

2015

The Need for Federal Preemption and International Negotiations Regarding Liability Caps and Waivers of Liability in the U.S. Commercial Space Industry

Matthew Schaefer

Recommended Citation

Matthew Schaefer, *The Need for Federal Preemption and International Negotiations Regarding Liability Caps and Waivers of Liability in the U.S. Commercial Space Industry*, 33 BERKELEY J. INT'L LAW. (2015).
Available at: <http://scholarship.law.berkeley.edu/bjil/vol33/iss1/8>

This Article is brought to you for free and open access by the Law Journals and Related Materials at Berkeley Law Scholarship Repository. It has been accepted for inclusion in Berkeley Journal of International Law by an authorized administrator of Berkeley Law Scholarship Repository. For more information, please contact jcera@law.berkeley.edu.

The Need for Federal Preemption and International Negotiations Regarding Liability Caps and Waivers of Liability in the U.S. Commercial Space Industry

Matthew Schaefer*

Federal preemption is often controversial and international negotiations are often difficult. Yet both are necessary in the case of liability issues surrounding the nascent U.S. commercial space industry. In 2012–2014, with the retirement of the U.S. government’s Space Shuttle, two U.S. commercial companies began ferrying cargo to the International Space Station for the U.S. government. Commercial human spaceflight will soon begin in earnest. In 2016, a company will begin suborbital space flights from the United States for tourism and research purposes. The current U.S. approach to third-party liability and space-flight-participant (or passenger) liability suffers from unnecessary uncertainty. This uncertainty is caused by federal legislation governing third-party liability issues and by a patchwork of divergent state statutes and common law rules regarding liability of commercial space operators to space-flight participants. Because the growing commercial space industry is important to U.S. national security and the U.S. economy,

* Law Alumni Professor of Law and Director, Space, Cyber, and Telecom Law Program, University of Nebraska College of Law. The author previously served as a director in the international economic affairs office of the National Security Council (White House) and as an international trade consultant to the National Governors’ Association. The author would like to thank his colleagues Frans G. von der Dunk, Harvey & Susan Perlman Alumni and Othmer Professor of Law; Steve Willborn, Judge Henry A. Spencer Professor of Law of University of Nebraska College of Law; as well as John F. Burton, Jr., Professor Emeritus in the School of Management and Labor Relations (SMLR) at Rutgers University and Professor Emeritus in the School of Industrial and Labor Relations at Cornell University; Professor Mark Sundahl, Cleveland-Marshall College of Law; and Giugi Carminati, Senior Associate at Berg & Androphy (Houston) for their comments on this Article. The author would also like to thank Sandra Teichert, LL.M. class of 2014, for her research assistance. Finally, the author would like to thank Associate Professor and Research Librarian at UNL College of Law Matt Novak for his assistance in researching difficult materials related to Part III.A.5 of this Article. All errors and omissions and views expressed are those of the author.

enhanced liability protections should be afforded to the nascent industry to avoid “crushing liability” on U.S. space companies and to place them on a level playing field with foreign competitors in the case of a massive, catastrophic accident. Accordingly, the Article recommends preemptive federal legislation that would create a liability cap on third-party liability and prevent suits by space-flight participants or their heirs against space companies except in cases of willful misconduct or gross negligence. However, the Article also cautions that federal preemption should not extend to workers’ compensation claims against employers that send their employees to space, since protection of the myriad of companies that might possibly sponsor flights to space for their employees is not critical to incentivizing and maintaining commercial space activity in the United States.

TABLE OF CONTENTS

INTRODUCTION	225
I. THIRD-PARTY LIABILITY—GOVERNMENT INDEMNIFICATION.....	230
AND LIABILITY CAPS	230
A. U.S. Domestic Liability Regime with Respect to Third Parties	230
B. A Liability Cap for the Commercial Space Industry Is Not Without Precedent.....	233
C. Maximum Probable Loss Determinations	241
D. International Treaty Dimensions Under the Liability Convention ..	242
II. LIABILITY WITH RESPECT TO SPACE FLIGHT PARTICIPANTS (SFPS).....	244
A. U.S. Domestic Liability Regime with Respect to SFPS	244
1. SFPS Under the Commercial Space Launch Amendments Act of 2004	245
2. Contractual Waivers Under State Common Law	248
3. State Legislation Granting Space Operators (Partial) Immunity from Liability	250
4. Choice-of-Court and Choice-of-Law Clauses and Their Enforcement	255
5. Potential for Litigation by SFPS or Their Heirs in Foreign Court	256
6. Summary.....	262
B. International Treaty Dimensions Under the Liability Convention ..	263
III. CORPORATE- OR UNIVERSITY-SPONSORED FLIGHTS FOR SFPS AND RELATIONSHIP TO STATE WORKERS’ COMPENSATION REGIMES	267
CONCLUSION	272

INTRODUCTION

The commercial space industry is critical to U.S. national security and economic well-being. Congress has explicitly made such findings in legislation addressing commercial space activities, in particular that

[t]he development of commercial launch vehicles, reentry vehicles, and associated services would enable the United States to retain its competitive position internationally, contributing to the national interest and economic well-being of the United States; [and] providing launch services and reentry services by the private sector is consistent with [U.S.] national security and foreign policy interests.¹

Further, Congress has found that “private industry has begun to develop commercial launch vehicles capable of carrying human beings into space and greater private investment in these efforts will stimulate the Nations’ commercial space transportation industry as a whole.”²

Space activities are inherently dangerous and roughly three percent of persons traveling to or in space to date have died, including the fourteen people aboard the Challenger and Columbia Space Shuttles in 1986 and 2003 accidents, respectively.³ Rockets that launch satellites and spacecraft are filled with twenty times more propellant than the weight of the rocket itself and must travel twenty-five times faster than passenger aircraft to reach earth orbit.⁴ Accidents, while rare, will likely always be part of space activity due to the inherent risk of such activity, and they obviously can harm those aboard spacecraft. Accidents can also potentially harm third parties on the ground not connected with the launch or flights, although, to date, no third-party human loss of life, and only minimal third-party property damage, has occurred as a result of space activities.⁵

Properly addressing liability issues, both with respect to third parties and with respect to space-flight participants (SFPs)—humans carried aboard commercial space vehicles that are not crew—are among the most important to ensure the continued growth of and investment in U.S. commercial space

1. 51 U.S.C. §§ 50901(a)(5)–(6) (2012).

2. *Id.* § 50901(a)(11).

3. Of the 546 people who have been in space as defined by the U.S. Air Force, eighteen have died. See *Astronaut/Cosmonaut Statistics*, WORLD SPACE FLIGHT, <http://www.worldspaceflight.com/bios/stats.php> (last modified Oct. 2, 2014); see also *Astronaut Fatalities*, SPACEFLIGHT NOW, <http://spaceflightnow.com/shuttle/sts114/fdf/fatalities.html> (last updated May 23, 2005).

4. See *How Things Fly*, SMITHSONIAN NAT’L AIR AND SPACE MUSEUM, <https://howthingsfly.si.edu/propulsion/rocket-propulsion> (last visited Oct. 20, 2014).

5. See U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-12-899, COMMERCIAL SPACE LAUNCHES: FAA SHOULD UPDATE HOW IT ASSESSES FEDERAL LIABILITY RISK 6 (2012), available at <http://www.gao.gov/assets/600/593106.pdf>. [hereinafter GAO REPORT] (“According to FAA, no FAA-licensed commercial space launch since 1989 has resulted in casualties or substantial property damage to third parties.”).

industries. Indeed, this has been true since the creation of a commercial space flight industry in the United States.⁶ While the exact impact of liability protections on the industry is hard to quantify, actual commercial space launch contract negotiations are a strong indicator of the importance of liability regimes. In most negotiations, the party negotiating with the launch provider asks how liability issues are handled under the launch operator's national legal framework. For example, in 2012, launch customers raised concerns over the looming expiration of U.S. government promises to indemnify launch operators and their customers, as well as their contractors and subcontractors, for third-party liability if the losses exceed required insurance coverage. Price is likely still the single largest factor in space launch purchasers' decisions, but liability regimes can influence price through the impact on insurance costs and overall risk-management decisions.

The importance of the commercial space industry is further highlighted by its predicted growth. The Federal Aviation Administration (FAA) and its Commercial Space Transportation Advisory Committee (COMSTAC) forecast an average annual demand of 31.2 commercial space orbital launches worldwide from 2013 through 2022, up from the forecasted 29.1 launches for the same time frame in the 2012 reports.⁷ Specifically, the reports project an average of 18.2 commercial geostationary orbit (GSO) launches and 13.0 non-geostationary orbit (NGSO) launches for 2013 through 2022.⁸ Developments in the suborbital marketplace could substantially increase this number given the greater frequency of launches in suborbital business plans. . . FAA economic studies have found a critical link between the U.S. launch industry and overall U.S. space-industry success:

The U.S. launch industry is a critical element of the U.S. transportation infrastructure, for without it the nation is unable to send people and satellites into space. Whereas launch revenues are relatively small, the launch industry nevertheless enables other industries, and it is these industries that generate substantial revenues, profits, and employment These results show that the launch vehicle manufacturing industry functions as an enabler of other industries rather than a significant economic activity generator. Over time, commercial launches have placed many satellites in orbit allowing operators to offer a range of satellite services and spurring the growth of ground equipment production to support these satellite services. Commercial launch is essential for maintaining existing satellite services markets and is invaluable for future emerging space

6. See Tim Hughes & Esta Rosenberg, *Space Travel Law (and Politics): The Evolution of the Commercial Space Launch Amendments Act of 2004*, 31 J. SPACE L. 1, 6–7 (2005) (describing that during the private industry-NASA partnered reusable launch vehicle development program in the mid-1990's, the industry's single largest concern was the potential for massive third-party liability but that Congress stepped in to provide third-party liability indemnification for the NASA-partnered program, allowing the activity to continue).

7. OFFICE OF COMMERCIAL SPACE TRANSP., FED. AVIATION ADMIN., 2013 COMMERCIAL LAUNCH FORECAST 1 (2013), available at http://www.faa.gov/about/office_org/headquarters_offices/ast/media/2013_GSO_NGSO_Forecast_Report_June.pdf.

8. *Id.*

markets.⁹

Further, the employment, earnings, and economic activity connected with the space industries are significant in terms of the overall U.S. economy. The FAA found in a 2010 study that the commercial space transportation and enhanced industries “generated a total of \$208.3 billion in economic activity in the United States.¹⁰ Over one million people throughout the country were employed as a result of this activity, with earnings that exceeded \$53 billion.”¹¹

U.S. space companies are in competition with foreign companies that benefit from governmental policies seeking to attract high-tech, high-wage industries that also have significant and broader national security implications. One leading commentator summarizes the issues with global competition in high-tech industries as follows:

Throughout much of the 20th century, the U.S. economy led the world in innovation, and American companies still maintain strong positions in high-tech activities based on innovation. Learning from the U.S. experience, other nations are investing heavily in their innovation capabilities, are fostering the development of new formidable high-tech competitors, and are using incentives and restrictions to attract investment and production by U.S. high-tech companies.

Faced with this changing competitive landscape, U.S. policy makers must nurture America’s own innovation capabilities, must make the U.S. an attractive location for the high-tech activities of both homegrown and foreign companies, and must champion fair competition in trade and global investment for technology-intensive goods and services.¹²

The U.S. commercial space launch market is under significant pressure from foreign markets. A 2012 Government Accountability Office (GAO) report found the following:

Over the past several years, Russian and French launches have generated the most revenues, followed by U.S. launches. Moreover, in 8 of the last 10 years, U.S. commercial launch companies generated less revenue than launches in either Russia or France. U.S. companies generated no commercial launch revenue in 2011 because they conducted no launches.¹³

The U.S. commercial space industry is still maturing and evolving in the post-Shuttle retirement era. While commercial launches of satellites in the U.S.

9. OFFICE OF COMMERCIAL SPACE TRANSP., FED. AVIATION ADMIN., *THE ECONOMIC IMPACT OF THE COMMERCIAL SPACE TRANSPORTATION ON THE U.S. ECONOMY IN 2009* 7, 14 (2010), available at http://www.faa.gov/news/updates/media/Economic%20Impact%20Study%20September%202010_20101026_PS.pdf.

10. *Id.* at 2.

11. *Id.*

12. Laura D’Andrea Tyson, *Washington Should Get Tough with Countries That Force U.S. Companies To Outsource*, HARV. BUS. REV. (Nov. 12, 2009), <http://blogs.hbr.org/2009/11/washington-should-get-tough-wi/>.

13. GAO REPORT, *supra* note 5, at 7.

date back to the late 1980's, commercial transportation of cargo and crew (both orbital and suborbital) are nascent industries. Two U.S. space operators have completed successful cargo runs to the International Space Station (ISS) in the past two years.¹⁴ Several companies are receiving milestone payments under the National Aeronautics and Space Administration's (NASA) commercial crew program to develop orbital human space-flight capsules, with two companies being awarded in September 2014 a total of \$6.8 billion in commercial crew contracts from NASA to ferry astronauts to the ISS.¹⁵ No commercial suborbital or orbital flights of humans have yet to take place, save for several space tourists flying aboard Russian Soyuz craft at \$20–30 million per ticket,¹⁶ although suborbital flights are expected to begin in 2016 out of Space Port America in New Mexico by another commercial company.¹⁷ Finally, it is clear the mature part of the U.S. commercial space industry, satellite launches, has been and continues to be in competition with companies that benefit from foreign governments that permanently and rigidly limit the liability exposure of those companies over many decades with no uncertainty of interruption in those protections.¹⁸

The U.S. government will continue to rely on commercial companies for access to space and the industry is important to broader economic and national security needs. Indeed, even the suborbital launch market that many characterize as serving recreational purposes has significant and far-reaching implications. The suborbital market has potentially significant research capabilities and adapted suborbital vehicles also have the potential capability of reducing the cost of small satellite launches. Thus, while Congress will not be able to level the playing field in all respects, Congress should ensure that the liability regime for the U.S. commercial space industry allows companies to avoid “crushing liability”¹⁹ in cases of accident and also continues to incentivize the growth of the industry and new markets. Currently, the U.S. government gives minimal short-term protection through a promise of government indemnification against

14. See FAA OFFICE OF COMMERCIAL SPACE TRANSPORTATION, ANNUAL COMPENDIUM OF COMMERCIAL SPACE TRANSPORTATION: 2013 57 (2013) available at https://www.faa.gov/about/office_org/headquarters_offices/ast/media/2014-02-04_FAA_2013_Compndium.pdf.

15. See Jeff Foust, *NASA Awards Selects Boeing and SpaceX for Commercial Crew Contracts*, SPACE NEWS (Sept. 16, 2014), <http://www.spacenews.com/article/civil-space/41891nasa-selects-boeing-and-spacex-for-commercial-crew-contracts>.

16. See John Schwartz, *Russia Leads the Way in Space Tourism with Paid Trips Into Orbit*, N.Y. TIMES, Oct. 10, 2008, http://www.nytimes.com/2008/10/11/science/space/11space.html?_r=0.

17. See Stephen Clark, *Virgin Galactic Planning SpaceShipTwo's Return to Flight*, SPACEFLIGHT NOW (Jan. 14, 2015), <http://spaceflightnow.com/2015/01/14/virgin-galactic-planning-spaceshiptwo-return-to-flight/> (“Virgin Galactic CEO George Whitesides said commercial service is now expected to begin in 2016.”).

18. See *infra* notes 26–29 and accompanying text.

19. Professor Shavell first introduced this term. See Steven Shavell, *An Analysis of Causation and the Scope of Liability in the Law of Torts*, 9 J. LEGAL STUD. 463, 465 (1980). It has been used in a variety of contexts, but the central point is that one wants to avoid using liability regimes in a manner that reduces or drives out socially useful activities.

catastrophic third-party damages.²⁰ However, U.S. industry deserves a permanent liability cap regarding third-party damage, which companies in competitor countries maintain. In regards to any injury or death to an SFP, the U.S. government has essentially left it to state law, both statutory and common-law, to determine the circumstances under which companies can be held liable. Given the national security and national economic interests involved, and the nascent stage of commercial human space flight, suits by SFPs against commercial space companies should be barred by the federal government except in cases of willful misconduct, or alternatively, the lower standard of gross negligence. In short, federal preemption regarding the liability of space companies to third parties and SFPs is necessary to protect national security and national economic interests. Due to the international nature of the marketplace, international liability claims under the Liability Convention²¹ and potential suits in foreign courts are possible, and thus the U.S. government must also pursue international negotiations to ensure dangerous loopholes are not created. While federal preemption can be controversial and international negotiations can be arduous, U.S. national security and national economic well-being demand further liability protections for the commercial space industry.

