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## Human Rights Justifications for Allowing the U.S. Regulation Moratorium on Commercial Spaceflight to Expire

Sydney Warinner

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— Comment —

HUMAN RIGHTS JUSTIFICATIONS FOR  
ALLOWING THE U.S. REGULATION  
MORATORIUM ON COMMERCIAL  
SPACEFLIGHT TO EXPIRE

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INTRODUCTION:  
THE BURGEONING COMMERCIAL SPACEFLIGHT INDUSTRY

Promises of soon-to-be-available space tourism opportunities have ferried the growing commercial spaceflight industry into the public consciousness.<sup>1</sup> In the mid-2000s, one optimist even speculated that, by

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1. Steven Freeland, *Up, Up and . . . Back: The Emergence of Space Tourism and Its Impact on the International Law of Outer Space*, 6 CHI. J. INT’L L. 1, 1-2 (2005) (noting that by 2005, over 7,000 people had reserved seats on Virgin Atlantic’s three-hour space voyage and that, according to polls from 2002, 19 percent of affluent American adults would pay \$100,000 for a fifteen-minute suborbital spaceflight, 16 percent would

2030, there could be as many as five million annual space passengers with access to accommodations like orbital and lunar hotels.<sup>2</sup> Although commercial spaceflight has existed for over two decades—the very first U.S.-licensed commercial spaceflight launch occurred in 1989 at White Sands Missile Range in New Mexico<sup>3</sup>—the twenty-first century has seen a significant increase in commercial spaceflight capabilities.<sup>4</sup> From April 2004 to August 2022, the U.S. Federal Aviation Administration (FAA) licensed twenty-nine commercial spaceflight launches, twenty of which occurred between 2018 and 2022.<sup>5</sup> A small class of private companies, including Scaled Composites, Virgin Galactic, Space Exploration Technologies Corporation (SpaceX), and Blue Origin, have operated these missions.<sup>6</sup>

The industry has also developed capabilities for nonprofessional astronauts to experience spaceflight.<sup>7</sup> For instance, the Inspiration4 mission in November 2021 was the first all-civilian orbital mission in which no professional astronauts were present.<sup>8</sup> Further, in April 2022, Axiom Space launched the first entirely private space expedition to the

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pay \$5 million for a two-week trip to an orbital space station, and 7 percent would pay for the same trip priced at \$20 million). For more recent developments, see Jackie Wattles, *SpaceX Will Launch Four Space Tourists on a Three-Day Trip in Space. Here's Everything You Need to Know*, CNN BUS. (Sept. 15, 2021, 12:50 PM), <https://www.cnn.com/2021/09/14/tech/spacex-inspiration-4-space-tourism-mission-walkup-scen/index.html> [https://perma.cc/2T52-Q7KT] (describing the first-ever orbital spaceflight mission involving no professional astronauts); Tony Owusu, *You Can Book Your First Space Trip for a Mere \$180K*, THE STREET (Feb. 24, 2023), <https://www.thestreet.com/lifestyle/travel/you-can-book-your-first-space-trip-for-a-mere-180k> [https://perma.cc/7R8F-K6RF] (describing efforts from Japanese startup Iwaya Giken to create a helium balloon—not to be confused with a spy balloon—capable of carrying people into low-orbit space).

2. Freeland, *supra* note 1, at 2 (describing a commentator who made this prediction).
3. *Frequently Asked Questions (FAQs)*, FED. AVIATION ADMIN., [https://www.faa.gov/space/additional\\_information/faq](https://www.faa.gov/space/additional_information/faq) [https://perma.cc/8ZFG-NECN] (Sept. 7, 2022).
4. U.S. GOV'T ACCOUNTABILITY OFF., GAO-15-706, FEDERAL AVIATION ADMINISTRATION: COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS PRESENT MULTIPLE CHALLENGES 17 (2015) [hereinafter COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS].
5. KEVIN B. COLEMAN, JENNIFER BAILEY, TARA HALT, RACHITA PURI & JOHN SLOAN, REGULATORY PREPARATION FOR U.S. COMMERCIAL HUMAN SPACEFLIGHT 7 (73d Int'l Astronautical Cong., Sept. 18–22, 2022).
6. *See id.*
7. Wattles, *supra* note 1.
8. COLEMAN ET AL., *supra* note 5, at 2.

International Space Station (ISS) using SpaceX's Falcon 9 Rocket.<sup>9</sup> In addition to these operations, some companies have begun offering space tourism flights, where civilians can embark on spaceflight missions to observe the galaxy and experience zero gravity.<sup>10</sup> For example, XCOR Aerospace's ship, Lynx, can offer spaceflights with seats for one pilot and one passenger.<sup>11</sup> Additionally, Virgin Galactic's SpaceShipTwo has the capacity to seat two pilots and six passengers for a two-hour flight.<sup>12</sup> By 2015, approximately 700 people had paid deposits for their \$250,000 tickets.<sup>13</sup>

NASA has also utilized private companies' spacecraft to transport cargo to the ISS as part of its commercial cargo program.<sup>14</sup> The commercial spaceflight industry's recent expansion has occurred not only because the federal government has contracted with private commercial spaceflight companies for efforts like NASA's program, but also because U.S.-based companies provide lower-cost spaceflight services than foreign alternatives; subindustries, including the space tourism industry and small satellite industry, have recently emerged; and the federal government offers an indemnification program to cover third-party liability claims that exceed required launch insurance.<sup>15</sup> The potential for civilians to travel to outer space and explore the moon may also contribute to the hype.<sup>16</sup> Due to the industry's twenty-first-century growth, by 2021, the global annual revenue for the space launch industry reached \$469 billion, with the United States generating

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9. *Id.*

10. *Id.* at 2–3. Some space tourism opportunities involve short suborbital trips. FED. AVIATION ADMIN., *supra* note 3. As opposed to orbital spaceflight, where greater velocity propels spacecraft into orbit around the Earth, suborbital spaceflight reaches space at no less than sixty-two miles above sea level but does not achieve orbit due to lesser velocity. *Id.* These flights are possible, in part, due to hybrid launch vehicles, which have the capacity to serve as aircraft or to be rocket powered to enter space. COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS, *supra* note 4, at 25.

11. COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS, *supra* note 4, at 8.

12. *Id.* at 7–8.

13. *Id.*

14. *Id.* at 2. Such companies include SpaceX and Boeing. *Id.* at 6.

15. *Id.* at 18–20. Third-party liability insurance covers a maximum of \$500 million in losses, and, subject to available appropriations, the federal government will cover the excess cost for losses up to \$3.06 billion. *Id.* at 36. By 2015, no losses had reached the threshold to trigger government coverage. *Id.*

16. See Valerie Stimac, *12 Space Tourism Companies that Will Send You to Space*, SPACE TOURISM GUIDE (July 22, 2019), <https://spacetourismguide.com/space-tourism-companies/> [<https://perma.cc/X5LP-8JU5>].

59.9 percent of the revenue, China generating 16.1 percent, and the European Space Agency generating 6.3 percent.<sup>17</sup> Commercial spaceflight composed approximately 77 percent of those revenues at \$362 billion.<sup>18</sup>

Not to be overshadowed by the excitement surrounding prospective space travel, commercial spaceflight comes with risks for passengers and crew. It is no secret that outer space is inherently hostile to human life.<sup>19</sup> For instance, a spacecraft's loss of cabin pressure—absent other safety measures, like protective gear—can turn fatal for passengers in a matter of seconds.<sup>20</sup> The 2003 Columbia disaster, during which a hole in the Space Shuttle Columbia's wing allowed atmospheric gas to enter the vehicle during reentry, causing it to overheat, dismantle, and kill all seven astronauts aboard, exemplifies this danger.<sup>21</sup>

Incidents in the last decade shine additional light on the dangers posed by commercial spaceflight. For example, in 2014 and 2015, two commercial spacecraft contracted by NASA for its commercial cargo program exploded within minutes of their launch from U.S. spaceports.<sup>22</sup> Additionally, an October 2014 test flight for SpaceShipTwo, a reusable launch vehicle used by Virgin Galactic, crashed into the Mojave Desert and killed the copilot.<sup>23</sup> An investigation from the National Transportation Safety Board revealed that the crash resulted from the spacecraft's feathering system, which slows the spacecraft during reentry, opening prematurely.<sup>24</sup> Although this is the only commercial space launch licensed or permitted by the FAA since 1989 that has reported a fatality,<sup>25</sup> roughly 1.4 percent of Russian and U.S.

