered: recognizing the unique challenges facing a small pool of operators and insurers in the industry, and modifying the law in a way similar to the successful CSLA, would likely encourage growth and help mitigate risks posed by orbital debris.