Part II of this Article examines the issue of third-party liability. It examines the U.S. government's current approach of extending a short-term promise of government indemnification for third-party damages exceeding the amount of insurance commercial space companies are required to obtain. It also examines other countries' third-party liability regimes that extend a permanent liability cap to their commercial space industries. It recommends the U.S. Congress enact a permanent third-party liability cap at the current amount of required insurance. There is precedent, as liability caps have previously been enacted for other industries—including antiterrorism technology and nuclear energy—for national security and national economic reasons. As the industry matures, international negotiations on liability caps could also be considered.

Part III analyzes the issue of liability for injury or death to SFPs. Originally, in the 2004 House bill for the Commercial Space Launch Amendments Act (CSLAA), SFPs were included in the full federal cross-waiver regime that would have barred suits by SFPs against space operators except in cases of willful misconduct by the space operator. However, that provision was struck out in the final bill and thus any future negligence suits by SFPs were seemingly left to be determined under state common law. However, in the past seven years, six states with spaceports or detailed plans for a spaceport have enacted legislation that sought to immunize space operators from negligence

20. See 51 U.S.C. § 50915; see also Part II *infra* discussing current U.S. policy.

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

suits. This Part analyzes the interplay between the states' statutes and common law and examines the weaknesses and gaps in the statutes. It argues that the federal government should clearly preempt the state law by going back to the approach taken in the 2004 House bill, or alternatively, if that approach is viewed as politically infeasible because it would also bar gross negligence claims, federal legislation could simply preempt state tort law negligence-based suits. Any arguments against federal preemption based on states' rights concerns should be muted because the current federal law arguably preempts any immunity state statutes purportedly afford space operators. Additionally, the federal government should pursue international negotiations to clarify that Liability Convention claims cannot be made on behalf of foreign SFPs and ensure that foreign litigation does not proceed in cases of SFP injury or death occurring in a U.S.-licensed launch.

Part IV addresses the issue of sponsored flights, namely when a corporation or university sends an employee aboard a spacecraft as part of their employment. In such cases, the employee should not have to waive rights to pursue workers' compensation claims against their employer, the flight sponsor. Protecting flight sponsors from workers' compensation claims is not necessary to protect the U.S. national security and economic interest, as these claims do not expose the U.S. commercial space industry to "crushing liability." Thus, there needs to be a savings clause preventing federal preemption of state law to ensure that workers' compensation claims can be made against flight sponsors.

Part V concludes that federal preemption regarding the liability of space companies to third parties and SFPs is necessary to protect national security and national economic interests. This Part also recommends that the federal government participate in international negotiations to clarify and enhance liability protections globally.

I.

THIRD-PARTY LIABILITY—GOVERNMENT INDEMNIFICATION AND LIABILITY CAPS

A. U.S. Domestic Liability Regime with Respect to Third Parties

Currently, the U.S. third-party liability regime is broken into three tiers. First, the U.S. government requires, as one of the conditions for obtaining a launch (or reentry) license, that commercial space-flight operators obtain third-party liability insurance in the amount of the maximum probable loss (MPL), according to a calculation performed by the FAA.²² The insurance is generally required to last thirty days from the ignition of the launch vehicle in the case of a launch or thirty days after initiation of reentry.²³ This calculated amount of

22. See 14 C.F.R. §§ 440.9, 440.11 (2014).

23. See *id.* §§ 440.11, 440.12. The United States does not require that third-party liability

required insurance cannot exceed \$500 million; nor can it exceed the amount of insurance available on world markets at reasonable cost.²⁴ The space launch operator's contractors and subcontractors, as well as its customers (not including SFPs) and its customer's contractors and subcontractors, are all mandatory additional insureds under the insurance policy. Second, if third-party liability claims exceed the insured amount (MPL), the government has in essence made a statutory promise to pay for the next tier, or tranche, of up to \$2.8 billion dollars in any third-party liability claims faced by a space-flight entity.²⁵ In the third tier, where third-party claims exceed the MPL plus the amount of promised government indemnification, liability reverts back to the operator. However, the government indemnification promised in the second-tier is just that: a promise of future action. Congress would still have to appropriate the money. While one hopes Congress would pass the necessary appropriation law, circumstances may arise where politics and other events prevent Congress from appropriating money to indemnify the operator. For example, if Congress were simultaneously forced to respond to a massive natural disaster and a space disaster, it may be

insurance be obtained for on-orbit activities, such as operating a satellite in space. In part this stems from the FAA only having express, delegated authority from Congress to regulate launch and reentry but does not maintain on-orbit regulatory authority not on-orbit activity. *See* 51 U.S.C. § 50904 (2012). The United Kingdom, in contrast, does require its satellite operators to obtain third-party liability insurance for on-orbit activity.

24. 51 U.S.C. § 50914(3) (2012) states:

For the total claims related to one launch or reentry, a licensee or transferee is not required to obtain insurance or demonstrate financial responsibility of more than—

- (A)(i) \$500,000,000 under paragraph (1)(A) of this subsection; or
- (ii) \$100,000,000 under paragraph (1)(B) of this subsection; or
- (B) the maximum liability insurance available on the world market at reasonable cost if the amount is less than the applicable amount in clause (A)(i) or (ii) of this paragraph.

25. 51 U.S.C. § 50915(a) (2012) states:

General Requirements.—(1) To the extent provided in advance in an appropriation law or to the extent additional legislative authority is enacted providing for paying claims in a compensation plan submitted under subsection (d) of this section, the Secretary of Transportation shall provide for the payment by the United States Government of a successful claim (including reasonable litigation or settlement expenses) of a third party against a licensee or transferee under this chapter, a contractor, subcontractor, or customer of the licensee or transferee, or a contractor or subcontractor of a customer, but not against a space flight participant, resulting from an activity carried out under the license issued or transferred under this chapter for death, bodily injury, or property damage or loss resulting from an activity carried out under the license. However, claims may be paid under this section only to the extent the total amount of successful claims related to one launch or reentry—

- (A) is more than the amount of insurance or demonstration of financial responsibility required under section 50914(a)(1)(A) of this title; and
- (B) is not more than \$1,500,000,000 (plus additional amounts necessary to reflect inflation occurring after January 1, 1989) above that insurance or financial responsibility amount.

presented with, and ultimately accept, arguments that the loss of one commercial space operator is acceptable even if competition and capabilities are reduced. Additionally, federal statutes typically promise indemnification only for a limited period and must be periodically renewed; they have even expired for short periods in the past. Given that many launch contracts are entered into one to two years before the actual launch, short-term extensions of a year or even three years after lapse of the program do not provide the necessary certainty for commercial actors.

Indeed, the government's indemnification promise risked lapsing at least five times since its inception in 1988, with extensions occurring in 1999, 2000, 2004, 2009, 2013, and 2014.²⁶ Indeed, in the latter two cases, the indemnification promise did lapse, albeit only briefly. It was allowed to expire for one day before being extended on January 2, 2013 until the end of 2013.²⁷ The promise of government indemnification expired for sixteen days before it was extended for three years on Jan. 16, 2014.²⁸

Despite the fact that no third-party liability claims have been made in over 230 licensed U.S. commercial launches since 1989, Congress has, to date, been hesitant to give the U.S. launch industry the same general level of protection that other countries have given their commercial launch industry.²⁹ Indeed, no third-party claims globally have reached a level to trigger government indemnification offered by foreign countries.³⁰

France, a major U.S. commercial competitor launch country, has effectively given its space operators a permanent cap on third-party liability. Specifically, France limits the liability of its operators for damage to third parties to a fixed amount of approximately €60 million (roughly \$78 million) except in cases of willful misconduct.³¹ France currently has the largest market

26. See "Historical and Revision Notes" & "Amendments," 51 U.S.C. § 50915.

27. See Jeff Foust, *House Passes Senate-Amended Launch Indemnification Bill*, SPACE POL. (Jan. 2, 2013), <http://www.spacepolitics.com/2013/01/02/house-passes-senate-amended-launch-indemnification-bill/>.

28. See Jeff Foust, *Commercial Space Industry Celebrates Launch Indemnification Extension in Omnibus Spending Bill*, SPACE POL. (Jan. 19, 2014), <http://www.spacepolitics.com/2014/01/19/commercial-space-industry-celebrates-launch-indemnification-extension-in-omnibus-spending-bill>.

29. See GAO REPORT, *supra* note 13, at 6, 9.

30. See *id.* at 9–10.

31. See Frans G. von der Dunk, *Towards "Flags of Convenience" in Space?*, in PROCEEDINGS OF THE INTERNATIONAL INSTITUTE OF SPACE LAW: 2012 811, 818–19 (Corinne M. Jorgenson ed., 2013); see also Loi 2008-518 du 3 juin 2008 relative aux opérations spatiales [Law 2008-518 of June 4, 2008 on Space Operations], JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANÇAISE [J.O.] [OFFICIAL GAZETTE OF FRANCE], June 5, 2008, arts. 16–17, available at <http://legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000018931380>, translated in 34 J. SPACE L. 453, 462–64 (2008) [hereinafter French Law on Space Operations]; ; Loi 2008-1443 du 30 décembre 2008 de finances rectificative pour 2008 [Law 2008-1443 of December 30, 2008 amending Finance Act of 2008], JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANÇAISE [J.O.] [OFFICIAL GAZETTE OF FRANCE], Dec. 31, 2008, art. 119, available at <http://www.legifrance.gouv.fr/affichLoiPubliee.do?idDocument=JORFDOLE000019903268&type=echeancier>.

share in commercial space launches.³² The country's space program has expanded operations in French Guiana, where it now has three launch vehicles—Ariane 5, Vega, and Soyuz. Australia also appears to have established a cap.³³ More importantly, two other major launch countries Russia and China, in practice, no one doubts, would limit their companies' liability in a fashion that operates like a cap although their policies do not explicitly elaborate a liability cap system but rather provide unlimited government indemnification above set amounts.³⁴ Russia would indemnify operators for all third-party damages over \$80–\$300 million depending on the rocket's size and that China would indemnify launch operators for damages exceeding \$100 million.³⁵ Further, other countries' liability regimes could operate as caps upon the actual occurrence of an accident. For example, in several other countries, including South Korea,³⁶ the Netherlands,³⁷ and Austria,³⁸ the amount of obligatory insurance required of operators in effect sets a cap on their applicable reimbursement obligations should their government be required to pay claims at the international level under the Liability Convention. It is unclear if companies in these countries would benefit from a domestic cap.

B. A Liability Cap for the Commercial Space Industry Is Not Without Precedent

Over the past fifty years, Congress has enacted third-party liability caps for industries of importance to U.S. national security and the U.S. economy, even in industries not facing competitive pressures from foreign industry benefiting from such caps, like the commercial space industry. The establishment of a

32. See FEDERAL AVIATION ADMINISTRATION, COMMERCIAL SPACE TRANSPORTATION: 2012 YEAR IN REVIEW 6 (2013), available at http://www.faa.gov/about/office_org/headquarters_offices/ast/media/Year_in_Review_2012_Commercial_Space_Transportation_FAA_AST_January_2013.pdf.

33. See von der Dunk, *supra* note 31, at 819–21; *Space Activities Act 1998* (Cth) ss 47, 48 (Austl.) [hereinafter Australian Space Activities Act]; *Space Activities Amendment Act 2002* (Cth) (Austl.), available at http://www.austlii.edu.au/au/legis/cth/num_act/saaa2002247.

34. See GAO REPORT, *supra* note 5, at 9.

35. See *id.*

36. See von der Dunk, *supra* note 31, at 819–21; see also Space Development Promotion Act of the Republic of Korea, Act No. 7538, May 31, 2005, arts. 14, 15 (S. Kor.), available at http://www.unoosa.org/oosa/en/SpaceLaw/national/republic_of_korea/space_development_promotions_actE.html.

37. See von der Dunk, *supra* note 31, at 819–21; see also *Selected Examples of National Laws Governing Space Activities: Netherlands*, UNITED NATIONS OFFICE FOR OUTER SPACE AFFAIRS (June 13, 2006), http://www.oosa.unvienna.org/oosa/en/SpaceLaw/national/netherlands/space_activities_actE.html.

38. See von der Dunk, *supra* note 31, at 819–21; see also BUNDESGESETZ ÜBER DIE GENEHMIGUNG VON WELTRAUMAKTIVITÄTEN UND DIE EINRICHTUNG EINES WELTRAUMREGISTERS (WELTRAUMGESETZ) [FEDERAL LAW OVER THE PERMISSION OF SPACE ACTIVITIES AND THE ESTABLISHMENT OF A SPACE REGISTER (SPACE LAW)] 11 Oct. 2011, §§ 4(7), 11 (Austria).

long-term third-party liability cap would give a still-maturing industry certainty and help stimulate investment that continues U.S. leadership in commercial space activities.

In 2002, Congress passed liability caps for industries involved in antiterrorism technologies in support of U.S. national security. The Support Antiterrorism by Fostering Effective Technologies Act of 2002 (SAFETY Act) gives liability protection to providers of antiterrorism technology, providing incentives for the “development, deployment, and commercialization” of the technologies.³⁹ Some features of the regime are similar to the commercial space regime. For example, a qualified antiterrorism technology seller enters into cross-waivers of liability with its contractors, subcontractors, and customers, as well as its customers’ contractors and subcontractors.⁴⁰ These cross-waivers of liability, or reciprocal waivers of claims, are agreements that the parties will not bring claims against each other for damage caused by negligence, sometimes even gross negligence, thus stimulating covered activities—in this case the development of anti-terrorism technologies. Further, the seller’s required insurance policy must include its contractors, subcontractors, vendors, suppliers, and customers and its customers’ contractors, subcontractors, vendors, and suppliers as additional insureds.⁴¹

However, other features in the risk-management system of the SAFETY Act go beyond the features found in the commercial space third-party liability regime. For example, the SAFETY Act gives federal courts exclusive jurisdiction over suits against sellers of antiterrorism technology.⁴² Importantly, the seller’s liability is capped to the amount of liability insurance required by the Department of Homeland Security, which cannot exceed “the maximum amount of liability insurance reasonably available from private sources on the world market at prices and terms that will not unreasonably distort the sales price of Seller’s’ antiterrorism technologies.”⁴³ Further, the SAFETY Act bars punitive damages.⁴⁴ As of May 2013, the liability cap benefits over six-hundred

39. See 6 U.S.C. §§ 441–44 (2012); *The SAFETY Act: Risk Management for Anti-Terrorism Products and Services*, 24 TRUST THE LEADERS (SMITH, GAMBRELL & RUSSELL, LLP), Summer 2009, at 12–13, available at http://www.sgrlaw.com/site/assets/files/2175/tl24_final.pdf.

40. 6 U.S.C. § 443(b) (2012) reads:

Reciprocal waiver of claims: The Seller shall enter into a reciprocal waiver of claims with its contractors, subcontractors, suppliers, vendors and customers, and contractors and subcontractors of the customers, involved in the manufacture, sale, use or operation of qualified anti-terrorism technologies, under which each party to the waiver agrees to be responsible for losses, including business interruption losses, that it sustains, or for losses sustained by its own employees resulting from an activity resulting from an act of terrorism when qualified anti-terrorism technologies have been deployed in defense against or response or recovery from such act.

41. See *id.* § 443(a)(3).

42. See *id.* § 442(a).

43. See *id.* § 443(a)(2).

44. See *id.* § 442(b)(1).

products, services, and technologies designated by the Department of Homeland Security as qualified antiterrorism technologies. . .⁴⁵ The ultimate purpose is to protect national security by providing liability protection to these industries, a rationale closely akin to that of the commercial space industry that Congress has found vital for U.S. national security as well. Thus, there is ample precedent to enact a third-party liability cap for the commercial space flight industry at the amount of required insurance (the MPL amount).

Congress also passed liability caps to benefit the nuclear and oil industries. The nuclear industry's history is particularly instructive. When the nuclear industry was first developing, Congress enacted the Price-Anderson Act of 1957,⁴⁶ which, in essence, capped operator liability at \$60 million, the amount of insurance they could obtain on the market. In addition, the federal government promised to provide compensation for amounts over \$60 million, up to an additional \$500 million.⁴⁷ Thus, the government combined a liability cap for the industry with a promise to provide compensation for larger third-party damage incidents.

In the leading case addressing the constitutionality of the Price-Anderson Act, the U.S. Supreme Court upheld the constitutionality of the nuclear liability cap, finding that insurance payouts within the boundaries of the cap would cover third-party claims in all but the most extreme and rare incident.⁴⁸ Studies in 1975 showed there was a one in 20,000 chance per reactor year of an incident involving \$100 million in third-party damages and a one in a billion chance per reactor year of an incident involving \$14 billion in third-party damage.⁴⁹ The original Price-Anderson Act cap of \$560 million (including the government indemnification tranche) fell in between these two sets of probabilities. Since the FAA uses a one-in-ten million possibility to determine MPL, a liability cap set at the MPL would certainly survive any constitutional challenge. Significantly, the U.S. Supreme Court also rejected arguments that the Price-Anderson Act liability cap would encourage irresponsible industry behavior. The Court pointed to the federal regulatory and licensing scheme as well as the costs that would be

45. See DHS SCIENCE AND TECHNOLOGY DIRECTORATE: FACTSHEET ON SAFETY ACT (2014), <https://www.safetyact.gov/pages/homepages/Home.do>. Companies taking the further step of becoming certified, which requires a higher level of proven effectiveness, receive the additional benefit of the government-contractor defense in any suit even if they have sold to a private party. See *id.*

46. Price-Anderson Act of 1954, Pub. L. 85-256, 71 Stat. 576 (1957) (codified as amended at 42 U.S.C. §§ 2039, 2210 (2012)) [hereinafter Price-Anderson Act].