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17. FED. AVIATION ADMIN., *supra* note 3.

18. *Id.*

19. See Sarah Knarzer, Comment, *The (Regulatory) Force Is with You: Using Early Aviation to Anticipate the Black Holes in the FAA's Proposed Regulatory Changes for Commercial Human Space Flight*, 5 ADMIN. L. REV. ACCORD 205, 228 (2020).

20. Jonathan H. Ward, *Op-Ed: It's Time to Rescind the Moratorium on Regulation of Commercial Spaceflight*, SPACE NEWS (Oct. 15, 2021), <https://spacenews.com/op-ed-its-time-to-rescind-the-moratorium-on-regulation-of-commercial-spaceflight/> [https://perma.cc/EN6T-7JS6].

21. Rachel Treisman, *Twenty Years After the Columbia Disaster, a NASA Official Reflects on Lessons Learned*, NPR (Feb. 1, 2023, 10:11 AM), <https://www.npr.org/2023/02/01/1153150931/columbia-space-shuttle-disaster-20th-anniversary> [https://perma.cc/8LN7-UNVB].

22. COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS, *supra* note 4, at 2.

23. *Id.* at 1.

24. *Id.* at 14–15.

25. *Id.* at 2.

spaceflight missions involve fatalities,<sup>26</sup> so harm to crew or passengers in future commercial spaceflight launches may become more prevalent as commercial spaceflight becomes more widely available.<sup>27</sup> This risk is especially concerning given that some commercial spaceflight companies have run test flights with spacecraft that present serious safety concerns. Specifically, in 2019, Virgin Galactic ran a test flight in which a pressure seal loosened and compromised the spacecraft's stabilizer, prompting Virgin Galactic's vice president to publicly admit that he was unsure how the test flight did not result in the deaths of three people and the spacecraft's destruction.<sup>28</sup> Companies have also reportedly taken shortcuts rather than addressing safety concerns.<sup>29</sup> For instance, neither Virgin Galactic nor Blue Origin requires its passengers to wear pressurized suits to protect against a potentially fatal loss of cabin pressure during a mission—a requirement enforced on NASA's, Russia's, and the European Space Agency's spacecraft.<sup>30</sup>

For these reasons, it is essential that governments whose territories have the capacity to launch commercial spaceflight missions issue and enforce adequate safety measures to protect astronauts and civilian tourists. However, the United States' current regulatory structure for commercial spaceflight does not allow the government to implement appropriate safety regulations, which may open the United States up to liability for violations of its international human rights obligations.<sup>31</sup> To outline this liability, Part I of this Comment will summarize the FAA's regulatory authority over the commercial spaceflight industry and the limitations on this authority imposed by the current federal regulation moratorium. Part II will address the jurisdictional application of international human rights law to commercial spaceflight

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26. Nicholas Schmidle, *The Red Warning Light on Richard Branson's Spaceflight*, NEW YORKER (Sept. 1, 2021), <https://www.newyorker.com/news/news-desk/the-red-warning-light-on-richard-bransons-space-flight> [https://perma.cc/B5MP-5HAF].
27. COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS, *supra* note 4, at 37.
28. Ward, *supra* note 20.
29. *Id.*
30. *Id.*
31. As a matter of scope, this Comment discusses potential liability for the United States; however, as of 2014, no other states had created a regulatory regime to ensure safety of commercial spaceflight. Mark J. Sundahl, *Standards, Standards Everywhere: Assessing Current Initiatives for Human Spaceflight Standards and Their Potential Effect on Future Regulations*, 57 PROC. INT'L INST. SPACE L. 383, 384 (2014). As such, future research should probe into potential liability for other states, as well. For instance, further research could be dedicated to the United Kingdom, Sweden, and the European Aviation Safety Agency, which, at least previously, considered drafting domestic and regional legislation applicable to commercial spaceflight. *Id.* at 385.

activities and identify human rights provisions potentially implicated by the United States' failure to implement appropriate safety regulations. Lastly, Part III will conclude this Comment by recommending that the United States allow the federal regulation moratorium for commercial spaceflight to expire on January 1, 2024, and allow the FAA to resume promulgating safety regulations that are up to date with technological advancements in the industry.

## I. THE U.S. REGULATION MORATORIUM FOR THE COMMERCIAL SPACEFLIGHT INDUSTRY

### A. *The FAA's Regulatory Authority over Commercial Spaceflight*

In 1984, the Commercial Space Launch Act<sup>32</sup> tasked the U.S. Department of Transportation with regulating the safety of commercial space transportation,<sup>33</sup> an authority it transferred to the FAA in 1995.<sup>34</sup> To enable the FAA to accomplish its task of providing safe and efficient aerospace travel,<sup>35</sup> 51 U.S.C. Chapter 509 grants it authority to issue safety regulations for commercial space launches and reentries.<sup>36</sup> A commercial spaceflight launch possesses at least one of the following three characteristics: (1) the FAA licensed the launch, (2) the "launch contract was open to international competition," or (3) the commercial launch was privately financed, and private companies manufactured and marketed the commercial launch vehicle without government support.<sup>37</sup> Commercial spaceflight missions take off from launch sites called spaceports, which may be state sponsored or privately run.<sup>38</sup> A reentry refers to the final maneuver of a suborbital spaceflight mission.<sup>39</sup>

To enforce its regulations, the FAA requires that any commercial launches that occur within U.S. territory or are conducted by U.S. entities abroad first obtain a license or permit from the FAA.<sup>40</sup> Under

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32. 49 U.S.C. §§ 2601–2623 (1988).

33. See Pub. L. No. 98-575, 98 Stat. 3056–57 (codified as amended at 49 U.S.C. §§ 2601–2623 (1988)).

34. COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS, *supra* note 4, at 5.

35. *Mission*, FED. AVIATION ADMIN., <https://www.faa.gov/about/mission> [<https://perma.cc/TVF8-F2YX>] (last visited Mar. 8, 2023).

36. 51 U.S.C. § 50903(b)–(c) (2012).

37. FED. AVIATION ADMIN., *supra* note 3.

38. COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS, *supra* note 4, at 7.

39. ROGER D. LAUNIUS & DENNIS R. JENKINS, COMING HOME: REENTRY AND RECOVERY FROM SPACE 8 n.16 (2012).

40. FED. AVIATION ADMIN., *supra* note 3. Launches by U.S. government organizations and certain classes of small rockets are exempt from this

51 U.S.C. § 50905, those licensed or permitted to launch commercial spaceflight operations may only use a crew that is trained and meets medical conditions consistent with the FAA's regulations.<sup>41</sup> This section also requires the FAA to promulgate regulations requiring those licensed or permitted to launch to provide written notice of potential risks associated with launch or reentry to their passengers and crew.<sup>42</sup> Additionally, to obtain a license, commercial spaceflight companies must ensure that their spacecraft contain life-supporting atmospheric conditions, but companies are free to determine how to meet these requirements,<sup>43</sup> which may account for Virgin Galactic's 2019 incident.<sup>44</sup>

14 C.F.R. Part 460 expands upon the FAA's commercial spaceflight regulations. Part 460, subpart A defines who composes the commercial spaceflight crew and establishes notification, medical, qualification, and training requirements for them.<sup>45</sup> Part 460, subpart B also provides training and informed consent requirements for passengers.<sup>46</sup> Under Part 401.7, the crew is composed of employees, independent contractors, or subcontractors of a licensee, transferee, or permittee employed to perform activities directly related to the launch, reentry, or operation of a vehicle with human passengers.<sup>47</sup> The crew includes flight crew, who are on board during a launch or reentry, and remote operators, who control the spacecraft's flight path while not on board.<sup>48</sup> Passengers, or "spaceflight participants," include all individuals on board a launch or reentry spacecraft who do not form part of the crew.<sup>49</sup>

With regard to safety regulations, Part 460 requires commercial spaceflight operators to ensure that their spacecraft have "adequate environmental control and life support systems," include "smoke detection and fire suppression systems[,] account for human factors," and have a flight-testing program.<sup>50</sup> Operators must also train their crew and passengers on protocols for responding to emergencies,

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requirement. *Id.* Regulations and processes for the former are handled by NASA and the U.S. Department of Defense. *Id.*

41. COLEMAN ET AL., *supra* note 5, at 3.

42. *Id.*

43. Sundahl, *supra* note 31, at 384.

44. *See supra* note 28 and accompanying text.

45. 14 C.F.R. § 460.5(a) (2022).