47. Michael G. Faure & Tom Vanden Borre, *Compensating Nuclear Damage: A Comparative Economic Analysis of the U.S. and International Liability Schemes*, 33 WM. & MARY ENVTL. L. & POL'Y REV. 219, 220 (2008). See also Price-Anderson Act, *supra* note 46; *Duke Power Co. v Carolina Env'tl. Study Group, Inc.*, 438 U.S. 59, 64 (1978).

48. *Duke Power Co.*, 438 U.S. at 85.

49. *Id.* at 85 n.28.

imposed on the private operator under the system.⁵⁰ The Court stated that “in the event of a nuclear accident the utility itself would suffer perhaps the largest damages. While obviously not to be compared with the loss of human life and injury to health, the risk of financial loss and possible bankruptcy to the utility is in itself no small incentive to avoid the kind of irresponsible and cavalier conduct implicitly attributed to licensees by the District Court.”⁵¹ Similarly, the space launch industry for human space flight and cargo missions has incredible motivations for business reasons alone to operate safely in its nascent stages. An early accident could drive up insurance rates and reduce demand for such missions.

Early international nuclear liability treaties also allowed for caps to be created by parties to the agreement by laying out either minimum liabilities below which national liability caps could not sink or maximum liability caps that could be imposed by contracting States.⁵² As the commercial space industry matures, the U.S. government might also consider pursuing international negotiations that could lead to an agreement in which countries agree to enact liability caps in national law. With many countries already having de facto or de jure third-party liability caps, negotiations may be streamlined to a degree. However, international negotiation of such caps is a longer-term issue, whereas enactment of a liability cap within the United States is an issue in need of immediate consideration.

The negotiating history of the nuclear liability conventions suggests that negotiators were aware that “unlimited liability could easily lead to the ruin of the operator without affording any substantial contribution to compensation for the damage caused.”⁵³ These early conventions were then modified to provide for public funds to be made available in cases of accident as an addition to the liability cap afforded to the operator (paralleling the evolution of the Price-Anderson Act in the U.S. system).⁵⁴ While the Price-Anderson Act has evolved into a system of retroactive premiums being imposed on operators⁵⁵ and additional treaties have been negotiated to eliminate requirements of utilizing public funds, this only occurred after the number of nuclear plants in the United States reached over sixty in number⁵⁶ and only after the pure cap was in place

50. *Id.* at 87.

51. *Id.*

52. *See* Faure & Borre, *supra* note 47, at 234–35.

53. *See id.* at 235 (citing NUCLEAR ENERGY AGENCY, EXPOSE DES MOTIFS (REVISED TEXT OF THE EXPOSE DES MOTIFS OF THE PARIS CONVENTION, APPROVED BY THE OECD COUNCIL ON THE 16TH NOV. 1982), para. 45, http://www.nea.fr/html/law/nlparis_motif.html).

54. *See* Faure & Borre, *supra* note 47, at 236–37.

55. *See id.* at 221.

56. *See Duke Energy Co.*, 438 U.S. at 66:

In 1975, Congress again extended the Act’s coverage until 1987, and continued the \$560 million limitation on liability. However a new provision was added requiring, in the event of a nuclear incident, each of the sixty or more reactor owners to contribute

for nearly two decades. Moreover, nuclear plants operate each and every day around the clock and in locations much closer to population centers than most space launches. The U.S. commercial launch industry is not nearly at the level of maturity—both in terms of frequency of operation and number of operators—that the nuclear industry was at when it transitioned to a system of retroactive premiums being placed on operators in the event of an accident. The United States has had just over 230 licensed commercial launches since 1989 (an average of roughly nine per year)⁵⁷ and there are only a handful of significant commercial space launch operators in the United States.⁵⁸ The U.S. commercial space industry is clearly not at the level of maturity—in terms of constancy of operation and the number of operators—at which the nuclear industry was when Price-Anderson moved away from a liability-cap system to a system that includes retroactive premiums imposed on nuclear plants upon the occurrence of an accident. Further, other countries continue to maintain liability caps for nuclear operators. Canada, with fewer nuclear operators than the United States, continues to maintain a \$75 million cap on liability for its nuclear industry.⁵⁹ Many European nations also continue to maintain liability caps for the nuclear industry.⁶⁰ Liability caps have been supported in the nuclear industry as a way of avoiding the possibility of “crushing liability” on private actors that would have them abandon altogether a socially useful enterprise.⁶¹ Similarly, it is in the interest of the U.S. government to avoid the scenario of “crushing liability” because it is already reliant on commercial launch operators for cargo carriage to ISS, will soon rely on commercial launch operators for crew carriage to the ISS, and may in the future depend on modified suborbital vehicles for less expensive small satellite launches. It is in the U.S. national interest to have multiple operators for each of these services for redundancy and competition. This U.S. national interest is heightened when foreign competitors provide third-party liability caps to their operators. U.S. nuclear operators are not engaged in intense

between \$2 and \$5 million toward the cost of compensating victims.

57. See *Commercial Space Data*, FEDERAL AVIATION ADMINISTRATION, http://www.faa.gov/data_research/commercial_space_data/ (last visited Feb. 9, 2015); See also GAO REPORT, *supra* note 5, 6–7.

58. See *List of Commercial Space Launches*, FEDERAL AVIATION ADMINISTRATION, http://www.faa.gov/data_research/commercial_space_data/launches/?type=Licensed (last visited Feb. 9, 2015).

59. See Joel Wood, *Canada’s Nuclear Liability*, FRASER FORUM, May/June 2011, at 35, 35–36, available at <http://www.fraserinstitute.org/uploadedFiles/fraser-ca/Content/research-news/research/articles/canadas-nuclear-liability.pdf>.

60. See *Client Alert: Will Europe’s Nuclear Liability Regime Change?*, HUNTON & WILLIAMS (Aug. 11, 2013), http://www.hunton.com/files/News/86772645-010c-444a-81452f18eccce89d/Presentation/NewsAttachment/8b26a43a-d6e7-4f06-866a-317171e601d0/Will_Europes_Nuclear_Liability_Regime_Change.pdf.

61. See Ronald A. Cass & Clayton P. Gillette, *The Government Contractor Defense: Contractual Allocation of Public Risk*, 77 VA. L. REV. 257, 280 n.76 (1991).

international competition with foreign companies, while the commercial space industry faces intense international competition from competitors benefiting from liability caps. Thus, the commercial space industry is more in need of liability caps than was the nuclear industry before it fully matured.

Another industry that benefits from liability caps passed by Congress is the offshore oil industry. Oil industry third-party liability caps in the Oil Pollution Act of 1990 (OPA 90) came under pressure after the BP Horizon accident in the Gulf.⁶² OPA 90 limits liability for offshore oil facilities to \$75 million (plus cleanup costs) but makes exceptions for situations involving gross negligence or violations of federal regulations.⁶³ Numerous bills were introduced in Congress to increase the cap from \$75 million to \$10 billion following the BP Horizon accident⁶⁴, but Congress passed no such legislation. Again, no accidents have yet occurred in commercial space launches involving third-party liability. Those seeking to raise the caps in OPA 90 put forth numerous arguments, but none of these have resonance in the context of commercial space activities. First, in the context of OPA 90, the cap's opponents argue that it encourages risk or negligent practices.⁶⁵ However, the commercial space industry, particularly those engaging in human space flight, have tremendous incentives for safe practices in the early stages of new space market activities, both orbital and suborbital, as an accident in the early stages of new activities will reduce market demand for such activities and potentially significantly harm the company's business reputation. Moreover, insurance rates on new vehicles are often higher until a vehicle establishes a record of success, so space-flight operators have an incentive to avoid accidents to bring down insurance premiums. Second, in the context of OPA 90, some argue that the cap is a subsidy to industry.⁶⁶ From an international legal perspective, a liability cap for commercial launch services is not considered a subsidy under the World Trade Organization's General Agreement on Trade in Services (GATS), nor would a liability cap with respect to even a manufactured good likely be considered one under the WTO Agreement on Subsidies and Countervailing Measures (covering goods not services).⁶⁷ Moreover, from an economic viewpoint, if an industry has

62. See, e.g., Bruce Alpert, *Raising Industry Liability Cap in Wake of Gulf Oil Spill Becomes Partisan Issue*, NEW ORLEANS TIMES-PICAYUNE, June 7, 2010, http://www.nola.com/news/gulf-oil-spill/index.ssf/2010/06/raising_liability_cap_in_wake.html.

63. See 33 U.S.C. § 2704(a)(3), (c)(1) (2013).

64. See *Liability Eyed in Deepwater Horizon Spill*, UPI (May 5, 2010), http://www.upi.com/Business_News/Energy-Resources/2010/05/05/Liability-eyed-in-Deepwater-Horizon-spill/93611273067091/.

65. See, e.g., *Liability and Financial Responsibility for Oil Spills Under the Oil Pollution Act of 1990 and Related Statutes: Hearing Before the H. Comm. on Transport. and Infrastructure*, 111th Cong. 171–77 (June 9, 2010) (statement of Michael Greenstone, Professor, Massachusetts Institute of Technology), available at <http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg56957/pdf/CHRG-111hhrg56957.pdf>.

66. See *id.*

67. The GATS currently contains no subsidy disciplines, only foreseeing future negotiations

significant and important externalities, including advancement of national security and high-tech, high-wage jobs, and additionally faces foreign competitors that are afforded permanent liability caps, then it is not only efficient but also fair to extend a third-party liability cap to U.S. space operators. Those opposing the increase of the liability cap in OPA 90 also argued that there might not be sufficient capacity in the insurance market and that smaller actors would be placed at a significant disadvantage.⁶⁸ The 2012 GAO report found that space insurers might be able to provide up to \$500 million per launch in third-party liability insurance, such that insurance capacity may be available for a cap that exceeds the current average MPL in the commercial space launch sector.⁶⁹ However, the report notes many variables that could come into play that would affect this potential capacity in the insurance industry.⁷⁰ Finally, smaller space companies will be affected by the absence of a liability cap (or the creation of a very large cap) as they would be more impacted by the increased premiums necessary to acquire greater amounts of third-party liability insurance (if they are launch companies) or have fewer resources at their disposal to pay out third-party claims on their own as compared with larger companies if third-party damages exceed insured amounts.

Oil facilities, like nuclear facilities, are located in places where third-party damage is more likely to occur with accidents, particularly given the quick spread of oil and radiation, respectively. Space launches occur from coastal areas or from very remote spaceports, and thus third-party damage is less likely. Moreover, if the liability cap for space launches is set at the MPL this is an improvement from a flat cap because it takes into account specific risk factors such as the launch vehicle as well as the geographic location of the launch site and its proximity to population centers. Indeed, some commentators have argued that liability limits under the OPA 90 should be set taking into account specific

on the topic. *See* General Agreement on Trade in Services art. XV, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1B, Legal Instruments—Results of the Uruguay Round, 1869 U.N.T.S. 183, 33 I.L.M. 1167 (1994). The Agreement on Subsidies and Countervailing Measures requires a potential direct transfer of liabilities from industry to government, and it is unclear that a pure cap (not combined with a promise of government to indemnify above the cap) would qualify. *See* Agreement on Subsidies and Countervailing Measures, Art. I(1)(a)(i), Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, Multilateral Agreements on Trade in Goods of the Uruguay Round, 1867 U.N.T.S. 14 (1994).

68. *See, e.g.,* Matthew Glans, *Research and Commentary: Oil Spill Liability Caps and the Oil Pollution Act*, THE HEARTLAND INSTITUTE (Nov. 3, 2011), <http://heartland.org/policy-documents/research-commentary-oil-spill-liability-caps-and-oil-pollution-act> (noting that “[s]upporters of the cap, including legislators in drilling areas across the nation, say unlimited liability would make insuring for new drilling impossible for all but the biggest companies, driving out smaller competitors”).

69. GAO REPORT, *supra* note 13, at 14.

70. *See id.*

risk factors for each individual oil well, as opposed to the nationally uniform cap the United States has today.⁷¹

Foreign competitors to the U.S. space launch industry have said, when asked, that they would be in favor of the United States creating liability caps or promising long-term government indemnification for third-party liability in hopes that it would lower overall insurance rates in the space industry.⁷² However, there is no indication from the insurance industry that rates would be significantly impacted by the U.S. government agreeing to take on additional third-party liability for a prolonged period of time. The only way this might occur is if the U.S. government withdrew or let lapse promises of government indemnification beyond the MPL-insured amount, as this might force U.S. companies to buy more insurance than the MPL and thus increase insurance outlays by the industry. Moreover, foreign entities have not pushed for U.S. extension of its third-party liability government indemnification regime to any significant degree. This is some indication that foreign nations view the current U.S. system as a competitive advantage for them.

One concern raised with creating a liability cap is that innocent harmed third parties may go uncompensated in the one-in-ten million chance that such losses exceed the insured amount. However, a cap would create no significant change from the status quo in this respect because under the current liability regime, compensation beyond MPL losses essentially depends on whether the Congress appropriates such money. In a liability cap regime, the same will be true. For example, assume an accident occurs involving \$2 billion in third-party damages under the current regime and the MPL for the launch was calculated at \$50 million. Insurers will pay the third parties for amounts up to the MPL. If Congress appropriates money in accordance with the indemnification promise, the government will indemnify operators for the remaining \$1.95 billion due to injured third-parties. If Congress does not pass an appropriation, some third parties will go unpaid because no operator will have assets to pay out that amount of claims (or at least pay out that amount of claims without severely damaging its operations). And, in such a situation, it is certainly possible that the operator will essentially be forced out of business as assets are sold to pay at least some portion of remaining claims. There will be less competition in the launch industry and less redundancy. The nation will lose a commercial launch operator despite having placed importance on the development of the commercial space industry for national economic and national security reasons. Now assume a liability cap is established at the MPL and the same incident occurs, one involving \$2 billion in third-party liability. Insurance will pay \$50 million in third-party claims. Whether the remaining third parties are

71. See Mark A. Cohen et al., *Deepwater Drilling: Law, Economic, and Policy of Firm Organization and Safety*, 64 VAND. L. REV. 1853, 1910–11 (2011).

72. This information is based on discussions with various foreign launch operators at conferences.

compensated once again depends on whether Congress appropriates money. The difference is that the space operator will not be forced out of business. Thus, in the exceedingly rare (potentially one in a one hundred thousand years) accident in which third-party damages exceed the MPL, a third-party-liability-cap regime will have no impact on whether innocent third parties are fully compensated for their losses. This will continue to depend, just as in the current liability regime, on whether Congress passes an appropriation. The differences in the two regimes are whether U.S. commercial space companies will be certain to avoid crushing liability, a protection that major competitors benefit from in foreign countries, and whether U.S. national security will be diminished through the loss of a space company or companies.

C. Maximum Probable Loss Determinations

As stated before, by statute and regulation, operators are required to obtain insurance up to the MPL as determined by the FAA for third-party liability. MPL calculations have ranged between \$3 million (for suborbital test launches) and \$268 million. The average MPL is \$82 million, although some recent SpaceX Falcon 9 launches have had an MPL as low as \$45 million.⁷³ FAA has been using essentially the same factor and formulas for MPL calculations over the last decade. Despite calls for reform of the MPL calculation, change to the formula should be resisted. Those advocating for reform of the MPL calculation argue the value of life in the calculation is outdated.⁷⁴ They also argue that an artificially low MPL places government funds at risk as it makes it more likely the government would need to live up to its promise to indemnify operators for third-party damages that exceed the MPL, particularly in an environment in which the number of launches will increase.⁷⁵ However, accuracy can never be

73. See U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-14-328T, COMMERCIAL SPACE LAUNCHES: FAA'S RISK ASSESSMENT IS NOT YET UPDATED 1 (2014), <http://www.gao.gov/assets/670/660635.pdf>. For recent SpaceX MPL calculations, see OFFICE OF COMMERCIAL SPACE TRANSP., FEDERAL AVIATION ADMIN., FINANCIAL RESPONSIBILITY REQUIREMENTS AS DETERMINED BY THE MAXIMUM PROBABLE LOSS (MPL) PROCESS 1-6 (2014), *available at* http://www.faa.gov/about/office_org/headquarters_offices/ast/launch_license/mpl_values/media/MPLApril2014-042414.pdf.

74. See GAO REPORT, *supra* note 5, at 11:

FAA uses a figure of \$3 million when estimating the cost of a single potential casualty—that includes either injury or death—which FAA officials said has not been updated since they began using it in 1988. Two insurers, as well as representatives of two companies that specialize in estimating damages from catastrophic events (modeling companies), said that this figure is likely understated. Because this number has not been adjusted for inflation or updated in other ways, it may not adequately represent the current cost of injury or death caused by commercial space launch failures.

75. See Alicia Cackley, *Testimony Before Space Subcommittee of the House Science Committee, Commercial Space Launches: FAA Risk Assessment Process is Not Yet Updated*,

guaranteed when calculating such a low probability event. Again, no third-party damage or claims have ever been made in over 230 commercial launches since 1989.⁷⁶ Thus, forecasts for 291 licensed commercial launches in the next decade should not be an impetus for changing the regime. Even if third-party claims ever arise, the chances of those claims exceeding the MPL, even as currently calculated, are beyond minuscule since “the FAA calculates that the chance of loss exceeding the required insurance and thus resulting in potential U.S. government liability is lower than one in ten million.”⁷⁷

Another concern with creating a third-party liability cap is that it might lead to increased calls to adjust the current calculation for MPL. Indeed, some want the value of life to be increased in the MPL calculation. . . . However, a large factor affecting MPL already is the choice to base the calculation on a one-in-ten million probability of loss exceeding that figure. That choice already leads to a very conservative approach to MPL and one that does not need to be adjusted given the familiarity the FAA, the launch industry, and insurance market have with the current calculation. U.S. commercial launches over the past twenty years have averaged less than nine per year and new estimates only anticipate this figure increasing to somewhere between twenty and thirty launches per year in the next decade. Even with a launch rate of one hundred per year, an MPL-exceeding third-party loss event could only be expected once every one hundred thousand years. Any reform of the MPL calculation without also changing the initial choice of a one-in-ten million event will likely lead to higher MPL numbers. A higher MPL will lead to higher insurance costs, leaving U.S. industry at a competitive disadvantage with foreign competitors in an environment in which insurance rates may already climb due to increased activity and new vehicles.⁷⁸ This is of particular concern to suborbital actors because such launches have a lower MPL but generally pay a higher premium rate and also anticipate a much greater frequency of launches than orbital launch companies.

D. International Treaty Dimensions Under the Liability Convention

Under the 1972 Liability Convention, the U.S. government, if it is considered a “launching State” of the space object causing damage, will be

February 4, 2014, at 19-20, available at <http://www.gao.gov/assets/670/660635.pdf>.

76. See GAO REPORT, *supra* note 5, at 6. See also *An Examination of Future Commercial Launch Markets & FAA’s Launch Indemnification Program: Hearing Before the Subcomm. on Space and Aeronautics of the H. Comm on Sci., Space, and Tech.*, 112th Cong. 2 (June 6, 2012), available at <http://science.house.gov/sites/republicans.science.house.gov/files/documents/hearings/HHRG-112-%20SY16-20120606-SD001.pdf> [hereinafter *Hearing on FAA Launch Indemnification*] (“The first commercial space launch took place in 1989 when Space Services Inc. launched the CONSORT-1 satellite from the White Sands Missile Range in New Mexico on a Starfire suborbital rocket.”).

77. *Hearing on FAA Launch Indemnification*, *supra* note 76, at 3.

78. See GAO REPORT, *supra* note 5, at 13.

absolutely liable for foreign third-party damage where the damage occurs on Earth or to aircraft in flight, and the U.S. government could be liable for damage caused to a foreign nation's space object (or persons on board) elsewhere than on surface of the Earth if fault is found.⁷⁹ Launching State status is given to the State that launches or procures the launch or from whose territory or facility the launch occurs.⁸⁰ This formula can lead to multiple launching States for a given launch, and in such cases the liability is joint and several.⁸¹ There are no caps or limits on liability at the international level under the Liability Convention. Thus, some might be concerned with establishing a liability cap for industry in U.S. domestic legislation as the U.S. government might have liability to a foreign government for which industry will be protected from liability via the domestic cap.

However, the U.S. government should not be overly concerned about the impact of establishing a liability cap in national law at the MPL amount for U.S. space operators regarding third-party liability in light of the Liability Convention. First, the U.S. government already promises to indemnify operators for up to \$2.8 billion in third-party damages that exceed the MPL, so even under the current regime the U.S. will not be seeking reimbursement from space launch operators for MPL-exceeding accidents. Second, while the United States will remain absolutely liable for damages on Earth or to aircraft in flight at the international level, the Convention only applies in cases of damage to other nations (or their nationals, whether natural or legal persons) that are party to the Liability Convention.⁸² There are currently ninety-one parties to the Liability Convention.⁸³ A less detailed obligation providing no particular standards of liability in the Outer Space Treaty covers an additional dozen nations, as 103 countries are now party to it.⁸⁴ However, given that it is highly unlikely

79. Liability Convention, *supra* note 21, art. II–III; *see also generally* Frans G. von der Dunk, *Passing the Buck to Rogers: International Liability Issues in Private Spaceflight*, 86 NEB. L. REV. 400, 411–23 (2007).

80. Liability Convention, *supra* note 21, art. I(c).

81. *Id.* art. V.

82. Vienna Convention on the Law of Treaties art. 34, May 23, 1969, 1155 U.N.T.S. 331. Of course, if the rules in the Liability Convention are considered customary international law, they could also bind nonparties. Given the absence of international third-party claims under the Liability Convention, with at most one case being brought under it—in the late 1970's by Canada against the Soviet Union when a nuclear-powered satellite crashed into Northwest Canada—it is unlikely the Liability Conventions provisions are customary international law.

83. Status of International Agreements Relating to Activities in Outer Space, Comm. on the Peaceful Uses of Outer Space, Legal Subcomm, 53rd Sess., Mar. 24–Apr. 4, 2014, U.N. Doc. A/AC.105/C.2/2014/CRP.7 (Mar. 20, 2014), *available at* http://www.unoosa.org/pdf/limited/c2/AC105_C2_2014_CRP07E.pdf [hereinafter UNOOSA Report].

84. *See* Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies art. VII, *opened for signature* Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

(roughly a probability of one in ten million) that third-party liability will exceed the MPL insured amount, it is even less likely that third-party damage in a foreign country or to foreign nationals will exceed this amount. This is so because most U.S. spaceports are located on coasts and designed to launch over oceans so that the early stages of a launch, which tend to be the most dangerous, take place over U.S. territory and oceans. In the forty-two years of operation of the Liability Convention, only one claim has been made by a nation against another nation—in the late 1970's when Soviet nuclear-powered satellite Cosmos 954 crashed in the Northwest Territories of Canada.⁸⁵ Canada mentioned the Liability Convention in its diplomatic exchanges with the Soviet Union and the Soviet Union ultimately paid roughly \$6 million to the Canadian government.

II.

LIABILITY WITH RESPECT TO SPACE FLIGHT PARTICIPANTS (SFPS)

A. U.S. Domestic Liability Regime with Respect to SFPS

Flights by private individuals into space are set to begin on a significant scale soon, greatly increasing the number of persons flying to space commercially beyond the few that have traveled to the ISS aboard Russia's Soyuz. For example, the Tauri Report, commissioned by the FAA, gives a ten-year forecast in the suborbital-reusable-vehicle market:

The dominant suborbital-reusable-vehicle market is Commercial Human Spaceflight, generating 80% of suborbital-reusable-vehicle demand. Our analysis indicates that about 8,000 high net worth individuals (with net worth exceeding \$5 million) from across the globe are sufficiently interested and have spending patterns likely to result in the purchase of a suborbital flight at current prices. Roughly, one-third of these consumers are from the United States. We estimate that about 40% of the interested, high net worth population, or 3600 individuals, will take suborbital flights in next 10 years.

This estimate may turn out to be conservative, as many of the 925 individuals that have made deposits for suborbital flights do not have net worth of \$5 million, although they clearly have high net worth relative to the population as a whole.⁸⁶ Additionally, low-earth-orbit missions with passengers to private space hotels or

Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the Moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, including the Moon and other celestial bodies.

See also UNOOSA Report, *supra* note 83, at 10.

85. See FRANCIS LYALL & PAUL B. LARSEN, *SPACE LAW: A TREATISE* 117–18 (2009).

86. See TAURI GROUP, *SUBORBITAL REUSABLE VEHICLES: A 10-YEAR FORECAST OF MARKET DEMAND 1* (2012), available at

http://www.faa.gov/about/office_org/headquarters_offices/ast/media/Suborbital_Reusable_Vehicles_Report_2pager.pdf.

research labs are also anticipated.⁸⁷

Finally, U.S. commercial space operators will take NASA crew to the ISS in the next three or so years, thus eliminating the need for the U.S. government to pay \$71 million per seat to the Russian government.⁸⁸ NASA-contracted flights for its astronauts are anticipated to be subject to joint oversight by FAA and NASA. FAA will have responsibility for licensing the launch and reentry activities of the NASA contractor for public safety, while NASA will retain responsibility for certifying the vehicle meets NASA requirements relating to both safety and mission assurance.⁸⁹ Although NASA astronauts traveling on contractor vehicles technically fall within the definition of SFP under FAA regulations, legal and policy considerations arising outside the current regulatory framework may require a reconsideration of this issue before commercial operators begin to take NASA astronauts to the ISS in three or so years.⁹⁰ For this reason, the analysis below focuses on non-NASA SFPs.

1. SFPs Under the Commercial Space Launch Amendments Act of 2004

Currently, SFPs are partially exempted from the CSLAA's extensive cross-waiver regime in the CSLAA, the major piece of federal legislation governing commercial space activities.⁹¹ Specifically, while SFPs must still enter cross-waivers with the federal government,⁹² they do not do so with private entities

87. See generally BIGELOW AEROSPACE, <http://www.bigelowaerospace.com> (last visited Jan. 1, 2015) (builder of expandable space habitats).

88. See The Washington Free Beacon Staff, *NASA Pays Russia \$71 Million to Send American Astronaut into Space*, THE WASHINGTON FREE BEACON (March 26, 2014), <http://freebeacon.com/issues/nasa-pays-russians-71-million-to-send-american-astronaut-into-space/>.

89. Based on discussions with NASA and FAA officials.

90. See *id.*

91. 51 U.S.C. § 50914(b) (2012):

Reciprocal Waiver of Claims—(1) A launch or reentry license issued or transferred under this chapter shall contain a provision requiring the licensee or transferee to make a reciprocal waiver of claims with its contractors, subcontractors, and customers, and contractors and subcontractors of the customers, involved in launch services or reentry services under which each party to the waiver agrees to be responsible for property damage or loss it sustains, or for personal injury to, death of, or property damage or loss sustained by its own employees resulting from an activity carried out under the applicable license.

92. *Id.* § 50914 (b)(2):

The Secretary of Transportation shall make, for the Government, executive agencies of the Government involved in launch services or reentry services, and contractors and subcontractors involved in launch services or reentry services, a reciprocal waiver of claims with the licensee or transferee, contractors, subcontractors, crew, space flight participants, and customers of the licensee or transferee, and contractors and subcontractors of the customers, involved in launch services or reentry services under which each party to the waiver agrees to be responsible for property damage or loss it

involved in commercial launches, including the space-flight operator.⁹³ In contrast, the space-flight operator must, as a condition to obtaining a launch or reentry license, enter into cross-waivers of liability with its customers (not including SFPs) and each must “flow down” the cross-waivers to their contractors and subcontractors “under which each party waives and releases claims against all the other parties to the waiver.”⁹⁴ There is a statutory exception for “willful misconduct” to the waivers of liability,⁹⁵ and the FAA has interpreted this language to mean that the waivers prevent claims based on negligence as well as gross negligence claims.⁹⁶ The original House bill for the CSLAA of 2004 would have required SFPs to be part of the full system of cross-waivers, entering into cross-waivers with space-flight operators.⁹⁷ Thus, the House bill would have only allowed SFP claims against space operators if those operators engaged in willful misconduct. However, the final law did not include such a provision. The final law and regulations make clear, however, that SFPs are not third parties eligible for government indemnification. SFPs are defined as “an individual, who is not crew, carried aboard a launch vehicle or reentry vehicle.”⁹⁸ Third parties are defined as:

a person except—

- (A) the United States Government or the Government’s contractors or subcontractors involved in launch services or reentry services;
- (B) a licensee or transferee under this chapter;
- (C) a licensee’s or transferee’s contractors, subcontractors, or customers involved in launch services or reentry services;
- (D) the customer’s contractors or subcontractors involved in launch services or reentry services; or
- (E) crew or space flight participants.⁹⁹

Rather than requiring SFP’s to engage in the full federal cross-waiver regime, Congress chose to establish a written-informed-consent regime in the CSLAA of 2004 with respect to SFPs. Specifically, the space flight operator is

sustains, or for personal injury to, death of, or property damage or loss sustained by its own employees or by space flight participants, resulting from an activity carried out under the applicable license.

93. See, e.g., Hughes & Rosenberg, *supra* note 6, at 63.

94. 14 C.F.R. § 440.17 (2014).

95. *Id.* § 440 app. B para. 7(b). The original House bill committee report referred to exceptions in cases of gross negligence. See Hughes & Rosenberg, *supra* note 6, at 36–37. The six states passing specific legislation related to immunity for space operators for injury or death to SFPs all make exceptions for “gross negligence” or “willful and wanton” disregard.

96. See 14 C.F.R. § 440.17(b) (“regardless of fault”); see also Financial Responsibility Requirements for Licensed Launch Activities, 65 Fed. Reg. 45,615–17 (Aug. 26, 1998) (final rule) (to be codified at 14 C.F.R. pt. 440).

97. Hughes & Rosenberg, *supra* note 6, at 36; see also Laura Montgomery, *Space Tourism and Informed Consent: To Knowingly Go*, 51 FED. LAW. 26, 27 (2004); see generally H.R. 3752, 108th Cong. § 2 (2004).

98. 14 C.F.R. § 401.5 (2014).

99. 51 U.S.C. § 50902(21) (2012) (emphasis added).

required to “inform each space flight participant in writing about the risks of the launch and reentry, including the safety record of the launch or reentry vehicle type” prior to entering an agreement with or taking compensation from an SFP.¹⁰⁰ While the regulations lay out in detail the type of information that must be transmitted to SFPs,¹⁰¹ the written informed consent simply alerts SFPs to possible risks and does not in itself act as a waiver of liability.¹⁰²

100. 14 C.F.R. § 460.45 (2014). *See also* Montgomery, *supra* note 97, at 27.

101. 14 C.F.R. § 460.45 reads:

(a) Before receiving compensation or making an agreement to fly a space flight participant, an operator must satisfy the requirements of this section. An operator . . . must disclose in writing—

- (1) For each mission, each known hazard and risk that could result in a serious injury, death, disability, or total or partial loss of physical and mental function;
- (2) That there are hazards that are not known; and
- (3) That participation in space flight may result in death, serious injury, or total or partial loss of physical or mental function.

(b) An operator must inform each space flight participant that the United States Government has not certified the launch vehicle and any reentry vehicle as safe for carrying crew or space flight participants.

(c) An operator must inform each space flight participant of the safety record of all launch or reentry vehicles that have carried one or more persons on board, including both U.S. government and private sector vehicles. This information must include—

- (1) The total number of people who have been on a suborbital or orbital space flight and the total number of people who have died or been seriously injured on these flights; and
- (2) The total number of launches and reentries conducted with people on board and the number of catastrophic failures of those launches and reentries.

(d) An operator must describe the safety record of its vehicle to each space flight participant. The operator’s safety record must cover launch and reentry accidents and human space flight incidents that occurred during and after vehicle verification performed in accordance with § 460.17, and include—

- (1) The number of vehicle flights;
- (2) The number of accidents and human space flight incidents as defined by section 401.5; and
- (3) Whether any corrective actions were taken to resolve these accidents and human space flight incidents.

(e) An operator must inform a space flight participant that he or she may request additional information regarding any accidents and human space flight incidents reported.

(f) Before flight, an operator must provide each space flight participant an opportunity to ask questions orally to acquire a better understanding of the hazards and risks of the mission, and each space flight participant must then provide consent in writing to participate in a launch or reentry. The consent must—

- (1) Identify the specific launch vehicle the consent covers;
- (2) State that the space flight participant understands the risk, and his or her presence on board the launch vehicle is voluntary; and
- (3) Be signed and dated by the space flight participant.