46. *Id.* at § 460.45 (detailing the requirements for spaceflight operators to provide passengers with information about hazards related to the space mission and passengers to provide written consent); *id.* at § 460.51 (providing for passengers' required emergency training).

47. *Id.* at § 401.7.

48. *See id.*

49. *Id.*

50. COLEMAN ET AL., *supra* note 5, at 3.



including smoke, fire, and loss of cabin pressure.<sup>51</sup> However, the leeway granted to companies to meet safety requirements may create a gap in regulatory coverage of the safety risks presented by commercial spaceflight.<sup>52</sup>

*B. The Federal Regulation Moratorium for Commercial Spaceflight*

Although the FAA retains the authority to enforce the aforementioned regulations for commercial spaceflight, congressional action has largely prevented it from promulgating new regulations to preempt safety risks as technology advances and commercial spaceflight accessibility increases.<sup>53</sup> In 2004, the Commercial Space Launch Amendments Act<sup>54</sup> established a moratorium on the FAA promulgating additional safety regulations for commercial spaceflight.<sup>55</sup> The moratorium has been characterized as a “learning period” that is free of regulatory limitations and facilitates technological development in the burgeoning commercial spaceflight industry.<sup>56</sup> Indeed, Congress’s policy justification for the moratorium is to allow “[t]he regulatory standards governing human space flight [to] evolve as the industry matures so that regulations neither stifle technology development nor expose crew . . . or space flight participants to avoidable risks.”<sup>57</sup> Congress has extended the moratorium four times—first, through the FAA Modernization and Reform Act of 2012;<sup>58</sup> second, through the Airport and Airway Extension Act;<sup>59</sup> third, through the Commercial Space Launch Competitiveness Act;<sup>60</sup> and, lastly, through the Continuing Appropriations Act, 2024 and Other Extensions Act.<sup>61</sup>

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51. *Id.*

52. *See supra* note 43 and accompanying text.

53. *See* COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS, *supra* note 4, at 9–10.

54. 49 U.S.C. § 70101 (2004).

55. *Id.*

56. COLEMAN ET AL., *supra* note 5, at 1.

57. *See id.* at 2 (quoting 51 U.S.C. § 50901(a)(15) (2015)).

58. FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, § 332(b), 126 Stat. 11, 74 (codified as amended at 29 U.S.C. § 40101).

59. Airport and Airway Extension Act of 2015, Pub. L. No. 114-55, § 102(e), 129 Stat. 522, 523 (codified as amended at 51 U.S.C. § 50905(c)(3)).

60. U.S. Commercial Space Launch Competitiveness Act, Pub. L. No. 114-90, § 111, 129 Stat. 704, 709–11 (codified at 51 U.S.C. § 50905 (2015)).

61. Continuing Appropriations Act, 2024 and Other Extensions Act, Pub. L. No. 118-15, § 2202(k), 137 Stat. 71, 83.

Absent another extension, the moratorium will expire on January 1, 2024.<sup>62</sup>

Under the moratorium, the FAA may still provide licenses or permits for commercial space launches, but the FAA generally cannot promulgate new safety regulations for those missions.<sup>63</sup> The FAA merely retains authority to issue regulations regarding “design features or operating practices that resulted in a death, serious injury, or contributed to an unplanned event . . . that posed a high risk of . . . serious or fatal injury.”<sup>64</sup> Such regulations may only describe their impact on “determining whether to issue a launch license.”<sup>65</sup> In other words, the FAA may promulgate regulations after an accident occurs, but the regulation must specifically relate to the design feature responsible for the accident.<sup>66</sup> To make matters worse, after the Trump administration signed Executive Order 13771 in 2017, which required executive agencies to repeal two regulations for each regulation that came into force,<sup>67</sup> the U.S. Secretary for Transportation took steps to simplify the licensing process for commercial space launch and reentry, further suppressing the already limited regulatory safeguards for commercial spaceflight.<sup>68</sup>

Potential accidents are increasingly likely as commercial spaceflight becomes more widely available and have the potential to pose severe threats to passengers’ lives and health.<sup>69</sup> This danger, coupled with continuously renewed limitations on the FAA’s regulatory authority, has caused many to call for an end to the regulation moratorium.<sup>70</sup> The United States should heed these calls or it will potentially risk liability

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62. RACHEL LINDBERGH, CONG. RSCH. SERV., IF12508, COMMERCIAL HUMAN SPACEFLIGHT SAFETY REGULATIONS 1 (2023), <https://crsreports.congress.gov/product/pdf/IF/IF12508> [<https://perma.cc/4CTJ-HBL5>].
63. COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS, *supra* note 4, at 2, 9–10.
64. COLEMAN ET AL., *supra* note 5, at 2.
65. COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS, *supra* note 4, at 9–10 (citing 51 U.S.C. § 50905(c)(2)(A) (2010)).
66. *FAA Continues to Update Regulations and Faces Challenges to Overseeing an Evolving Industry: Hearing Before the Subcomm. on Aviation of the H. Comm. on Transportation and Infrastructure*, 117th Cong. 27 (2021) (prepared statement of Heather Krause, Director, Physical Infrastructure, Gov’t Accountability Off.).
67. Exec. Order No. 13,771, 82 Fed. Reg. 9339 (Feb. 3, 2017).
68. Knarzer, *supra* note 19, at 213 (citing Streamlined Launch and Reentry Licensing Requirements, 84 Fed. Reg. 15296, 15301 (Apr. 15, 2019)).
69. *See supra* notes 19–30 and accompanying text.
70. *See, e.g.*, Ward, *supra* note 20. There is even an indication that the FAA does not favor extending the regulation moratorium. Sundahl, *supra* note 31, at 385.

for human rights violations resulting from foreseeable and otherwise preventable accidents during commercial spaceflight missions.

II. THE UNITED STATES' POTENTIAL LIABILITY FOR  
INTERNATIONAL HUMAN RIGHTS VIOLATIONS STEMMING FROM  
ITS FAILURE TO IMPLEMENT APPROPRIATE SAFETY  
REGULATIONS FOR COMMERCIAL SPACEFLIGHT

*A. Application of the United States' International Human Rights  
Obligations to Spacecraft that the FAA Licenses and Permits to Launch*

As a jurisdictional matter, for the United States to incur legal responsibility for human rights violations that occur on private commercial spacecraft that the FAA licenses or permits to launch from U.S. spaceports, the United States' human rights obligations must apply in space and on these private spacecraft. This means that—in accordance with the jurisdictional bases set forth in human rights treaties, such as the International Covenant on Civil and Political Rights (ICCPR)—private commercial spacecraft must fall under the United States' territorial jurisdiction or effective control.<sup>71</sup> Bases for determining that commercial spacecraft licensed or permitted by the United States to launch from U.S. spaceports fall under the United States' jurisdiction exist implicitly in international space law treaties and by analogy to recognized jurisdiction over sea vessels and aircraft. Accordingly, contrary to some scholars' arguments that international space law lacks a regime that can assign liability for harm to space tourists,<sup>72</sup> a state's international human rights obligations may apply on commercial spacecraft that it licenses or permits to launch. So long as a binding treaty or customary international law imposes an obligation on the United States to ensure the safety of commercial spaceflights originating from its territory, failure to do so would constitute a violation of its international obligations.<sup>73</sup>

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71. International Covenant on Civil and Political Rights art. 2(1), Dec. 16, 1966, 999 U.N.T.S. 171 [hereinafter ICCPR] (“Each State Party to the present Covenant undertakes to respect and to ensure to all individuals within its territory and subject to its jurisdiction the rights recognized in the present Covenant . . .”).

72. See, e.g., Adrian Taghdiri, Note, *Flags of Convenience and the Commercial Space Flight Industry: The Inadequacy of Current International Law to Address the Opportune Registration of Space Vehicles in Flag States*, 19 B.U. J. SCI. & TECH. L. 405, 414–15 (2013).