102. *See* Pamela L. Meredith & Marshall M. Lammers, *Commercial Spaceflight: The “Ticket*

2. Contractual Waivers Under State Common Law

Space operators will no doubt seek contractual waivers from SFPs.¹⁰³ In many states, exculpatory clauses are disfavored and thus will be narrowly construed. As a general rule, to be upheld in court, such clauses must be clear and unambiguous.¹⁰⁴ Nevertheless, in some U.S. states, like California, the common law is very favorable to contractual waivers of liability for recreational sports activities. California courts have found that “[e]xculpatory agreements in the recreational sports context do not implicate the public interest.”¹⁰⁵ Since recreational sports activities are not essential activities,¹⁰⁶ a “release of all premises liability in consideration for permission to enter recreational and social facilities for any purpose does not violate public policy.”¹⁰⁷ Indeed, public policy analysis in California (and several other states) relies on the so-called *Tunkl* factors,¹⁰⁸ and recreational activities such as space tourism will not run afoul of those factors because the service is not a “matter of practical necessity” and is not an “essential activity” leading to an imbalance in bargaining power. For example, in *Booth v. Santa Barbara Biplanes LLC.*, the California court enforced an exculpatory clause for simple negligence obtained by a tourist company offering sight-seeing tours by aircraft, noting that the company was not “transporting passengers ‘for compensation between points within this state’” and thus not like other common carriers.¹⁰⁹ Indeed, as evidenced in *Booth*, it seems unlikely that common carriage jurisprudence limiting exculpatory clauses for negligence will apply, and, in any event, such jurisprudence may be preempted by the CSLAA of 2004 through its choice of “space-flight participant” terminology rather than “passenger.”¹¹⁰

However, approaches vary between the states, and some states’ common law is not as favorable to contractual waivers for recreational sports activity. Indeed, another space-active state, Virginia, never enforces agreements whereby

to Ride,” 25 AIR & SPACE LAW. 4, 6 (2012).

103. See *id.*

104. See WILSON ELSER, EXPRESS ASSUMPTION OF RISK/WAIVER/EXCULPATORY CLAUSES: 50-STATE SURVEY 1 (2012), http://www.wilsonelser.com/writable/files/Legal_Analysis/wilsonelser_50-statesurvey_expresswaivers_10-2012.pdf.

105. *Allan v. Snow Summit*, 59 Cal. Rptr. 2d 813, 825 (Ct. App. 1996); see also *Platzer v. Mammoth Mountain Ski Area*, 128 Cal. Rptr. 2d 885, 888 (Ct. App. 2002).

106. *Olsen v. Breeze, Inc.*, 55 Cal. Rptr. 2d 818, 824 (Ct. App. 1996).

107. *Benedek v. PLC Santa Monica*, 129 Cal. Rptr. 2d 197, 204. (Ct. App. 2002).

108. *Tunkl v. Regents of the Univ. of Cal.*, 383 P.2d 441 (Cal. 1963). See also ELSER, *supra* note 104, at 5.

109. *Booth v. Santa Barbara Biplanes L.L.C.*, 70 Cal. Rptr. 3d 660, 665 (Ct. App. 2008).

110. For further discussion of common carriage jurisprudence as applied to and potentially complicating liability waivers, see Justin Silver, Note, *Houston, We Have a (Liability) Problem*, 112 MICH. L. REV. 833 (2014) (arguing common carriage designation is a real risk for suborbital flights). A third reason it unlikely is the existence of state liability immunity statutes, although arguably the poor drafting in some of those might lead to questions regarding common carriage as well.

one party seeks to waive liability for negligence in advance of an accident.¹¹¹ The four other states seeking to incentivize space activities (Colorado, New Mexico, Texas, and Florida) all have waiver laws that have been classified as neither strict nor lenient, but rather as moderate according to one comprehensive study of state waiver law.¹¹²

Additionally, real differences exist among states as to whether contractual waivers prevent heirs of the participant in the activity from successfully suing recreational sports operators. In California, courts hold that a waiver of liability clause signed in advance of recreational activity and before injury that specifically precludes claims based on the possible defendant's negligence will prevent a successful suit not only by the participant in the activity but also by the decedent's heirs. For example, in *Coates v. Newhall*, a dirt bike rider's release of all liability of the dirt bike track owner was found valid and prevented a successful suit by his heirs.¹¹³ In another California case, *Madison v. Superior Court*, the court addressed a scuba diving death and the exculpatory clause the diver had signed, ultimately holding that "a plaintiff in a wrongful death action is subject to any defenses which could have been asserted against the decedent, including an express agreement by the decedent to waive the defendants' negligence and assume all risks."¹¹⁴ As explained more fully in *Gregorie v. Alpine Meadows Ski Corp.*:

Preliminarily, the waiver and release purports to release Alpine from any cause of action for wrongful death, however decedent did not have the ability to waive a cause of action on behalf of her heirs. The longstanding rule is that wrongful death action is a separate and distinct right belonging to the heirs and it does not arise until the death of the decedent. . . . Nevertheless, in a wrongful death action the plaintiff is subject to any defenses which could have been asserted against the decedent, including an express agreement by the decedent to waive the defendants' negligence and assume all risks. Therefore, although an express waiver of liability is legally ineffective to release a wrongful death cause of action, a release may provide a defendant with a complete defense to all claims, including wrongful death actions.¹¹⁵

The rule in Texas and Georgia is similar to that of California.¹¹⁶ Heirs are prevented from successfully suing based on allegations of negligence if the exculpatory clause the decedent signed is valid.

111. *Hiatt v. Lake Barcroft Comty. Ass'n*, 418 S.E.2d 894, 896 (Va. 1992); *see also* ELSER, *supra* note 104, at 20.

112. *See* DOYICE J. COTTEN & MARY B. COTTEN, *WAIVERS & RELEASES OF LIABILITY* 111 (8th ed. 2012).

113. *Coates v. Newhall Land & Farming, Inc.*, 236 Cal. Rptr. 181 (Ct. App. 1987).

114. *Madison v. Superior Court*, 250 Cal. Rptr. 299, 303 (Ct. App. 1988) (internal citations omitted).

115. No. CIV.S-08-259 LKK/DAD, 2009 WL 2425960, at *14 (E.D. Cal. Aug. 7, 2009) (unpublished) (internal quotation marks and citations omitted).

116. *See* *Turner v. Walker Cnty.*, 408 S.E.2d 818 (Ga. Ct. App. 1991); *Sullivan-Sanford*

However, in other states, such as New Jersey, the common law does not prevent heirs from suing. For example, in *Gershon v. Regency Diving Center*, the New Jersey court found that an exculpatory clause signed by the decedent and claiming to prevent suit by his heirs would not bar an heir's suit.¹¹⁷ The heirs were allowed to proceed with a wrongful death action against the diving center. The court found that the societal interest in having the heirs achieve economic compensation for wrongful death outweighed the decedent scuba diver's freedom of contract. As the court held, the "decedents' unilateral decision to contractually waive his right of recovery does not preclude his heirs, who were not parties to the agreement and received no benefit in exchange for such a waiver, from instituting and prosecuting a wrongful death action."¹¹⁸ Courts in numerous states have yet to address the issue of whether heirs, under the common law, are prevented by a contractual waiver signed by the participant from successfully suing a recreational sports operator.¹¹⁹ Additionally, some states that prevent heirs' wrongful death suits allow suit by heirs for loss of consortium.¹²⁰ Since significant space launch accidents could result in death, the uncertainty created by state common-law approaches to how a decedent's waiver impacts suits by the decedent's heirs is of particular concern.

3. State Legislation Granting Space Operators (Partial) Immunity from Liability

In an effort to improve or clarify the situation existing under the common law and create an incentive for space companies to operate from their respective states, at least six states—California,¹²¹ New Mexico,¹²² Virginia,¹²³ Colorado,¹²⁴ Texas,¹²⁵ and Florida¹²⁶—have passed immunity legislation, presumably seeking to protect space flight operators from negligence claims made by SFPs or their heirs.¹²⁷ In April 2014, Arizona became the seventh state

Lumber Co. v. Watson, 155 S.W. 179, 180 (Tex. 1913); Thompson v. Fort Worth & R.G. Ry. Co., 80 S.W. 990, 992 (Tex. 1904).

117. *Gershon v. Regency Diving Ctr.*, 845 A.2d 720, 727 (N.J. Super. Ct. App. Div. 2004).

118. *Id.*

119. See COTTEN & COTTEN, *supra* note 112, at 113 fig.8.2.

120. See, e.g., *Whittlesey v. Miller*, 572 S.W.2d 665, 668 (Tex. 1978). See also COTTEN & COTTEN, *supra* note 112, at 113 fig.8.2 (listing California, Colorado, Florida, and New Mexico as states possibly allowing consortium-based suits as well).

121. CAL. CIV. CODE § 2210–12 (2014).

122. N.M. STAT. ANN § 41-14-1 to -3 (2014).

123. VA. CODE ANN. § 8.01-227.8 to -227.10 (2014).

124. COL. REV. STAT. § 41-6-101 (2014). See also April Greene Apking, *A Step in the Right Direction: Colorado's First Space Legislation*, 91 DENV. U. L. REV. ONLINE 7 (2013).

125. TEX. CIV. PRAC. & REM. CODE ANN. § 100A.002 (2014).

126. FLA. STAT. § 331.501 (2014).

127. See generally Frans G. von der Dunk, *Federal versus State: Private Commercial Spaceflight Operator Immunity Legislation in the United States*, 56 PROCEEDINGS INT'L INST. SPACE

to pass this type of legislation, but the initial and primary purpose of the statute was to cover the high altitude balloon flights that the FAA recently determined would be treated as a launch vehicle necessitating a launch license.¹²⁸ Additionally, Arizona currently does not have a spaceport or detailed plans for one.¹²⁹ Therefore, its law will not be further analyzed alongside those of states that have active space programs.¹³⁰

The state statutes are imperfect at best.¹³¹ Table 1 provides a comparison of relevant state statutes. None of the statutes explicitly immunize operators from negligence claims. Rather, in most cases, the statutes do so by implication as they only expressly exempt from immunity gross negligence and intentional acts. And four of the six statutes muddy the waters further because of exemptions to immunity where the operator “knew or should have known” of a dangerous condition on land or in the equipment.¹³² “Knew or should have known” is the language of negligence. Some commentators believe courts will be mindful that the state statutes were seeking to offer significant immunity, and thus will require the “condition” to be preexisting, to have caused the accident, and to be unrelated to the mission itself.¹³³ Others are less sure state courts will be so favorable to the space industry in their interpretations.¹³⁴ Indeed, rather than explicitly precluding negligence claims, most of the statutes immunize operators from claims based on inherent risks (and some further narrow any potential immunity a court might find by stating only damages caused “exclusively” by inherent risks of the activity are captured by the immunity).¹³⁵ Courts may vary widely in what they view as an inherent risk, and negligence

L. 517 (2014); Maria-Vittoria “Giugi” Carminati, *Is Statutory Immunity For Spaceflight Operators Good Enough?*, 6 LEGIS. POL’Y BR. 35 (2014).

128. See Jeff Foust, *World View to Offer High-Altitude Passenger Balloon Flights, Regulated as a Launch Vehicle*, NEWSpace JOURNAL (Oct. 22, 2013), <http://www.newspacejournal.com/2013/10/22/world-view-to-offer-high-altitude-passenger-balloon-flights-regulated-as-a-launch-vehicle/>.

129. See FAA SAFETY TEAM, *U.S. Launch Sites and Space Ports: Commercial/Government/Private Active and Proposed Sites*, FAA (Feb. 2013), https://www.faa.gov/about/office_org/headquarters_offices/ast/industry/media/Spaceport_Map_Feb_2013.pdf; see also FAA, *Active Launch Site Operator Licenses*, FAA, http://www.faa.gov/data_research/commercial_space_data/licenses/#operatorLicenses (last modified on Sept. 17, 2013).

130. See Jeff Faust, *Arizona Passes Spaceflight Liability Bill*, SPACE POLITICS (Apr. 24, 2014), <http://www.spacepolitics.com/2014/04/24/arizona-passes-spaceflight-liability-bill>.

131. See Meredith & Lammers, *supra* note 102, at 6–7 (“The statutory protections are limited and sometimes ambiguous.”).

132. See Cal.Cic. Code § 2212(c)(3); see also Fla. Stat. 331.501(2)(b)(2); N.M. Stat. § 41-14-3(B)(2); Col. Rev. Stat. 41-6-101(2)(B)(II).

133. See Rachel A. Yates, *State Law Limitations on the Liability of Spaceflight Operators*, THE SCITECH LAW., Summer 2012, at 14, 16.

134. See Carminati, *supra* note 127.

135. See Yates, *supra* note 133, at 15; see also von der Dunk, *supra* note 127.

claims may not be significantly curbed. Determining in the space domain whether an accident was caused by inherent risk versus a negligent act is a very difficult exercise, and one of the reasons why space operators need protection from negligence suits.

Other gaps and ambiguities exist in the state statutes. For example, California's law does not cover the manufacture that supplies the space vehicle to a space flight operator nor contractors of a space-flight entity, thus leaving them exposed to potential lawsuits—a particular problem for space operators that are also manufacturer vehicles.¹³⁶ New Mexico's law originally shared this weakness but has been corrected recently.¹³⁷ It is even possible that in some states legislation could worsen companies' ability to successfully use contractual waivers against such claims under the common law. State statutes addressing the equine industry provide a cautionary tale.¹³⁸ Courts in at least three states, including New Mexico, have found that the presence of a statute that does not clearly immunize operators from negligence liability (only from inherent risk) means that it is state policy not to enforce contractual waivers seeking to release operators from liability for their negligence.¹³⁹ Additionally, judicial interpretations of equine-activity statutes can vary widely, and in a manner that does not immunize operators from negligence suits.¹⁴⁰ For example, Colorado courts have interpreted their equine-activity statute as not protecting operators from negligence suits, even though Colorado's statute does not clearly exempt operator negligence from the immunity provided (as is done in some other states' statutes).¹⁴¹ Even if the state statutes are interpreted to provide significant

136. See CAL. CIV. CODE § 2210-12 (2014).

137. See Greg Ryan, *NM Gov. OK's Space Travel Liability Law*, LAW 360 (Apr. 3, 2013), <http://www.law360.com/articles/429689/nm-gov-oks-space-travel-liability-law>.

138. See generally Carminati, *supra* note 127.

139. Robert O. Dawson, *HorseLaw: The Uneasy Relationship Between Equine Activity Statutes and Releases from Liability*, UNIV. OF VT. § 3, http://asci.uvm.edu/equine/law/horselaw/042_uneasy.htm (last visited Oct. 30, 2014):

Ironically, courts in three states have held that the existence of an equine activity statute invalidates a release from liability that would otherwise have been valid. Courts in Hawaii, New Mexico and Missouri have held that because their equine activity statutes exclude equine professional or sponsor negligence from the protection of the statute, they express a public policy that professionals or sponsors should be held financially accountable for the consequences of their own negligence. A release from liability is not consistent with that public policy because it attempts to protect from negligence. At least in the absence of an explicit expression of a purpose to override the statute, the release will not be held to be valid in those states. In those three jurisdictions, the equine industry is worse off in terms of protection from negligence after enactment of their equine activity statutes than before. This clearly was not the purpose of industry lobbyists in seeking enactment of these statutes.

140. See generally Carminati, *supra* note 127.

141. Dawson, *supra* note 139, § 2:

Courts in Colorado . . . have held that the definition of inherent risks does not include injuries that result from the negligence of equine professionals or sponsors. In those jurisdictions, professional or sponsor negligence is not protected by the statutes. Only

immunity, it is possible that plaintiffs will argue the state statutes are preempted by the CSLAA of 2004, which provides:

- a) STATES AND POLITICAL SUBDIVISIONS.—A State or political subdivision of a State—
 - 1) may not adopt or have in effect a law, regulation, standard, or order inconsistent with this chapter; but
 - 2) may adopt or have in effect a law, regulation, standard, or order consistent with this chapter that is in addition to or more stringent than a requirement of, or regulation prescribed under, this chapter.¹⁴²

a valid release from liability will protect such a professional or sponsor from the legal consequences of his or her own negligence.

142. 51 U.S.C. § 50919(c) (2012).