73. In accordance with the *Lotus* principle stemming from the Permanent Court of International Justice's *S.S. Lotus* case, states enjoy the freedom to take any acts that are not legally prohibited. *S.S. Lotus* (Fr. v. Turk.), 1927 P.C.I.J. (ser. A) No. 10, at 18–19 (Sept. 17). The International Court of Justice later applied this principle in *Paramilitary Activities*, where it held that “in international law there are no rules, other than such rules

### 1. International Space Law Treaty Regime

Outer space treaty law appears to implicitly apply state parties' human rights obligations to commercial spaceflight activities. International space law is largely restricted to five decades-old treaties.<sup>74</sup> First, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies ("Outer Space Treaty") entered into force on October 10, 1967, and established foundational outer space law, such as the right to free exploration of outer space and the prohibitions against the appropriation of, occupation of, and use of nuclear weapons and weapons of mass destruction in outer space.<sup>75</sup> The Outer Space Treaty also applies international law to the outer space context. For instance, Article 3 of the treaty expressly applies "international law" and "the Charter of the United Nations" to "the exploration and use of outer space."<sup>76</sup> The prohibition against the use of nuclear weapons and weapons of mass destruction<sup>77</sup> likewise stems from international law.<sup>78</sup> Further, Article 6 of the Outer Space Treaty assigns international

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as may be accepted by the State concerned, by treaty or otherwise, whereby the level of armaments of a sovereign State can be limited." Military and Paramilitary Activities in and Against Nicaragua (*Paramilitary Activities*) (Nicar. v. U.S.), Merits, 1986 I.C.J. 14, ¶ 269 (Jun. 27). Further, any treaty or customary rule's inclusion of responsibility for states' activities in outer space would give these provisions teeth, as international responsibility gives rise to legal consequences, which may include the obligation to cease wrongful acts, guarantee not to repeat wrongful acts, and make full reparations for injuries caused by wrongful acts. Int'l L. Comm'n, *Responsibility of States for Internationally Wrongful Acts*, at arts. 28–31, in Rep. on the Work of Its Fifty-Third Session, U.N. Doc. A/56/10, ¶ 77 (2001) [hereinafter *Articles on State Responsibility*].

74. See *Space Law Treaties and Principles*, U.N. OFF. FOR OUTER SPACE AFFS., <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html> [<https://perma.cc/7LCA-Y4DT>] (last visited Mar. 8, 2023).

75. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies arts. 1–2, 4, Jan. 27, 1967, 18 U.S.T. 2410 [hereinafter *Outer Space Treaty*].

76. *Id.* at art. 3.

77. *Id.* at art. 4.

78. Although the International Court of Justice did not come to a definitive conclusion on the question of whether there is a customary prohibition against the use of nuclear weapons, it recognized that various treaties have prohibited or limited the use of nuclear weapons. Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion (*Nuclear Weapons Advisory Opinion*), 1996 I.C.J. 226, ¶ 58 (July 8). The Court also referenced multiple treaties or protocols prohibiting the use of weapons of mass destruction. *Id.* ¶¶ 27, 57.

responsibility to states for “national activities” carried out by both governmental agencies and nongovernmental entities.<sup>79</sup>

Second, the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (“Rescue Agreement”) entered into force on December 3, 1968, and requires state parties to rescue spacecraft personnel who landed in areas under their jurisdiction due to accidents, distress, or emergencies.<sup>80</sup> Third, on September 1, 1972, the Convention on International Liability for Damage Caused by Space Objects (“Liability Convention”) entered into force. The Liability Convention assigns states liability to pay compensation when their space objects damage Earth’s surface or other aircraft or cause death or health impairment to individuals.<sup>81</sup> Article 1 of the convention clarifies that such responsibility applies to states that launch space objects, states that procure the launch of space objects, and states from whose territory or facilities a space object is launched.<sup>82</sup>

Fourth, the Convention on Registration of Objects Launched into Outer Space (“Registration Convention”) entered into force on September 15, 1976, and requires that states launching space objects register those objects with the United Nations Secretary-General.<sup>83</sup> Lastly, the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (“Moon Agreement”) entered into force on July 11, 1984, and stipulates that states’ use of the moon and other celestial bodies must only be for peaceful purposes and prohibits states from appropriating or occupying the moon.<sup>84</sup> Under Article 10 of the Moon Agreement, states also have an obligation to “adopt all practicable measures to safeguard the life and health of persons” on

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79. Outer Space Treaty, *supra* note 75, at art. 6.

80. Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space art. 2, *opened for signature* Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119 [hereinafter Rescue Agreement].

81. Convention on International Liability for Damage Caused by Space Objects arts. 1–2, *opened for signature* Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187 [hereinafter Liability Convention].

82. *Id.* at art. 1. Article 1 of the Convention on Registration of Objects Launched into Outer Space also applies its provisions to States from whose territory space objects are launched. Convention on Registration of Objects Launched into Outer Space art. 1, *opened for signature* Jan. 14, 1975, 28 U.S.T. 695, 1023 U.N.T.S. 15 [hereinafter Registration Convention].

83. Registration Convention, *supra* note 82, at art. 2, ¶ 1.

84. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies arts. 1, 3, 11, *opened for signature* Dec. 18, 1979, 1363 U.N.T.S. 3 [hereinafter Moon Agreement].

these celestial bodies.<sup>85</sup> As of 2022, the United States had ratified all but the Moon Agreement.<sup>86</sup>

None of these treaties expressly apply international human rights law to outer space. However, one might reasonably argue that the Outer Space Treaty's application of "international law" to states' outer space activities is broad and incorporates international human rights law.<sup>87</sup> Article 3 of the Outer Space Treaty specifically provides that states must conduct their outer space activities "in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding."<sup>88</sup> "Including" could be read as non-exhaustive<sup>89</sup> and incorporating international law beyond the U.N. Charter. However, some could argue that the stated purpose for such incorporation to "maintain[] international peace and security" and promote international cooperation relates more to treaty law, which traditionally concerns relations between states,<sup>90</sup> than to legal standards, like human rights law, concerning relations between a state and its nationals and other individuals under its control.<sup>91</sup> I propose that a more expansive reading incorporating international human rights law is appropriate, especially after reading "including" to be non-exhaustive and considering the U.N. Charter's repeated references to state parties' duty to further and respect human rights.<sup>92</sup>

Even if Article 3 of the Outer Space Treaty is read restrictively to not incorporate international human rights law, other provisions within the five outer space treaties may implicitly apply international human rights law to the context of private commercial spacecraft licensed or

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85. *Id.* at art. 10, ¶ 1.
86. Comm. on the Peaceful Uses of Outer Space, Rep. of the Legal Subcomm. on Its Sixty-First Session, U.N. Doc. A/AC.105/C.2/2022/CRP.10, at 9 (2022).
87. *See* Outer Space Treaty, *supra* note 75, at art. 3.
88. *Id.*
89. *Auer v. Commonwealth*, 621 S.E.2d 140, 144 (Va. Ct. App. 2005) ("Generally speaking, the word 'include' implies that the provided list of parts or components is not exhaustive and, thus, not exclusive.").
90. *See* Vienna Convention on the Law of Treaties, at 333, May 23, 1969, 1155 U.N.T.S. 331.
91. *Human Rights*, U.N., <https://www.un.org/en/global-issues/human-rights> [<https://perma.cc/YA3S-PRPW>] (last visited Mar. 27, 2023).
92. *See, e.g.*, U.N. Charter, at 2 ("We the peoples of the United Nations determined . . . to reaffirm faith in fundamental human rights . . . ."); *id.* at art. 1 (stating that one of "[t]he purposes of the United Nations" is "[t]o achieve international cooperation in . . . promoting and encouraging respect for human rights."); *id.* at art. 55 ("[T]he United Nations shall promote . . . universal respect for, and observance of, human rights . . . .").

permitted to launch by the United States. For instance, Article 10 of the Moon Agreement's requirement that states "adopt all practicable measures to safeguard the life and health of persons on the moon"<sup>93</sup> reasonably follows from states' duties under international human rights law to protect individuals' right to life<sup>94</sup> and "the highest attainable standard of physical and mental health."<sup>95</sup> This seems to implicitly apply these, or similar, human rights obligations to outer space activities. This would also be consistent with interpretations that including the language "prompted by sentiments of humanity" in the Rescue Agreement's preamble signifies that the treaty offers protections for commercial space tourists.<sup>96</sup> Additionally, Article 6 of the Outer Space Treaty's assignment of international responsibility to states for "national activities" carried out by nongovernmental agencies<sup>97</sup> indicates that states could be held accountable for the actions of non-state entities, rather than just the traditional state agents and organs attributable to a state.<sup>98</sup> Article 1 of the Liability Convention appears to clarify that this includes nongovernmental spacecraft licensed to launch from spaceports in the United States by applying international responsibility to states that launch space objects, states that procure the launch of space objects, and states from whose territory or facilities a space object is launched.<sup>99</sup> Read together, these provisions suggest that the United States' human rights obligations to protect the life and health of individuals under its jurisdiction apply on commercial spacecraft launched from U.S. territory.

## 2. Analogous Application of the Law of the Seas and Aircraft

Even if international human rights law does not apply to commercial spacecraft through outer space treaty law, it may apply on the basis of analogous international law governing the law of the seas and aircraft. As an initial matter, a state's international human rights obligations generally apply in areas under its jurisdiction or effective

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93. Moon Agreement, *supra* note 84, at art. 10.

94. ICCPR, *supra* note 71, at art. 6, ¶ 1.

95. International Covenant on Economic, Social, and Cultural Rights art. 12, ¶ 1, *opened for signature* Dec. 19, 1966, 993 U.N.T.S. 3 [hereinafter ICESCR].

96. Freeland, *supra* note 1, at 10 (quoting Rescue Agreement, *supra* note 80, annex).

97. Outer Space Treaty, *supra* note 75, at art. 6.

98. Articles on State Responsibility, *supra* note 73, at art. 4, cmts. 4, 6.

99. Liability Convention, *supra* note 81, at art. 1. Article 1 of the Registration Convention also applies its provisions to states from whose territory space objects are launched. Registration Convention, *supra* note 82, at art. 1.

control.<sup>100</sup> The European Court of Human Rights underscored this jurisdictional prerequisite in *Al-Skeini v. United Kingdom*,<sup>101</sup> where it explained that a state cannot be held responsible for an alleged human rights violation if the violation did not occur within an area under that state's jurisdiction.<sup>102</sup> A state's jurisdiction encompasses its territory, but may also apply extraterritorially when the state performs acts or produces effects in other states' territories.<sup>103</sup> For instance, a state may exercise jurisdiction in the territory of another state where it uses force or conducts military activities.<sup>104</sup> Additionally, the Human Rights Committee has drawn upon this basis for jurisdiction to infer that a state's human rights obligations apply extraterritorially, not only to areas under a state's effective control, but also to individuals under its effective control.<sup>105</sup> Specifically, when interpreting the scope of the right to life under Article 6 of the ICCPR, the Human Rights Committee explained that "a State party has an obligation to respect and ensure the rights . . . of all persons . . . located outside any territory effectively controlled by the State whose right to life is nonetheless affected by its military or other activities in a direct and reasonably foreseeable manner."<sup>106</sup> Accordingly, in *Hassan v. United Kingdom*,<sup>107</sup> the European Court of Human Rights held that a state's human rights obligations apply to individuals detained in military bases under their control.<sup>108</sup> Similarly, in the *Wall Advisory Opinion*<sup>109</sup> and *Armed*

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100. *Soering v. United Kingdom*, 161 Eur. Ct. H.R. (ser. A), ¶ 86 (1989); Human Rights Comm., General Comment No. 36, U.N. Doc. CCPR/C/GC/36, ¶ 63 (2019) [hereinafter General Comment No. 36].

101. App. No. 55721/07, 53 Eur. Ct. H.R. 589 (2011).

102. *Id.* ¶ 130.

103. *See, e.g.*, Human Rights Comm., General Comment No. 31, U.N. Doc. CCPR/C/21/Rev.1/Add.13, ¶ 10 (2004) [hereinafter General Comment No. 31] (explaining that the ICCPR "applies to those within the power or effective control of the forces of a State Party acting outside its territory").

104. *See, e.g., Al-Skeini*, 53 Eur. Ct. H.R. ¶ 138; *Issa v. Turkey*, 2004-II Eur. Ct. H.R. 1, ¶¶ 16, 19, 72–74 (holding that if Turkish soldiers took individuals to a cave in Northern Iraq and executed them, then they would have exercised their control, or jurisdiction, over those individuals).

105. General Comment No. 36, *supra* note 100, ¶ 63.

106. *Id.*

107. 2014-VI Eur. Ct. H.R. 1.

108. *Id.* ¶¶ 75–77.

109. Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, Advisory Opinion (*Wall Advisory Opinion*), 2004 I.C.J. 136 (July 9).



*Activities*,<sup>110</sup> the International Court of Justice (ICJ) noted that a state's human rights obligations apply in areas under its occupation.<sup>111</sup>

A state's jurisdiction has also been found to exist on certain ships and aircraft. With regard to ships, in *S.S. Lotus*,<sup>112</sup> the Permanent Court of International Justice noted that "a ship is placed in the same position as national territory. . . . It follows that what occurs on board a vessel on the high seas must be regarded as if it occurred on the territory of the state under whose flag the ship flies."<sup>113</sup> In other words, a state enjoys territorial jurisdiction over a ship sailing under its flag.<sup>114</sup> Therefore, its human rights obligations apply there.<sup>115</sup> This is consistent with the United Nations Convention on the Law of the Sea, which provides that obligations regarding labor conditions and safety apply on a state's flagged ships<sup>116</sup> and that a state has the obligation to "assume jurisdiction under its internal law over each ship flying its flag and its master, officers and crew in respect of administrative, technical and social matters concerning the ship."<sup>117</sup> This signifies that a state not only must apply its international legal obligations to ships sailing under its flag, but also has an obligation to implement domestic legislation to enforce these obligations.<sup>118</sup>

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110. *Armed Activities on the Territory of the Congo* (Dem. Rep. Congo v. Uganda), Judgment, 2005 I.C.J. 168 (Dec. 19).

111. *Wall Advisory Opinion*, 2004 I.C.J. 136 ¶ 113 (holding that Israel's international human rights obligations apply in Occupied Palestinian Territory); *Dem. Rep. Congo v. Uganda*, 2005 I.C.J. 168 ¶¶ 213, 220 (holding that Uganda's obligations under the ICCPR, African Charter on Human and Peoples' Rights, and the Convention on the Rights of the Child and its Additional Protocol were applicable in the territory of the Democratic Republic of the Congo occupied by Ugandan military forces).

112. *Fr. v. Turk.*, 1927 P.C.I.J. (ser. A) No. 10.

113. *Id.* at 25.

114. *Id.*

115. *See* U.N. Convention on the Law of the Sea, art. 94 ¶ 1, Dec. 10, 1982, 1833 U.N.T.S. 387 [hereinafter UNCLOS] ("Every State shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag."); *see also* Sondre Torp Helmersen, *The Sui Generis Nature of Flag State Jurisdiction*, 58 JAPANESE Y.B. INT'L L. 319, 320 (2015) (assuming that flag state jurisdiction arises under customary international law).

116. *See* UNCLOS, *supra* note 115, at art. 94(3) ("Every State shall take such measures for ships flying its flag as are necessary to ensure safety at sea with regard, *inter alia*, to (a) the construction, equipment and seaworthiness of ships; (b) the manning of ships, labour conditions and the training of crews, taking into account the applicable international instruments; [and] (c) the use of signals, the maintenance of communications and the prevention of collisions.").

117. *Id.* at art. 94(2)(b).

118. *See id.* at arts. 94(2)–(3).

Although standards applicable to sea vessels may logically apply by analogy to spacecraft, some may allege that distinctions between the two preclude such application. For instance, one distinction between the law of the seas and outer space law is that the former has been framed as “one of the ‘original’ fields of international law,”<sup>119</sup> whereas the latter is a burgeoning field of law that has emerged in the last few decades.<sup>120</sup> The difference in time during which such law has developed could impact its recognizable status as customary international law because customary international law is, in part, composed of widespread state practice.<sup>121</sup> Due to the short time period during which states could act in accordance with emerging customary principles in a newer area of law, it may be more difficult to establish widespread state practice.<sup>122</sup> However, the development of space exploration in the last three decades does not necessarily bar the formation of customary international human rights law with regard to space activities.<sup>123</sup> For instance, space law could experience a “Grotian Moment,” or rapid formation of custom.<sup>124</sup> Additionally, in *North Sea Continental Shelf*,<sup>125</sup> the ICJ explained that “the passage of only a short period of time is not necessarily, or of itself, a bar to the formation of a new rule of customary international law on the basis of what was originally a purely conventional rule.”<sup>126</sup> Accordingly, outer space law’s relatively recent emergence does not preclude it from incorporating preexisting human rights standards stemming from conventions like the ICCPR and International Covenant on Economic, Social, and Cultural Rights (ICESCR).

Alternatively, international human rights law in outer space may not necessarily need to be a new field of customary international law. Rather, application of existing international human rights law obligations to outer space activities may be conceptualized as applying an existing body of law to a new context. Such has been done with application of the customary principles of non-intervention and non-

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119. Bernard H. Oxman, *Human Rights and the United Nations Convention on the Law of the Sea*, 36 COLUM. J. TRANSNAT’L L. 399, 399 (1998).