TABLE 1: COMPARISON OF STATE LEGISLATION GRANTING IMMUNITY FOR SPACE ACTIVITY

State	Includes Manufacturers and Suppliers in Immunity?	Includes "Knew or Should Have Known" Language as Exception to Immunity?	Limits Liability for Inherent Risks, Inherent Risks Exclusively, Risks, or Losses Arising Out of Participation?	Sets Ceiling or Floor on Immunity? I.e., How Does it Impact Common Law Treatment of Contractual Waivers?	Pre-existing Common Law Finding Validity of Contractual Waivers? If so, Strict, Moderate or Lenient in Enforcing the Waivers?	State Courts Interpret the Immunity Provided by Equine Activity Statutes Narrowly or Broadly?
Virginia	Yes	No	Inherent risks	Explicitly sets floor; does not impact other limitations of liability in law	No; agreements in advance to waive liability for negligence are unenforceable	N/A (no case law)
Colorado	Yes	Yes	Inherent risks exclusively	Jurisprudence suggests sets floor	Moderate	Narrowly
Texas	Yes	No	Any loss or injury arising from participation in spaceflight	Explicitly sets floor; i.e., by pronouncing the validity of the statutorily required waiver and any additional limitations on liability agreed to between parties	Moderate (enforceable if conspicuous and expressly refers to negligence)	Broadly
New Mexico	Yes	Yes	Inherent risks exclusively	Jurisprudence suggests sets ceiling, i.e., might eliminate validity of contractual waiver	Moderate	N/A (little to no case law)
California	No (expressly)	Yes	Risks	Explicitly sets floor; does not impact other limitations of liability in law	Moderate (but very favorable to recreational sports)	N/A (no such statute)
Florida	Yes	Yes	Inherent risks exclusively	Explicitly sets floor; immunity in statute in addition to any others provided in law	Moderate	Narrowly

The crux of preemption analysis is congressional intent.¹⁴³ Plaintiffs will argue that based on paragraph (c)(1) a state statute preventing suit by an SFP based on negligence is inconsistent with congressional intent because even though the original House bill required SFPs to enter cross-waivers with space-flight operators, Congress ultimately elected to forgo that requirement.¹⁴⁴ Defendant space-flight operators will then point to the “savings clause” in paragraph (c)(2) allowing states to enact laws “in addition to or more stringent than a requirement” in the federal law. The argument will be that the immunity provided to space-flight operators protecting them from SFP suits is an additional or more stringent requirement than merely protecting the federal government from SFP suits. While it is probable that the preemption argument of SFPs will fail, it is by no means certain, particularly when one considers the uncertainties of preemption analysis.¹⁴⁵ The fact that a preemption argument can already be made based on the current federal law to override state immunity legislation for space operators should reduce the weight of any states’ rights arguments against new federal legislation preempting state law to achieve the opposite result—namely to ensure SFPs or their heirs may only sue space operators in cases of willful misconduct or, as a middle road solution, also allow claims based on gross negligence. If SFPs are required to join the full federal cross-waiver regime, they will only be allowed to make claims for willful misconduct, and not for negligence or gross negligence. It may be more politically palatable to Congress to pass legislation that only bars negligence suits rather than both negligence and gross-negligence claims. It may also be administratively easier to simply bar negligence suits than require all SFPs to sign cross-waivers once human space flights are regular events and the number of SFPs grows.¹⁴⁶

4. *Choice-of-Court and Choice-of-Law Clauses and Their Enforcement*

Companies will also undoubtedly seek to rely on choice-of-court and choice-of-law clauses in their contracts with SFPs for further protection. These clauses will specifically seek to have litigation occur in the courts of the state where the launch occurred and be subject to state space-activity statutes designed (perhaps unsuccessfully) to ensure space-operator immunity from suit.

143. Matthew Schaefer, *Constraints on State-Level Foreign Policy: (Re)Justifying, Refining and Distinguishing the Dormant Foreign Affairs Doctrine*, 41 SETON HALL L. REV. 201, 289 (“In preemption analysis, the intent or purpose of Congress is the “ultimate touchstone.”); see, e.g., *Retail Clerks Int’l Ass’n v. Schermerhorn*, 375 U.S. 96, 103 (1963).

144. The preemption argument will likely be based on either obstacles conflicts (i.e., the state statute is standing as an obstacle to achieving the full purpose of the federal enactment) or occupation-of-the-field lines of argument.

145. See Caleb E. Nelson, *Preemption*, 86 VA. L. REV. 225, 232 (2000).

146. See Silver, *supra* note 110.

U.S. courts generally enforce forum-selection and choice-of-law clauses unless fraud or duress is involved, the clauses run counter to public policy, or they are seriously inconvenient or otherwise unreasonable.¹⁴⁷ However, divergent case law exists on whether heirs in a wrongful death action are bound to arbitration (and presumably choice-of-court) clauses the decedent signed. In the California case *Herbert v. Superior Court*, the court held that the decedents' signature on a group healthcare plan contract with an arbitration clause bound the decedents' adult non-plan members, requiring them to arbitrate rather than litigate their wrongful death action.¹⁴⁸ The Texas Supreme Court has issued a similar ruling.¹⁴⁹ In contrast, in the Colorado case *Pacheco v. Allen*,¹⁵⁰ the court considered California's approach in *Herbert* but rejected it and held that the heirs were not bound by the arbitration agreement. The Colorado court reasoned that a wrongful death action under Colorado's Wrongful Death Act arose independently from and was not derivative of the deceased's cause of action.¹⁵¹ Thus, it is possible that U.S. heirs of American SFPs could seek to sue in a different state than the choice-of-court clause's chosen forum in the contract between the SFP and the space operator, and courts might not enforce the clause and thus permit suit to occur in a different jurisdiction that still has personal jurisdiction over the space operator.

5. Potential for Litigation by SFPs or Their Heirs in Foreign Court

Importantly, the SFP market is an international market. The FAA-commissioned Tauri Report predicted that over half of all early SFPs would be foreign nationals. Statistics of the company with the largest number of SFP deposits supports this prediction—sixty percent are foreign nationals.¹⁵² Questions arise whether an injured SFP, or in cases of death, an SFP's heir,

147. See, e.g., *Carnival Cruise Lines, Inc. v. Shute*, 499 U.S. 585 (1991); *M/S Bremen v. Zapata Off-Shore Co.*, 407 U.S. 1 (1972).

148. 215 Cal. Rptr. 477 (Ct. App. 1985).

149. *In re Labatt Food Serv.*, 279 S.W.3d 640, 646 (Tex. 2009):

The beneficiaries also argue that they should not be bound because Dancy did not have the authority to bind them to the arbitration agreement when the wrongful death cause of action actually belongs to the surviving spouse, children, and parents of the deceased. While it is true that damages for a wrongful death action are for the exclusive benefit of the beneficiaries and are meant to compensate them for their own personal loss, the cause of action is still entirely derivative of the decedent's rights. Thus, regardless of the fact that Dancy's beneficiaries are seeking compensation for their own personal loss, they still stand in Dancy's legal shoes and are bound by his agreement. (citations omitted).

150. 55 P.3d 141, 144 (Colo. App. 2001).

151. *Id.* at 143–44.

152. Michael Bruno, *Virgin Galactic Counts 625 Customers For Suborbital Trips*, AVIATION WEEK, Aug. 13, 2013, <http://aviationweek.com/space/virgin-galactic-counts-625-customers-suborbital-trips>.

might sue in a foreign court.¹⁵³ The hurdles a foreign SFP or their heir would need to overcome in such a situation are numerous but perhaps not entirely insurmountable.

First, a foreign court would need to have personal jurisdiction over the space operator or manufacturer. Space operators can structure marketing and sales of tickets in a manner that limits contacts in foreign jurisdictions. However, personal-jurisdiction jurisprudence is quite malleable, not only in the United States but in at least several other countries as well, and it yields potentially uncertain results given courts' discretion and the fact-intensive nature of their inquiries into a party's contacts. Additionally, the jurisprudence in some countries balances the plaintiff's interests with the defendant's to a much greater degree than does the U.S. system. For example, even in Canada, the United States' largest trading partner, adoption by the Canadian Supreme Court of a "'real and substantial connection' [test for personal jurisdiction] has not been exactly defined, and the previous tradition of greatly favoring plaintiffs has remained intact."¹⁵⁴ Indeed, a Canadian lawyer recently warned that "U.S. defendants could be subject to suit in Canada even if they have few contacts to the forum."¹⁵⁵ As the lawyer explained:

Canadian courts take a very different approach to personal jurisdiction from the Due Process analysis familiar to U.S. litigants. The balancing approach taken by Canadian courts favors asserting jurisdiction over foreign defendants, as long as the plaintiff can demonstrate a strong connection to the forum and the inconvenience to the plaintiff in litigating in a foreign jurisdiction outweighs any inconvenience to the defendant in litigating in the Canadian jurisdiction.¹⁵⁶

For decades, Canadian courts were applying highly discretionary personal-jurisdiction rules. While a recent 2012 Canadian Supreme Court opinion has narrowed and better defined Canada's "real and substantial connection" test, making clear that advertising in a Canadian jurisdiction would not be sufficient to establish jurisdiction over the defendant, nuances and uncertainty remain.¹⁵⁷

153. For instance, plaintiff's counsel would need to factor into any initial forum choice the fact that punitive damages are less likely to be available in foreign jurisdictions and that attorneys fees may be the responsibility of the losing side, depending on the foreign jurisdiction selected.

154. Stephen J. Maddex, *The Law of Personal Jurisdiction in Canada: How U.S. Defendants Can Be Haled into Court in Canada . . . and Never See It Coming*, TERRALEX § 3 (June 5, 2009), <http://www.terralex.org/publication/4bc381f127>.

155. *Id.*

156. *Id.*

157. See Evan Atwood & Malcom N. Ruby, *Supreme Court Simplifies and Clarifies Assumption of Personal Jurisdiction*, LEXOLOGY (Apr. 30, 2012), <http://www.lexology.com/library/detail.aspx?g=0b17393a-92b0-4ce5-928b-11eb403841d9>:

The Supreme Court's decision adds welcome clarity, simplicity, and direction to what had been confusion in applying the real and substantial connection test. Only time will tell if the apparent simplicity of the test is difficult to apply and how it will be used in different contexts other than inter-jurisdictional tort claims.

Thus, the case-by-case discretion of Canadian courts is narrowed by the opinion, but not eliminated. If Canada has historically utilized malleable rules regarding personal jurisdiction, it is certainly possible that other nations also maintain discretionary personal jurisdiction rules today.¹⁵⁸

Other countries have more pro-plaintiff rules on personal jurisdiction than the United States. For example, in Russia, courts may exercise jurisdiction over a foreign defendant in cases of “damages caused by injury, other health impairment or death of a breadwinner, [when] harm is caused on the territory of the Russian Federation, or the *plaintiff* has his domicile in the Russian Federation.”¹⁵⁹ In Ukraine, in cases involving a foreign defendant, the courts may accept jurisdiction in cases in which the *claimant* for damage compensation is a Ukrainian domiciliary and a natural person.¹⁶⁰

Second, in order for an SFP or SFP heir to sue a U.S. launch operator in a foreign court, the foreign court would have to reject a forum-selection clause in the contract specifying a U.S. state law, most likely the law of the state from which the launch occurred. It is conceivable this could happen in certain jurisdictions. For example, a German court recently rejected a choice-of-forum clause in a contract between a U.S. corporation and a German sales agent for the corporation. The clause specified Virginia courts, but the German court feared that mandatory European Union law on agents’ posttermination rights would not be applied, especially because the contract’s choice-of-law clause also chose Virginia law.¹⁶¹ Additionally, in Latin American nations, there has historically been a tendency to treat “competence to hear a case” as a matter of public policy and not allow parties’ choice to oust courts of jurisdiction to hear cases.¹⁶² Indeed, failure of courts to enforce choice of court clauses is one reason the Hague Conference on Private International Law sponsored negotiations on a Choice of Courts Convention, though that treaty is not yet in effect and would cover only business-to-business agreements and thus would not govern SFP suits against U.S. launch operators.¹⁶³ Interestingly, even that treaty has an

158. See *id.* (discussing the Canadian experience); see also James Allsop & Daniel Ward, The Incoherence of Australian Private International Law (Apr. 10, 2013) (Paper Presented at the Sydney Centre for International Law Conference), available at <http://www.fedcourt.gov.au/publications/judges-speeches/chief-justice-allsop/allsop-cj-20130410>.

159. Kirill Trofimov, *Russian Federation (Russia)*, in 5 INTERNATIONAL ENCYCLOPEDIA OF LAWS: CIVIL PROCEDURE 68 (Piet Taelman ed., 2013) (emphasis added).

160. See Anna Tsirat & Gennadii Tsirat, *Ukraine*, in 6 INTERNATIONAL ENCYCLOPEDIA OF LAWS: CIVIL PROCEDURE 77 (Piet Taelman ed., 2013).

161. See Jennifer Antomo, *German Supreme Court Strikes Down Choice of Court Agreement Prorogating Courts of Virginia*, N.Y.U. TRANSNAT’L L. BLOG (Apr. 13, 2009), <http://blogs.law.nyu.edu/transnational/2013/04/german-supreme-court-strikes-down-choice-of-court-agreement-prorogating-courts-of-virginia>.

162. See Ronald Brand, *Non-Convention Issues in the Preparation of International Sales Contracts*, 8 J.L. & COM. 145, 157 (1988).

163. See Convention on Choice of Court Agreements, concluded June 30, 2005, 44 I.L.M. 1294, available at http://www.hcch.net/index_en.php?act=conventions.text&cid=98.

exception in Article VI to enforcement of such clauses if enforcement would be “manifestly contrary [to] public policy.”¹⁶⁴ Finally, if the SFP is suing a manufacturer or supplier of the space operator, the choice-of-forum clause obstacle to litigation in foreign courts will not be present.

Third, if the SFP is to successfully sue the space launch operator in a foreign court, the foreign court may also need to reject the choice-of-law clause included in the contract between the SFP and the space operator. It is, of course, possible that a foreign court could apply the law of the U.S. state chosen, and simply interpret that law not to grant immunity to the space operator given the ambiguities and gaps in the state statutes, or interpret that law to void the contractual waiver, but application of foreign law would more likely preclude immunity for the space operator. Conflict-of-law rules, not only in the United States but also in many foreign countries, are quite malleable and allow plenty of room for home-law bias. Indeed, Latin American nations have been resistant to party autonomy in choice of law.¹⁶⁵ Even in Canada, concerns have been expressed that some courts are improperly refusing to enforce choice-of-law clauses under *forum non conveniens* analysis:

Regrettably, some lower courts treat the strong-cause test as a gloss on the *forum non conveniens* analysis they would undertake in the absence of a forum-selection clause (and others simply conflate the two tests). In jurisdictions that have adopted the Court Jurisdiction and Proceedings Transfer Act . . . matters are confused further since the CJPTA is treated as codifying the conflicts-of-law rules for a local court taking jurisdiction. The fact that forum-selection clauses are only expressly dealt with in [section] 10 of the CJPTA (dealing with territorial competence) and are not referred to in [section] 11 (the *forum non conveniens* provision) feeds the notion that [British Columbia provincial] courts are entitled to engage in a full *forum non conveniens* analysis even in the face of an exclusive-forum clause by which the parties have selected another jurisdiction.¹⁶⁶

Moreover, some countries may view ‘attempts by U.S. state governments in legislation and by U.S. space operators through contractual terms to bar negligence claims by SFPs against space operators as a violation of public policy and reject the application of U.S. state laws even if conflict-of-law rules or the choice-of-law clause would otherwise point to its application. Numerous countries will not enforce such exculpatory clauses. For example, in Germany, “[t]he user of a standard form contract may not exclude or limit his liability for negligently caused injury to life, body, or health.”¹⁶⁷ In Spain, exculpatory

164. See *id.* art. VI.

165. See Friedrich K. Juenger, *Contract Choice of Law in the Americas*, 45 AM. J. COMP. L. 195, 195–97 (1995).

166. LISA A. PETERS, CONTRACT LAW UPDATE: DEVELOPMENTS OF NOTE, at 14 (Oct. 2010), available at http://www.lawsonlundell.com/media/news/101_Contract%20Law%20Update.pdf.

167. Gerald Spindler & Oliver Rieckers, *Germany*, in 1 INTERNATIONAL ENCYCLOPEDIA OF LAWS: TORT LAW 113 (Ingrid Boone ed., 2013).

clauses in consumer contracts or where damage is caused to one's health or well-being are void in most situations.¹⁶⁸ In other countries, like South Africa, such clauses are enforceable but not against the participant's heirs.¹⁶⁹ Moreover, there is some debate in South African jurisprudence whether such clauses even apply in cases of death.¹⁷⁰

Of course, even if an SFP or his heir obtains a money judgment in a foreign court against a U.S. space-flight operator, the SFP or the heir will need to secure enforcement of the award in the United States or another country where the space-flight operator has assets. Enforcement of a foreign court judgment in the United States under the common law standard laid out in *Hilton* generally is not a high bar to clear, particularly as "lack of reciprocity . . . is no longer an automatic bar to the enforcement of a foreign country judgment."¹⁷¹

However, most states, including all space active states,¹⁷² have now enacted in its entirety or with some modification the Uniform Foreign Money Judgments Recognition Act (UFMJRA)¹⁷³ or its slightly revised 2005 successor the Uniform Foreign Country Money Judgments Recognition Act (UFCMJRA).¹⁷⁴ If there is a lack of due process in the foreign proceeding or the foreign court lacked personal or subject-matter jurisdiction, then the UFMJRA and UFCMJRA require the court where enforcement is sought to refuse to enforce the judgment.¹⁷⁵ However, with respect to the personal jurisdiction criteria, "U.S. courts generally apply U.S. minimum contacts analysis,¹⁷⁶ such that a showing that the foreign judgment was obtained with proper personal jurisdiction under the principles of that foreign country will not suffice" to ensure enforcement of the foreign judgment in US courts.¹⁷⁷ Additionally, permissive grounds for refusing enforcement of foreign money judgments under

168. Sergio Nasarre-Aznar, *Spain*, in 4 INTERNATIONAL ENCYCLOPEDIA OF LAWS: TORT LAW, *supra* note 167, at 197.

169. See Max Loubser, *South Africa*, in 4 INTERNATIONAL ENCYCLOPEDIA OF LAWS: TORT LAW, *supra* note 167, at 320.

170. See *id.*

171. Edward H. Davis Jr. & Annette C. Escobar, *A Practitioner's Guide to Enforcement of Foreign Country Money Judgments in the United States*, in INTERNATIONAL LITIGATION STRATEGIES AND PRACTICE 131, 132 (Barton Legum ed., 2005).