120. *See supra* notes 1–6 and accompanying text.

121. *See* MICHAEL P. SCHARF, CUSTOMARY INTERNATIONAL LAW IN TIMES OF FUNDAMENTAL CHANGE: RECOGNIZING GROTIAN MOMENTS 33 (2013).

122. *See id.* at 32 (explaining that, historically, the crystallization of customary international law required state practice over a long period of time).

123. *Id.* at 5–6.

124. *Id.* at 3 (defining a “Grotian Moment” as a rapid crystallization of customary international law); *see also id.* at 136 (situating existing space law within the Grotian Moment concept).

125. *North Sea Continental Shelf (Ger./Den.; Ger./Neth.)*, Judgment, 1969 I.C.J. 3 (Feb. 20).

126. *Id.* ¶ 74.

interference—which traditionally applied to uses of force in another state’s territory<sup>127</sup>—to the more modern field of cyber law.<sup>128</sup> I propose that this method of application is perhaps more plausible in the outer space context than asserting the crystallization of new customary international law, given the limited state practice regarding space activities and the scarcity of human rights provisions within the outer space treaties.

Another potential challenge to applying flag state jurisdiction to spacecraft is that some scholars have characterized flag state jurisdiction over ships on the high seas as *sui generis*,<sup>129</sup> or a situation that is “unique” or “of its own kind/genus.”<sup>130</sup> Notably, instances labeled *sui generis* do not create precedent applicable to future events.<sup>131</sup> However, this argument likely lacks merit, especially given that international conventions pertaining to aircraft apply a similar basis for jurisdiction. For instance, Article 3 of the Convention on Offences and Certain Other Acts Committed on Board Aircraft states that an aircraft’s state of registration has jurisdiction over it.<sup>132</sup> A similar inference could be drawn from Article 17 of the Convention on International Civil Aviation, which states that “[a]ircraft have the nationality of the State in which they are registered.”<sup>133</sup> This suggests that a state’s jurisdiction over vehicles traveling under its flag or registration applies in multiple contexts.<sup>134</sup> Given that, at least in the United States, spacecraft are regulated by the same department responsible for regulating aviation,<sup>135</sup> it would logically follow that the same or a similar basis for jurisdiction applies to spacecraft.

A finding of a new customary body of international human rights law that applies in outer space or recognition that existing human rights law applies to outer space activities would deliver the same effect: international human rights obligations would apply to states’ protection of civilians under their jurisdiction in outer space. This could give rise

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127. *Paramilitary Activities*, 1986 I.C.J. at 106–08, ¶¶ 202–05.

128. TALLINN MANUAL 2.0 ON THE INTERNATIONAL LAW APPLICABLE TO CYBER OPERATIONS 20–24 (Michael N. Schmitt ed., 2d ed. 2017).

129. Helmersen, *supra* note 115, at 319–20.

130. Christopher R. Rossi, *Impaled on Morton’s Fork: Kosovo, Crimea, and the Sui Generis Circumstance*, 30 EMORY INT’L L. REV. 353, 358 (2016).

131. *Id.* at 359.

132. Convention on Offences and Certain Other Acts Committed on Board Aircraft art. 3, Sept. 14, 1963, 704 U.N.T.S. 220.

133. Convention on International Civil Aviation art. 17, Dec. 7, 1944, 15 U.N.T.S. 295.

134. See General Comment No. 36, *supra* note 100, ¶ 63 (explaining that a state’s jurisdiction covers both ships and aircraft registered by that state).

135. See *generally* 14 C.F.R. (2022) (detailing the FAA’s regulatory authority over commercial spaceflight and the aviation sector).

to state responsibility for human rights violations in outer space that effective domestic regulation could have prevented or mitigated.

*B. The United States' Failure to Implement Appropriate  
Safety Regulations and Corresponding Obligations  
Under International Human Rights Law*

The failure to issue adequate safety regulations for commercial spaceflight could implicate both the international human right to life and right to health. The right to life is codified in Article 6(1) of the ICCPR, which provides that all individuals enjoy “the inherent right to life,” which states must “protect[] by law.”<sup>136</sup> This right includes freedom from acts and omissions “intended or . . . expected to cause . . . unnatural or premature death.”<sup>137</sup> Accordingly, a state’s duty to protect the right to life can be characterized as a “due diligence obligation to take reasonable, positive measures” to protect against “reasonably foreseeable threats to life” and “foreseeable and preventable life-terminating harm or injury.”<sup>138</sup> To comply with this obligation, states must “establish a legal framework to ensure the full enjoyment of the right to life by all individuals.”<sup>139</sup> This includes adopting legislation and other measures “to protect life from all reasonably foreseeable threats” occurring in part or entirely on the state’s territory or under its jurisdiction,<sup>140</sup> including threats from private and corporate entities not attributable to the state.<sup>141</sup> To enforce these measures, states must organize their governmental organs and governance structures to prevent violations of the right to life, investigate and punish perpetrators of violations, and provide victims with effective remedies and reparations.<sup>142</sup>

However, states need not exhaust all measures to prevent deprivations of life; rather, states need only take measures “reasonably expected . . . to avoid a real and immediate risk to life of which they have or ought to have knowledge.”<sup>143</sup> As articulated by the Inter-American Court of Human Rights, a state may be found to have violated the right to life if, at the moment the alleged violation occurred, the state knew or should have known about “the existence of a situation posing an immediate and certain risk to the life” and failed to adopt measures “reasonably expected to prevent or avoid [the]

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136. ICCPR, *supra* note 71, at art. 6(1).

137. General Comment No. 36, *supra* note 100, ¶ 3.

138. *Id.* ¶¶ 6, 21.

139. *Id.* ¶ 18.

140. *Id.* ¶¶ 18, 22.

141. *Id.* ¶¶ 7, 18, 21–22.

142. *Id.* ¶ 19; General Comment No. 31, *supra* note 103, ¶ 8.

143. *Osman v. United Kingdom*, 1998 Eur. Ct. H.R. 1403, ¶ 116.

risk.”<sup>144</sup> Thus, the United States’ failure to implement safety regulations commensurate with risks posed by advancing commercial spaceflight capabilities and technology of which the United States is aware or should be aware could violate its due diligence obligation to protect the right to life.

Further, a state may violate the right to life even if the life-threatening situation does not result in death.<sup>145</sup> For instance, in *Rochela Massacre v. Colombia*,<sup>146</sup> the Inter-American Court of Human Rights held that a state with jurisdiction over an individual who was shot but did not die failed to meet its duty to ensure the right to life.<sup>147</sup> Additionally, a state’s duty to protect the right to life includes protection from a risk of illness,<sup>148</sup> but the link between the act causing the risk and the harm to the alleged victim cannot be too attenuated. For instance, in *L.C.B. v. United Kingdom*,<sup>149</sup> the European Court of Human Rights declined to find that the United Kingdom violated the right to life of an individual diagnosed with leukemia whose father was a soldier stationed at Christmas Island during the United Kingdom’s nuclear tests there.<sup>150</sup> This may indicate that to hold the United States responsible for potentially life-threatening illnesses or injuries caused by commercial spaceflight safety risks, the illnesses or injuries must be direct consequences of the failure to implement safety regulations that, if followed, could have prevented those harms.

With regard to necessary regulations, the duty to protect against medical risks can involve a duty to implement domestic legislation to prevent individuals from having to resort to unsafe practices.<sup>151</sup> For instance, in the context of laws restricting abortion, the Human Rights Committee has explained that a state’s regulation of abortion cannot contradict its duty to ensure that women are not left to resort to unsafe abortions.<sup>152</sup> While there certainly are distinctions between access to abortion—as pregnancy is not always elective and concerns issues of

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144. *Sawhoyamaya Indigenous Cmty. v. Paraguay*, Merits, Reparations, and Costs, Judgment, Inter-Am. Ct. H.R. (ser. C) No. 146, ¶ 155 (Mar. 29, 2006).

145. General Comment No. 36, *supra* note 100, ¶ 7; *see also*, U.N. Hum. Rts. Comm., *Chongwe v. Zambia*, U.N. Doc. CCPR/C/70/D/821/1998, ¶ 5.2 (Nov. 9, 2000) (holding that authorizing the use of lethal force that could have killed an individual violates the right to life).

146. *Rochela Massacre v. Colombia*, Merits, Reparations, and Costs, Judgment, Inter-Am. Ct. H.R. (ser. C) No. 163 (May 11, 2007).

147. *Id.* ¶ 127.

148. *İlhan v. Turkey*, 2000-VII Eur. Ct. H.R. 267, ¶ 76.

149. *L.C.B. v. United Kingdom*, 76 Eur. Ct. H.R. 1390 (1998).

150. *Id.* at 1403–04.

151. *See* General Comment No. 36, *supra* note 100, ¶ 8.

152. *Id.*

bodily autonomy<sup>153</sup>—and elective space travel, there may be reason to apply the prohibition against leaving individuals without any meaningful choice but to waive their right to life or health to the space tourism industry, which currently does not offer safer alternatives to largely unregulated spaceflight. If this were the case, then the United States may not be able to shield itself from liability for human rights violations on commercial spacecraft by requiring commercial spaceflight crew and passengers to provide informed written consent before participating in a mission.<sup>154</sup> Indeed, if mere informed consent would have been sufficient to meet safety standards for the civil aviation industry, then the United States would not have needed to enact legislation providing for heightened safety measures.<sup>155</sup> Why should civilians aboard spacecraft enjoy lesser protections than those aboard aircraft?

In addition to potentially violating the right to life, the failure to adequately protect against life-threatening medical risks may also violate Article 12 of the ICESCR, which provides that all individuals have a right to “the highest attainable standard of physical and mental health.”<sup>156</sup> The right to health includes preventing and limiting individuals’ exposure to radiation and “detrimental environmental conditions that directly or indirectly impact upon human health.”<sup>157</sup> This could arguably include preventing individuals from exposure to fatal atmospheric conditions, like those in the 2019 Virgin Galactic incident.<sup>158</sup>

Similar to the right to life, to comply with the right to health, states have a duty to take “deliberate, concrete and targeted” steps to realize the right to health in the most expeditious and effective way possible

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153. Abigail A. Matthews & Rebecca J. Kreitzer, *How Personal Beliefs and Identity Affect Bodily Autonomy Attitudes*, 99 U. DET. MERCY L. REV. 373, 373, 393 (2022).

154. FED. AVIATION ADMIN., *supra* note 3. Before seeking the crew and passengers’ consent, the operator of a spacecraft must provide them with information about risks and hazards presented by launch and reentry and the safety records of all relevant launch and reentry vehicles and the operator’s specific vehicle and allow for the crew and passengers to ask questions. *Human Spaceflight*, FED. AVIATION ADMIN., [https://www.faa.gov/space/human\\_spaceflight](https://www.faa.gov/space/human_spaceflight) [<https://perma.cc/G6XP-XLU6>] (May 17, 2022).

155. *See A Brief History of the FAA*, FED. AVIATION ADMIN., [https://www.faa.gov/about/history/brief\\_history](https://www.faa.gov/about/history/brief_history) [<https://perma.cc/PXA9-QMGN>] (last visited Mar. 11, 2023).

156. ICESCR, *supra* note 95, at art. 12(1).

157. Comm. on Econ., Soc. & Cultural Rts., *CESCR General Comment No. 14: The Right to the Highest Attainable Standard of Health (Art. 12)*, in Rep. on the Work of Its Twenty-Second Session, U.N. Doc. E/C/12/2000/4, ¶ 15 (Aug. 11, 2000) [hereinafter General Comment No. 14].

158. *See supra* note 20 and accompanying text.

and prevent third-party interference.<sup>159</sup> “[T]he failure to regulate the activities of individuals, groups or corporations . . . to prevent them from violating the right to health” qualifies as a violation.<sup>160</sup> Accordingly, the United States’ failure to implement adequate safety regulations to protect commercial spaceflight passengers from life-threatening health risks may violate both the international human right to life and right to health.

*C. The United States’ Moral Obligation to Regulate Commercial Spaceflight During the Development of Custom, Even if International Human Rights Obligations Do Not Currently Apply*

Even if, currently, the United States does not have an obligation under international human rights law to implement adequate safety regulations for commercial spaceflight, it should still terminate the commercial spaceflight regulation moratorium on January 1, 2024, due to the potential impact of its practice on the development of customary international law in this area. The United States will likely play a particularly significant role in the development of customary international law pertaining to space as one of the primary states with the capacity to launch spacecraft from its territory.<sup>161</sup> These capabilities would qualify the United States as a “specially affected” state, whose views and conduct would receive greater consideration than that of other states when determining the formation of customary norms.<sup>162</sup> This is because specially affected states “are particularly involved in the relevant activity” and “likely to be concerned with the alleged rule.”<sup>163</sup> The United States would almost indisputably qualify as a specially affected state in the context of commercial spaceflight regulation given that, at least in 2014, it was the only state with a regulatory regime for this industry.<sup>164</sup>

The specially affected states doctrine has been recognized and applied by numerous international bodies and courts. For instance, this

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159. General Comment No. 14, *supra* note 157, ¶¶ 30–31, 33.

160. *Id.* ¶ 51.

161. FED. AVIATION ADMIN., *supra* note 3. Aside from the United States, just the European Space Agency and seven additional states have the capability to launch commercial spacecraft. *Commercial Space: Market Overview*, INT’L TRADE ADMIN., <https://www.trade.gov/commercial-space> [<https://perma.cc/CF2F-C6J3>] (last visited Mar. 14, 2023).

162. Sienho Yee, *Report on the ILC Project on Identification of Customary International Law*, 14 CHINESE J. INT’L L. 375, 389 (2015).

163. Int’l Law Comm’n, Rep. on the Work of Its Sixty-Eighth Session, U.N. Doc. A/71/10, at 95 (2016).

164. Sundahl, *supra* note 31, at 384. The European Aviation Safety Agency considered creating regional safety regulations but did not implement them. *Id.* at 385.

doctrine has been recognized by the International Law Commission,<sup>165</sup> a body mandated by the United Nations to codify developments in international law.<sup>166</sup> It has also been applied in international jurisprudence. For instance, the ICJ first applied the specially affected states doctrine in *North Sea Continental Shelf*, where the court was tasked with determining how to delimit territorial waters between states in the North Sea–continental shelf areas.<sup>167</sup> To answer this question, the ICJ expressed that it could consider “State practice, including that of States whose interests are specially affected,” to determine the existence of a delimitation rule under customary international law.<sup>168</sup> Although the court expressed that state practice sufficient to evince customary international law should be “extensive and virtually uniform,”<sup>169</sup> it considered the practice of just fifteen coastal states, who used the equidistance principle to delimit their continental shelf boundaries.<sup>170</sup> Similarly, in *Fisheries Jurisdiction*,<sup>171</sup> the court considered the practice of coastal states to determine the customary zone for states’ territorial fishing waters.<sup>172</sup> Subsequently, in

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165. Int’l Law Comm’n, Rep. on the Work of Its Sixty-Sixth Session, U.N. Doc. A/69/10, at 242 (2014).

166. *About the Commission*, INT’L L. COMM’N, <https://legal.un.org/ilc/> [<https://perma.cc/3HHF-AQXB>] (last visited Dec. 20, 2023).

167. *North Sea Continental Shelf* (Ger./Den.; Ger./Neth.), Judgment, 1969 I.C.J. 3, ¶¶ 1–2, 73–74 (Feb. 20).

168. *Id.* ¶ 74.

169. *Id.* Although the court’s view in the early- to mid-twentieth century appeared to require nearly uniform state practice to establish custom, its more recent judgments have walked back this standard to allow for inconsistencies in practice without negating the existence of a customary rule. *See, e.g.*, *Asylum* (Col. v. Peru), Judgment, 1950 I.C.J. 266, 276 (Nov. 20) (noting in 1950 that “[t]he Colombian Government must prove that the rule invoked by it is in accordance with a constant and uniform usage practised by the States in question”); *Paramilitary Activities*, 1986 I.C.J. at 98, ¶ 186 (noting in 1986 that “[i]n order to deduce the existence of customary rules, the Court deems it sufficient that the conduct of States should, in general, be consistent with such rules, and that instances of State conduct inconsistent with a given rule should generally have been treated as breaches of that rule, not as indications of the recognition of a new rule”).

170. *North Sea Continental Shelf*, 1969 I.C.J. at 43, ¶ 75. The court ultimately decided the case on other grounds: the geographic positioning of states whose state practice was considered was distinguishable from the case at hand, and those states did not provide the necessary *opinio juris* to establish custom because they followed the equidistance principle because of a treaty obligation, not out “of a belief that this practice [would otherwise be] rendered obligatory by the existence of a rule of law requiring it.” *Id.* ¶¶ 76–80.