172. See *Legislative Fact Sheet—Foreign-Country Money Judgments Recognition Act*, Uniform Law Commission, available at <http://www.uniformlaws.org/LegislativeFactSheet.aspx?title=Foreign-Country%20Money%20Judgments%20Recognition%20Act> (last visited Oct. 20, 2014).

173. UFMJRA, available at <http://www.uniformlaws.org/shared/docs/foreign%20money%20judgments%20recognition/ufmjra%20final%20act.pdf>.

174. UFCMJRA at 1, available at http://www.uniformlaws.org/shared/docs/foreign%20country%20money%20judgments%20recognition/ufcmjra_final_05.pdf.

175. UNIF. FOREIGN-COUNTRY MONEY JUDGMENTS RECOGNITION ACT § 4 (2005); UNIF. FOREIGN MONEY-JUDGMENTS RECOGNITION ACT § 4 (1962).

176. Davis Jr. & Escobar, *supra* note 171, at 133–34.

177. George B. Murr, *Enforcing and Resisting Foreign Judgments*, in INTERNATIONAL LITIGATION: DEFENDING AND SUING FOREIGN PARTIES IN U.S. FEDERAL COURTS 341, 348 (David J. Levy ed., 2003).

the UFMJRA and UFCMJRA include failure of the foreign court to respect the parties' choice-of-court agreements and instances where the claim on which the judgment is based is "repugnant to the public policy" of the forum.¹⁷⁸ However, if an heir sues and obtains a judgment, the question arises as to whether the choice-of-forum agreement has been violated. It is also questionable whether a foreign judgment in favor of an SFP contrary to a state law seeking to immunize a space-flight operator would be sufficient to find a violation of public policy under the UFMJRA and UFCMJRA. Moreover, foreign judgment creditors can act strategically to seek recognition of a foreign court judgment in a U.S. State with lenient recognition standards before seeking to enforce the judgment in another U.S. State under the Full Faith and Credit Clause of the U.S. Constitution.¹⁷⁹ Although a minority of U.S. courts have resisted this strategic technique by insisting the foreign judgment be treated as such (i.e. as a foreign judgment),¹⁸⁰ it is more common for courts to accept the strategy.¹⁸¹ Finally, even if the judgment were not immediately enforceable in the U.S. courts, space operators in such circumstances would need to take care as to where they positioned their assets globally.

If space operators choose to use arbitration clauses with foreign SFPs, this will reduce the risk of foreign courts taking the case, as under the widely subscribed-to Convention on the Recognition and Enforcement of Foreign Arbitral Awards (New York Convention), countries must compel the parties to the dispute to arbitrate as long as the New York Convention applies.¹⁸² The New York Convention generally applies to agreements in writing, arising out of a commercial legal relationship, with arbitration to occur in a New York Convention country, and with parties from different nations.¹⁸³ However, there are defenses to this obligation, including public policy and nonarbitrability defenses.¹⁸⁴ Thus, a foreign court might still exercise jurisdiction where the arbitration clause combined with a choice-of-law clause acts as a prospective waiver of negligence claims. In addition, an arbitration award would be more readily enforced globally because of the New York Convention's enforcement

178. See UNIF. FOREIGN-COUNTRY MONEY JUDGMENTS RECOGNITION ACT § 4(C)(3), (C)(5) (2005); UNIF. FOREIGN MONEY-JUDGMENTS RECOGNITION ACT § 4(b)(3), (b)(5) (1962).

179. See Murr, *supra* note 177, at 358–59.

180. See *id.*

181. See Gregory H. Shill, *Ending Judgment Arbitrage: Jurisdictional Competition and the Enforcement of Foreign Money Judgments in the United States*, 54 HARV. INT'L L.J. 459, 490–91 (2013) (“[R]are is the state court that will resist the constitutional default rule of full faith and credit and deny enforcement of a sister-state judgment recognizing a foreign judgment.”).

182. See Convention on the Recognition and Enforcement of Foreign Arbitral Awards art. II, June 10, 1958, 21 U.S.T. 2517, 330 U.N.T.S. 3.

183. See *id.* arts. I, II.

184. See *id.* art. V.

obligations,¹⁸⁵ potentially placing a company's assets at risk in multiple jurisdictions. This near-global enforceability of an arbitration award might be one reason human space flight companies wishing to avoid payments to SFPs or their heirs in the aftermath of an accident apparently will still choose a less reliable court-selection clause rather than an arbitration clause.

6. Summary

Given the international character of the SFP customer base, the fact that suits in foreign courts by SFPs or their heirs might be successful, and that enforcement of such judgments may be possible in the United States, the U.S. Congress should pass legislation refusing enforcement of foreign court judgments against space-flight operators obtained by SFPs or their heirs. Because most SFPs are high-net-worth individuals, contractual waivers may not bind heirs, and state space activity immunity statutes contain many uncertainties, companies could conceivably be exposed to potentially high claims—maybe as high as several hundred million dollars (if one assumes high-net worth individuals may have lives valued at \$40 million or so). Given the importance of the commercial space industry to U.S. national security and the U.S. economy, the human space-flight industry in its nascent stages should not be burdened with this additional cost, particularly when high-net-worth individuals should be able to garner insurance or bear the burden of these risks, and companies may soon be in competition with foreign competitors in this arena as well. Indeed, the House Committee report for the House version of the CSLAA of 2004 expressed the belief that “space flight participants can purchase their own insurance.”¹⁸⁶ Operators may even require SFPs to obtain certain levels of insurance once insurance premiums come down as vehicle safety records are established.¹⁸⁷

Federal legislation that includes SFPs fully in the federal cross-waiver regime—by barring claims except those based on willful misconduct or, alternatively, federal legislation that seeks a middle ground by preempting state tort law negligence (but not gross negligence) claims by SFPs—combined with language specifically excluding such claims by SFP heirs too, would solve these problems arising in the U.S. system. States would still compete for commercial space investment on natural, geographical advantages as well as infrastructure investment and the provision of educated workforces.¹⁸⁸ Given the global

185. See *id.* art. IV.

186. H.R. REP. NO. 108-429, at 12 (2004). It is not clear if the Committee is referring to insurance by SFPs to cover their own injuries or to cover third-party claims or both.

187. See Meredith & Lammers, *supra* note 102, at 6 (noting that in the case of an International Space Station tourist, the purchase agreement required the tourist to obtain at least five million dollars million in both life and health insurance).

188. See generally Matthew Schaefer, *State Investment Attraction Subsidy Wars Resulting From a Prisoner's Dilemma: The Inadequacy of State Constitutional Solutions and the Appropriateness of a Federal Legislative Response*, 28 N.M. L. REV. 303, 305 (1998):

customer base and the importance of the industry to the U.S. economy and national security, differing regulatory rules regarding liability are not beneficial grounds for competition among the states. In fact, they are only likely to lead to unnecessary litigation in the event of an accident.

It is possible that third parties injured during space activities could attempt to add high-net-worth SFPs as defendants in cases against the space operator.¹⁸⁹ Under the current FAA regulations, space-flight operators are not required to include SFPs as an additional insured in their third-party liability insurance policies unless the SFPs are employees of a flight sponsor (i.e., employees of a “customer”).¹⁹⁰ If SFPs join the full federal cross-waiver regime precluding both negligence and gross negligence claims, or otherwise have their state tort law negligence suits foreclosed, Congress could also consider requiring the addition of all SFPs as additional insureds on third-party liability policies obtained by space-flight operators.¹⁹¹ Alternatively, it could continue to simply allow SFPs to negotiate such benefits contractually with space-flight operators or have operators offer such benefits on their own accord.¹⁹² But in any event, this seems to be a fair addition to efforts to include SFPs in the full federal cross-waiver, or alternatively simply barring negligence suits by SFPs.

B. International Treaty Dimensions Under the Liability Convention

Foreign SFPs on U.S. space flights who suffer an accident involving a single rocket or a single spacecraft are not covered by the Liability Convention. Article III of the Liability Convention makes clear it is referring to third-party liability, stating:

In the event of damage being caused elsewhere than on the surface of the Earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible.¹⁹³

Thus, foreign SFPs aboard one spacecraft are covered by the Liability Convention when that craft is hit by another nation’s spacecraft (presuming fault

Beyond natural locational advantages states compete for investments [by improving] the quality of the overall business climate by, for instance, improving the state educational system to produce an educated workforce, enhancing infrastructure within the state, maintaining or developing the stability of the state’s fiscal condition

189. See Hughes & Rosenberg, *supra* note 6, at 59.

190. See 14 C.F.R. § 440.9(b) (2014); Meredith & Lammers, *supra* note 102, at 7.

191. See Meredith & Lammers, *supra* note 102, at 7 (suggesting operators might choose to add such SFPs as additional insureds even if not required).

192. See Hughes & Rosenberg, *supra* note 6, at 59 (“[A] smart consumer [SFP] might demand it and a smart operator might offer it as a competitive advantage.”).

193. Liability Convention, *supra* note 21, art. III.

can be established), but SFP injuries do not fall within the Convention's' ambit when the craft suffers an accident *not* involving another nation's spacecraft.¹⁹⁴ In the former case, the foreign SFPs are third parties; in the latter case, they are not.

Arguably, there may be two narrow situations in which the Liability Convention may *prima facie* apply to a single-spacecraft or single-rocket accident injuring or killing a foreign SFP: first, when the launch vehicle never leaves the surface of the Earth, and second, when the death or injury to the foreign SFP only occurs once a spacecraft crash lands back to the surface of the Earth. The reason for potential Liability Convention coverage in these instances is that Article II of the Liability Convention provides that a "launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth . . ." ¹⁹⁵ However, even in these two narrow instances of *prima facie* application of the Liability Convention in a single-rocket or spacecraft accident, an exemption will ultimately prevent application of the Convention. The Liability Convention's Article VII(b) provides an exemption whereby a State party will not be liable for damage caused by one of its space objects to

*[f]oreign nationals during such time as they are participating in the operation of that space object from the time of its launching or at any stage thereafter until its descent, or during such time as they are in the immediate vicinity of a planned launching or recovery area as the result of an invitation by that launching State.*¹⁹⁶

Treaties are to be interpreted in accordance with the Vienna Convention on the Law of Treaties (VCLT), and in particular Articles 31 and 32,¹⁹⁷ which are widely viewed by nations as a codification of customary international law rules of treaty interpretation. For example, the United States recognizes the VCLT as an authoritative source of treaty law despite the fact the United States has not ratified the VCLT. The VCLT places primary emphasis on the textual or objective method of treaty interpretation and turns first to the ordinary meaning of the terms of the treaty.¹⁹⁸ The question is whether foreign SFPs should be considered to be "participating in the operation of the spacecraft" under the Liability Convention and thus exempt States from liability. One American dictionary defines participating as "being involved with others in doing something."¹⁹⁹ The same dictionary defines operation as "performance of a

194. See Stephan Hobe, *Legal Aspects of Space Tourism*, 86 NEB. L. REV. 439, 450 (2007) ("Moreover, Article III of the Liability Convention clearly refers to cases where third parties are involved, so that fault-based liability cannot be applied with respect to passengers.").

195. Liability Convention, *supra* note 21, art. II59.

196. *Id.* art. VII (emphasis added).

197. Vienna Convention on the Law of Treaties, *supra* note 82, arts. 31–32.

198. See *id.* art. 31(1).

199. *Participate*, MERRIAM-WEBSTER, <http://www.merriamwebster.com/dictionary/participate> (last visited Oct. 20, 2014).

practical work or of something involving the practical application of principles or processes.”²⁰⁰ It is debatable whether SFPs thus “participate” in the operation of the spacecraft.²⁰¹

But textual terms are to be interpreted “in their context and in the light of its’ object and purpose.”²⁰² The object and purpose of the treaty as a whole and the particular provision at issue both may be examined. Context includes the text of the treaty, particularly surrounding articles. As analyzed above, Article III shows the Liability Convention was seeking only to cover third-party liability and provides another strong reason to exclude from coverage under the Liability Convention foreign SFPs who voluntarily place themselves on the spacecraft.²⁰³ The object and purpose of Article VII(b)’s exemption also appears to be to exclude those foreign nationals who voluntarily and intentionally bring themselves to a space launch or its vicinity and are not mere bystanders.²⁰⁴

Further, under the VCLT, if the textual or objective method leaves the meaning ambiguous or obscure, then one can turn to the drafting history.²⁰⁵ The Liability Convention’s drafting history suggests that one of the two major negotiating countries, the Soviet Union, was even pressing so far as to exclude all foreign nationals injured by a space object in another nation’s territory.²⁰⁶ That broad exemption was rejected and thus the language “participating in the operation of the space object” was possibly intended to exclude all persons aboard the space object from Liability Convention coverage, but not any innocent bystanders that would be foreign nationals. The United States should seek understandings with other countries, formally or informally, that any

200. *Operation*, MERRIAM-WEBSTER, <http://www.merriam-webster.com/dictionary/operation> (last visited Oct. 20, 2014).

201. See Steven Freeland, *Fly Me to the Moon: How Will International Law Deal with Commercial Space Tourism*, 11 MELB. J. INT’L L. 90, 104 (2010); Hobe, *supra* note 194, at 450; Frans G. von der Dunk, *Passing the Buck to Rogers: International Liability Issues in Private Spaceflight*, 86 NEB. L. REV. 400, 412 (2007) (“The Liability Convention, though not referring anywhere explicitly to the concept, only deals with third-party liability.”).

202. Vienna Convention on the Law of Treaties, *supra* note 82, art. 31(1).

203. See Liability Convention, *supra* note 21, art. III; Hobe, *supra* note 194, at 450.

204. See Liability Convention, *supra* note 21, art. VII(b); Hobe, *supra* note 194, at 450 (“Yet, by participating in a space mission, passengers of a space flight voluntarily put themselves at a high risk. Against this background, absolute liability of the launching state for damages caused to passengers of its space object seems inappropriate.”).

205. Vienna Convention on Law of Treaties, *supra* note 82, art. 32.

206. See U.N. Office for Outer Space Affairs, Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., Summary Record of the 49th mtg., Sept. 28, 1965, at 4, U.N. Doc. A/AC.105/C.2/SR.49 (Nov. 30, 1965), available at http://www.unoosa.org/pdf/transcripts/legal/AC105_C2_SR049E.pdf (quoting the USSR delegate as stating his country’s belief “that the convention should not apply to damage caused in the territory of the launching State, even to aliens” since “aliens present in the territory of a State should be treated there on an equal footing with the nationals of the State in question”).

foreign SFP involved in a single-rocket or space vehicle accident falls outside the scope of the Liability Convention and thus no claim could be raised against the United States by another country under the State-to-State claim process of the Liability Convention. While these claims would be made formally by a foreign government, that government might pass on the proceeds of any such claim to SFPs or their heirs. In any such international negotiations, the United States might additionally place obligations on countries to prevent suit in national courts by SFPs or their heirs, although this would go beyond simply reaffirming the Liability Convention's obligations and thus would be more difficult.

Once again, the vast majority of SFPs, at least in the first decade of commercial human suborbital flight, will be high-net-worth individuals capable of purchasing tickets costing roughly \$90,000–\$200,000. Thus SFPs, whether U.S. or foreign nationals, should be barred from making claims (other than in cases of willful neglect and possibly gross negligence) against operators directly or through their governments under the Liability Convention. Such individuals should have the capacity to bear the risk or obtain personal accident insurance on the market. Indeed, one company, Pembroke, offers up to \$5 million coverage for SFPs for death or injury,²⁰⁷ although it is unclear how many SFPs will choose to purchase such policies given the premium is likely to run over \$100,000 in the initial stages of suborbital travel, and effectively raise the cost of suborbital travel by 50%–100%.

It is possible foreign governments would seek to make claims against the United States for a foreign national injured aboard a U.S. spacecraft outside the context of the Liability Convention but this would be difficult and likely unsuccessful. Under general international law, governments are not responsible for private party conduct absent some close nexus between the government and the private actor.²⁰⁸ Article VI of the Outer Space Treaty does create a specialized rule applicable in the space domain—specifically making countries internationally responsible for the conduct of their nongovernmental actors.²⁰⁹ However, in order to bring a claim, there would need to be an internationally wrongful act. For an act to be internationally wrongful, it must be attributable to the state and involve a breach of international obligations, such as a treaty obligation.²¹⁰ The mere fact that an accident occurred with respect to a spacecraft would not be sufficient on its own to be such an act. Presumably,

207. See *Ironshore's Pembroke Goes Way Out There—With Personal Accident Cover for Space Tourists*, CARRIER MGMT. (June 11, 2014), <http://www.carriermanagement.com/news/2014/06/11/124460.htm>.