171. *Fisheries Jurisdiction* (UK/Ice.; Ger./Ice.), Judgment, 1974 I.C.J. 90 (July 25).

172. *Id.* ¶¶ 50–52.



its 1996 *Nuclear Weapons Advisory Opinion*,<sup>173</sup> the court considered the practice of the mere five states containing nuclear weapons to determine whether there was a customary prohibition against the use of nuclear weapons.<sup>174</sup> In other words, to determine the existence of a customary rule, the ICJ will consider the practice of states with the capacity or resources to act pursuant to that rule.<sup>175</sup> Thus, when determining the existence of future customary human rights obligations on commercial spacecraft, courts will likely grant weighty consideration to the practice of states with the capacity to launch such spacecraft.

The United States has also acknowledged this doctrine and indicated its applicability to the commercial spaceflight industry. First, the United States invoked the specially affected states doctrine in relation to its interpretation of *jus ad bellum* and *jus in bello* norms.<sup>176</sup> Second, the FAA acknowledged its impact on international policy by suggesting that the Agency’s “vision” is to “demonstrate [to] global leadership . . . how [to] safely integrate new users and technologies into [its] aviation system”<sup>177</sup> and that its recommended safety standards could serve as “a top-level description of regulatory philosophy” for other countries and a “model for developing domestic legislation and regulations for launches and reentries or spaceport . . . operations.”<sup>178</sup> Accordingly, even if the United States does not currently have a legal obligation to properly regulate commercial spaceflight safety, it may

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173. *Nuclear Weapons Advisory Opinion*, *supra* note 78.

174. *Id.* ¶¶ 37, 59–61.

175. See Kevin Jon Heller, *Specially-Affected States and the Formation of Custom*, 112 AM. J. INT’L L., 191, 194–96 (2018).

176. *Id.* at 192. *Jus ad bellum* governs the legality of an initial use of force, while *jus in bello* governs the manner in which force is used. *What Are jus ad bellum and jus in bello?*, INT’L COMM. OF THE RED CROSS (Jan. 22, 2015), <https://www.icrc.org/en/document/what-are-jus-ad-bellum-and-jus-bello-0> [<https://perma.cc/U3Z8-Q7BH>]. It is also important to note that although the United States’ invocation of the specially affected states doctrine lends support to the likelihood that it may be used to determine the existence of future customary rules, the United States’ particular conception of this rule is problematic, as it proposes that powerful states in the Global North are more significant than those in the Global South in the formation of custom. Heller, *supra* note 175, at 192.

177. See *Mission*, FED. AVIATION ADMIN., <https://www.faa.gov/about/mission> [<https://perma.cc/2LCC-3HQQ>] (last visited Mar. 11, 2023).

178. George C. Nield, John Sloan & David Gerlach, *Recommended Practices for Commercial Human Space Flight*, 65th Int’l Astronautical Cong. 1, 7 (2014), [https://www.faa.gov/space/additional\\_information/international\\_affairs/media/recommended\\_practices\\_human\\_space\\_flight\\_iac\\_toronto\\_nield\\_october\\_2014\\_508.pdf](https://www.faa.gov/space/additional_information/international_affairs/media/recommended_practices_human_space_flight_iac_toronto_nield_october_2014_508.pdf) [<https://perma.cc/Q9DX-W5U3>].

equate its priority to lead the international community by example with a moral obligation to do so.<sup>179</sup>

Alternatively, if the United States disregards this arguable moral obligation, it may have policy reasons for resuming the FAA's regulatory authority. For example, this may provide the United States with an opportunity to improve its controversial record of human rights compliance<sup>180</sup> and credibility in the international community. Further, the United States may wish to avoid creating a highly criticized, hazardous system akin to the "flags of convenience" issue plaguing the shipping industry, where private companies based in states that elect to regulate safety opt to register themselves in states, like the United States, with less stringent regulations.<sup>181</sup> Regardless of whether the United States were to be motivated by moral obligations or other policy justifications, regulating commercial spaceflight safety could yield beneficial results.

Given the United States' recognition of its potential impact on the formation of customary international law, the FAA's vision to lead the international community in safely incorporating new technology in the aviation industry, and the policy benefits for doing so, the United States should take the necessary steps—in other words, allow the commercial spaceflight regulation moratorium to expire in January 2024—to allow safety standards to develop in tandem with technological developments in commercial spaceflight. In doing so, the United States may lay the foundation for customary international law to incorporate those standards.

### III. CONCLUSION AND RECOMMENDATIONS

Are billionaires rocketing into outer space the most sympathetic of individuals? Perhaps not. The United Nations Secretary-General even stated in September 2021 that "'billionaires joyriding to space while millions go hungry on earth' contributes to a worldwide 'malady of mistrust' in governments and other institutions."<sup>182</sup> However, states

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179. A moral obligation exists when an individual acts in a particular way because they feel obliged by moral values, rather than binding law, to do so. Artem Sergeev, *The Legitimacy of Customary International Law: Legal, Moral, and Social Perspectives*, 2017 INT'L REV. L. 1, 8 (2017). In the context of customary international law, moral values can stem from benefits to the international community that result from states acting in accordance with those moral values. *Id.*

180. See *United States: Events of 2020*, HUM. RTS. WATCH, <https://www.hrw.org/world-report/2021/country-chapters/united-states> [<https://perma.cc/YR8A-RBJG>] (last visited Mar. 14, 2023).

181. Taghdiri, *supra* note 72, at 417–19, 422.

182. DANIEL MORGAN, CONG. RSCH. SERV., IF11940, COMMERCIAL HUMAN SPACEFLIGHT 3 (2021), <https://crsreports.congress.gov/product/pdf/IF/IF11940> [<https://perma.cc/5KCX-MKAZ>].

have an obligation to protect the human rights of *all* individuals under their jurisdiction,<sup>183</sup> and as commercial spaceflight opportunities grow more frequent, so too will the dangers associated with largely unregulated safety standards for spacecraft. For this reason, to comply with its duty to protect the international human right to life and right to health of those aboard commercial spacecraft licensed or permitted to launch by the FAA, the United States should allow the federal regulation moratorium for the commercial spaceflight industry to expire on January 1, 2024.

Upon this expiration, the FAA should supplement its current “licensing approach,” which relies heavily on commercial spaceflight companies obtaining passengers’ informed consent to participate in dangerous spaceflight missions before they can obtain a launch license, with a “certification approach” similar to that of the aviation industry, which would require commercial spaceflight companies to ensure that their spacecraft meet design safety requirements before obtaining a certification designating them as safe to launch.<sup>184</sup> To facilitate the process of identifying proper safety requirements, the FAA could consider recommendations for best practices already drafted by nongovernmental organizations, including the International Association for the Advancement of Space Safety, the Commercial Spaceflight Federation, and the International Standards Association.<sup>185</sup> Indeed, the FAA already has a history of considering such standards when drafting its safety recommendations.<sup>186</sup> The FAA may also draw upon its own, currently unenforceable, safety recommendations drafted by its Commercial Space Transportation Advisory Committee, which have been identified as a starting point for future regulation.<sup>187</sup> Heightened safety regulations could both allow tourists to enjoy space exploration

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183. ICCPR, *supra* note 71, at art. 2(1).

184. Sundahl, *supra* note 31, at 386 (defining the licensing approach and certification approach in the context of the commercial spaceflight industry); Knarzer, *supra* note 19, at 220 (identifying the certification approach that the FAA has imposed on the aviation industry).

185. Sundahl, *supra* note 31, at 386–87.

186. Nield et al., *supra* note 178, at 3.

187. *Id.* at 2–3. The FAA’s recommended safety measures include “medical limits for spaceflight participants, human protection, and flightworthiness.” COMMERCIAL SPACE LAUNCH INDUSTRY DEVELOPMENTS, *supra* note 4, at 30.

with less concern for life-threatening consequences and shield the United States from liability when accidents occur.

*Sydney Warinner*<sup>†</sup>

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<sup>†</sup> 2023 J.D., with a concentration in Public International Law, Case Western Reserve University School of Law; 2020 B.A. English and Spanish, Ohio State University. I would like to thank Volume 73 of the *Case Western Reserve Law Review* for their thoughtful editing of this Comment, as well as the international law faculty at Case Western Reserve University School of Law for their guidance through my international law education. I wrote this Comment in my personal capacity, and, therefore, the arguments and views contained therein do not represent the position of my employer.