208. See Rep. of the Int'l Law Comm'n arts. 8, 11, 53d Sess. April 23–June 1 and, July 2–Aug. 10, 2001, U.N. Doc. A/56/10 (2001), available at <http://www.un.org/documents/ga/docs/56/a5610.pdf> http://legal.un.org/ilc/texts/instruments/english/draft%20articles/9_6_2001.pdf.

209. Outer Space Treaty, *supra* note 84, art. VI.

210. Rep. of the Int'l Law Comm'n, 68, 53rd Sess., Apr. 23–Jun. 1, Jul. 2–Aug 10, 2001, U.N. Doc. A/56/10.

foreign countries could also attempt to claim that the U.S. government had not exercised properly its duty to provide “authorization and continuing supervision” over private entities’ activities in space as also called for by Article VI of the Outer Space Treaty.²¹¹ This is not a strong claim given the United States has the most advanced human space-flight regime of any nation in the world. In any event, such a claim would be handled diplomatically only, not before an international tribunal, as the Outer Space Treaty contains no mandatory dispute-settlement clause.

III.

CORPORATE- OR UNIVERSITY-SPONSORED FLIGHTS FOR SFPs AND RELATIONSHIP TO STATE WORKERS’ COMPENSATION REGIMES

Individuals will purchase tickets to become SFPs, but space flight tickets will also be bought by sponsors, including corporations, universities, and NASA. In situations in which NASA is sponsoring a flight and sending its astronauts on a commercial vehicle, the FAA and NASA would likely coordinate to develop a joint oversight approach. In such situations, the FAA will have responsibility for licensing the launch and reentry activities of the NASA contractor for public safety, while NASA will retain responsibility for certifying the vehicle to NASA requirements relating to both safety and mission assurance. Thus, the NASA-sponsored flight situation is unique and will not be addressed further here.

However, significant complexities surround corporate- and university-sponsored flights, particularly with regard to state workers’ compensation regimes. If a company (other than the space flight operator itself) sponsors a human space flight and sends up an employee on the space flight—perhaps as a bonus to executives or to have an employee conduct research—and the employee is injured or dies in the course of the space flight, what legal recourse is available to the employee or his or her heirs? The employee’s (or his or her heirs’) remedy against the employer—the sponsoring company or “customer” in FAA regulatory terminology—will include claims under the workers’ compensation statute in the relevant state. However, the employee (or his or her heir) may attempt to proceed against the space-flight operator as well, since, as described above, SFPs are not subject to the full federal cross-wavier regime. Further, state space-activity immunity legislation may not fully protect the space-flight entity. Indeed, given the potential complications with contractual waivers and holes in the drafting or application of state space-operator liability immunity legislation, it is possible that an SFP or his or her heirs could recover against a space-flight operator. If the SFP obtaining the judgment is an

211. *See id.*

employee of a flight sponsor, the flight sponsor would be required to indemnify the space-flight operator under FAA regulations since the flight sponsor falls within the definition of “customer” under the FAA regulations.²¹² This type of legal regime could inhibit or restrict the sponsored-flight market for commercial space operators and thus the research that could be undertaken. For example, a corporation or university may be less likely to send an employee on a research-oriented space flight if there are concerns that above and beyond workers’ compensation claims it indemnify a space-flight operator’ for a judgment against it brought by an SFP, or an heir of the SFP, for injury or death suffered in a space flight. Additionally, state universities may have certain legal restraints on entering contracts requiring such an indemnification obligation, thus further limiting their ability to enter the market as a flight sponsor under current federal regulations. Of course, the operator could seek such an indemnification agreement via contract with the sponsor of the flight even in the absence of the FAA regulation, but presumably such an indemnification agreement by contract would be subject to negotiation.

Additionally, this federal regulatory regime is at odds with the normal practice under state workers’ compensation laws. In many jurisdictions, the injured person or, in case of death, the person’s heirs, can pursue actions against those responsible for their injuries in addition to workers’ compensation.²¹³ To the extent the employer has already paid as required by the state workers’ compensation regime, the employer obtains a subrogation lien against the judgment obtained by the employer’s employee or the employee’s heir in a suit against the third party.²¹⁴ For example, Tennessee Code Annotated Section 50-6-112 provides:

When the injury or death for which compensation is payable under this chapter was caused under circumstances creating a legal liability against some person other than the employer to pay damages, the injured worker, or the injured worker’s dependents, shall have the right to take compensation under this chapter, and the injured worker, or those to whom the injured worker’s’ right of action survives at law, may pursue the injured worker’s’ or their remedy by proper action in a court of competent jurisdiction against the other person

(c)(1) In the event of a recovery against the third person by the worker, or by those to whom the worker’s right of action survives, by judgment, settlement or

212. See 14 C.F.R. 440.17(b)–(c), app. B. See also Meredith & Lammers, *supra* note 102, at 7:

If the SFP is an employee of the Sponsor, the CSLA makes the Sponsor financially responsible for the death and bodily injury of the SFP and requires that the Sponsor “agree[] to hold harmless and indemnify [the Operator and its suppliers] from bodily injury or property damage sustained by its employees, resulting [from the spaceflight], regardless of fault.” Thus, if a corporation decides to buy three spaceflight tickets as performance rewards for senior executives, the corporation would be financially responsible for any injury or death those executives may suffer and would need to indemnify the Operator and its contractors against any claims by the executives.

213. 1 LEX K. LARSON, LARSON’S WORKERS’ COMPENSATION LAW, § 115.03 (Matthew Bender, Rev. ed., 2014).

214. See *id.* §§ 115.03, 116.01.

otherwise, and the employer's maximum liability for workers' compensation under this chapter has been fully or partially paid and discharged, the employer shall have a subrogation lien against the recovery, and the employer may intervene in any action to protect and enforce the lien.

The purpose behind this system (which exists in many states workers' compensation regimes) is the following:

The statutory provisions in the Workers' Compensation Law that permit recoveries from third parties whose conduct causes an employee's on-the-job injuries are strictly for the benefit of the employee and the employer. These provisions advance the policies of the workers' compensation program because they: (1) place the financial burden of the employee's injury on the party responsible to the same extent as if no workers' compensation was involved, (2) prevent the employee from obtaining a double recovery while, at the same time, recovering additional damages that would not be available under the workers' compensation program, and (3) permit the employer to come out even by being reimbursed for its workers' compensation expenditures. Thus, the goals of the workers' compensation program are advanced by giving an employer the right "to collect from a blameworthy third party an amount equivalent to the compensation that it paid and/or will pay to an injured employee," or by permitting an employer to pursue a claim against the third party who caused its employee's injuries if the employee himself or herself does not pursue the claim²¹⁵

Again, the FAA regulations appear to require the flight sponsor to indemnify the space-flight operator for any judgment obtained by any of the sponsor's employees against the space-flight operator, thus substantially reversing the rule provided by many state workers' compensation regimes. In most jurisdictions, "[e]mployees who choose to bring a civil action against the third-party tortfeasor are not prohibited from obtaining workers' compensation if their suit is not fully successful."²¹⁶ So even in states that require employees to initially choose between suing their employer and a third-party tortfeasor, SFPs or heirs could take their chances suing the space operator, and then resort to workers' compensation if the suit fails. However, if SFPs are included in the full federal cross-waiver regime, with the exception of entering into cross-waivers with their employer, then it would be an easy choice for employees or their heirs to pursue a claim for workers' compensation rather than bring an action against the space-flight operator, in which they would have to allege "willful misconduct" in order to overcome the cross-waiver. Alternatively, if the federal legislation pursues the middle road solution and only bars negligence (but not gross-negligence claims) by SFPs against space-flight operators, the election decision is still an easy one since gross-negligence claims are difficult to prove as well.

Additionally, FAA federal regulations requiring indemnification of space-flight operators by flight sponsors of any judgments obtained by the sponsors'

215. *Cooper v. Logistics Insight Corp.*, 395 S.W.3d 632, 645 (Tenn. 2013) (citations omitted).

216. LARSON, *supra* note 213, § 115.02.

employees appear to possibly preempt state laws under which the employer liability under workers' compensation regime for employee injury or death is "exclusive and in place of all other liability."²¹⁷ Thus, under current FAA regulations, the sponsor of the space flight—the employer of the injured or deceased employee—is clearly in a different position when the employee is injured during a space flight than any other employment-related activity. The employer is responsible not only for workers' compensation, but also to indemnify the space-flight operator should the SFP (or presumably the SFP's heirs) obtain a judgment against the space-flight operator.

Just as with the gaps, holes, and complications surrounding contractual waivers and state space-operator liability immunity legislation, the recommended solution is to include SFPs in the federal cross-waiver regime or otherwise preempt state tort law negligence claims to eliminate the chance that SFPs (or their heirs) obtain judgments against space-flight operators and that the current FAA regulations disrupt the normal operation of state workers' compensation statutes and create disincentives for sponsored flights. However, SFPs and their employers—the flight sponsors—should not be required to enter cross-waivers. If they are required to enter cross-waivers, there should be a carve-out to allow SFP employees to pursue a workers' compensation claim against their employer—the flight sponsor—so that employees of companies sponsoring space flights are adequately protected by state workers' compensation laws. This seems consonant with the overall intent behind the cross-waiver regime that has been established under the CSLAA of 2004 and FAA regulations. The FAA regulations' sample cross-waiver (when the federal government is involved in a launch activity) provide that "[n]othing contained herein shall be construed as a waiver or release by Licensee, Customer or the United States of any claim by an *employee* of the Licensee, Customer or the United States, respectively, including a member of the Armed Forces of the United States, for Bodily Injury or Property Damage, resulting from Licensed Activities."²¹⁸

The decision to either exempt SFPs from entering into cross-waivers with their employer flight sponsors or make them enter into cross-waivers but with mandatory carve-outs for workers' compensation claims will mainly impact those few states, such as Texas, that do not require employers to enter the workers' compensation regime.²¹⁹ For example, if SFPs and their employer flight sponsors are not required to enter into cross-waivers, then the SFPs could pursue claims against their Texas employers who opted not to enter the workers' compensation regime. If SFPs are required to enter into cross-waivers with their employers but a carve-out is created for workers' compensation claims, then

217. See KY. REV. STAT. ANN. § 342.690 (2014).

218. See 14 C.F.R. § 440, app. B, para. 7(a) (2014) (emphasis added).

219. See *Employer Frequently Asked Questions*, TEX. DEP'T INS. (last updated Jan. 2, 2015), available at <http://www.tdi.texas.gov/wc/employer/employerresources.html#q1>.

SFPs would still not be able to bring a claim—based in tort or workers’ compensation—against a Texas employer who opted not to enter into the workers’ compensation regime. Thus, Congress will need to be careful when drafting any carve-out for workers’ compensation claims to also make clear its wishes with respect to SFP versus employer flight sponsor claims in those few states, such as Texas, in which workers’ compensation is optional.

One final complication is that under some state workers’ compensation regimes, even persons labeled as “independent contractors” can occasionally be eligible for workers’ compensation. Most workers’ compensation statutes do not define an employee beyond the general phrasing “every person in the service of another under contract of hire, express or implied.”²²⁰ In interpretation and application of this language, most courts have found that the “common-law definition of employee . . . worked out for vicarious tort liability purposes, was meant to be adopted.”²²¹ And, thus, many courts have turned to the tests laid out in the Restatement of Agency (Second) when making such determinations, including the extent of control of the employer over details of the work, the skill required for the particular occupation, who supplied the tools, the length of time for which a person was employed, the method of payment to the person, and whether or not the work was part of the regular business.²²² If a space-flight sponsor hires a person to conduct research aboard a spacecraft and labels that person an independent contractor, then the flight sponsor, considered a customer under FAA regulations, will engage in a cross-waiver with the space-flight operator and both of those entities will be required to “flow down” the waiver to their contractors and subcontractors. Thus, as a contractor to the customer, the researcher will be required to enter into a cross-waiver. However, if the researcher will be the SFP, then he is not required to enter into cross-waivers under the current federal scheme for SFPs. This is the first conundrum. An additional complexity is that contractor is defined as an “entity” in federal regulations, and this raises the question of whether a contractor, who is an individual, would be part of the cross-waiver flow-down from the sponsor.²²³ In any event, this conundrum can be resolved once again by making SFPs part of the federal cross-waiver regime but not requiring SFPs to waive rights to pursue workers’ compensation claims against their employers. The conundrum is also

220. See LARSON, *supra* note 213, § 60.01.

221. See *id.*

222. See *id.*

223. 14 C.F.R. § 440.3 (2014) (“*Contractors and subcontractors* means those entities that are involved at any level, directly or indirectly, in licensed or permitted activities, and includes suppliers of property and services, and the component manufacturers of a launch vehicle, reentry vehicle, or payload.”) (emphasis added). However, unlike the term customer, from which SFPs are specifically excluded, SFPs are not specifically excluded from the definition of contractors. *Id.* (“A space flight participant, for the purposes of this part, is not a customer.”).

resolved if Congress pursues the alternative solution of only barring negligence (but not gross-negligence) claims by SFPs against space operators and other entities involved in the cross-waiver regime, and if a carve-out for workers' compensation claims is included.

The second conundrum is that the individuals labeled as independent contractors may upon closer inspection be employees for purposes of state workers' compensation statutes, and they would have waived, through the federal cross-waiver "flow-down," their right to pursue workers' compensation claims against the flight sponsor. Because it will not always be known with certainty in advance when a person initially labeled an independent contractor is actually an employee covered by a workers' compensation law, Congress should make clear that the federal cross-waiver regime is not intended to preempt provisions of state workers' compensation laws allowing an employee (or independent contract later found to meet requirements to be considered an employee) to proceed directly against an employer.

Additionally, as noted earlier, the CSLAA of 2004 has provisions addressing preemption of state laws.²²⁴

If an independent contractor who is an individual enters into a flow-down cross-waiver with their employer flight sponsor, he or she is waiving claims against the employer flight sponsor. Thus, if he or she is later found to be an employee with state workers' compensation law applicable to them, the state workers' compensation law may be held preempted as inconsistent with the CSLAA of 2004. In addition to either exempting SFP employees and their employer flight sponsors from the cross-waiver regime or otherwise making clear such waiver does not impact the applicability of workers' compensation claims by employees directly against their employers, Congress should, for additional certainty, also consider establishing a general "savings clause" provision in the preemption section of the CSLAA of 2004. That clause should state the CSLAA is not intended to preempt provisions of state workers' compensation laws allowing employees, as defined by state workers' compensation laws (even if originally categorized as independent contractors), or their heirs, from making workers' compensation claims directly against their employers.

CONCLUSION

Federal preemption is often controversial, and international negotiations are often difficult. Yet, both are necessary in the case of liability issues surrounding the nascent U.S. commercial space industry given the importance of the industry to U.S. national security and economic well-being. In the 2012–2014 period, with the retirement of the Space Shuttle, two U.S. commercial companies have begun ferrying cargo to the International Space Station for the U.S. government.

224. See Part III.A.3 *supra*.

Commercial human space flight will begin in earnest soon. Indeed, in 2016 or soon thereafter, companies will begin suborbital space flights from the United States for tourism and research purposes. The current U.S. approach to third-party liability and SFP liability suffers from unnecessary uncertainty, due in part to current federal approaches and in part to a patchwork of divergent state statutes and common-law rules.

Recognizing the importance of the growing commercial space industry to U.S. national security and the national economy, enhanced liability protections should be afforded to the nascent industry to avoid “crushing liability” on U.S. space companies and to place the industry on a level playing field with foreign competitors in the case of a massive, catastrophic accident. Preemptive federal legislation that would create a liability cap on third-party liability is fully supported by existing and prior legislation in which Congress has afforded similar protections to the antiterrorism technology industry, for national security purposes, and the nuclear industry, to protect a critical national asset. Preemptive federal legislation preventing suits by SFPs or their heirs against space companies, except in cases of willful misconduct (or, alternatively, gross negligence), is also supported at the early stages of human space flight given the high net worth and sophistication of SFPs. However, this Article also cautions that federal preemption should not occur with respect to workers’ compensation claims against employers that send their employees to space, as protection of the myriad of employers potentially sending employees to space from workers; compensation claims is not critical to incentivizing and maintaining commercial space activity in the United States.

The United States should also pursue international negotiations to clarify that Liability Convention claims cannot be made against the United States based on foreign SFP injuries resulting from single spacecraft accidents. The United States should also pursue negotiations in which foreign countries agree to bar SFP suits in their national courts. International agreements and federal legislation with these provisions will ensure the United States remains a leader in the commercial space industry and that U.S. industry is placed on an equal liability footing with foreign competitors.