

COMMENT

“TO THE STARS, DESPITE ADVERSITY”: LIABILITY FOR THE *COLUMBIA* SPACE SHUTTLE TRAGEDY**

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* COLUMBIA ACCIDENT INVESTIGATION BD., 1 FINAL REPORT 2 (2003) [hereinafter CAIB REPORT], http://www.caib.us/news/report/pdf/vol1/full/caib_report_volume1.pdf (featuring an emblem memorializing “the three U.S. human space flight accidents—*Apollo 1*, *Challenger*, and *Columbia*. The words across the top translate to: “To The Stars, Despite Adversity—Always Explore”).

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tragedy.⁴ The Board summarized its dismay for NASA in the following paragraph:

At NASA's urging, the nation committed to building an amazing, if compromised, vehicle called the Space Shuttle. When the agency did this, it accepted the bargain to operate and maintain the vehicle in the safest possible way. The Board is not convinced that NASA has completely lived up to the bargain This situation needs to be addressed—if the nation intends to keep conducting human space flight, [NASA] needs to live up to its part of the bargain.⁵

The cruelest consequence of NASA's failure to "live up to its part of the bargain" is the loss of the *Columbia* crewmembers' lives, a burden borne most severely by the families left behind.⁶ Especially in light of the Board's scathing report, the *Columbia* tragedy demands an analysis of the families' ability to recover damages from the U.S. government for NASA's negligent acts and omissions.

A discussion of astronauts' ability to recover for NASA's negligence is particularly relevant in light of President Bush's renewed commitment to funding manned space flight programs.⁷ In a January 14, 2004 speech delivered from NASA headquarters, President Bush announced the goal of developing a new spacecraft, the "crew exploration vehicle," capable of conducting manned missions within ten years.⁸ In concluding his speech, President Bush stated that "space travel brings great risks,"⁹ effectively acknowledging the potential that *Columbia*

4. CAIB REPORT, *supra* note *, at 140 (noting "at least eight 'missed opportunities' to discover the debris damage which potentially led to the disaster"); see Charles R. Lucy & Skip Smith, *The Space Shuttle Columbia and the Legal High Frontier: Possible Claims and Defenses*, Hollandhart.com 2-3 (2003) (noting that the Board believed "NASA's organizational culture and structure had as much to do with this accident as the External Tank foam"), http://www.hollandhart.com/articles/Legal_Liabilities_Arising_From_the_Columbia_Disaster.pdf. The Lucy and Smith article was presented at the 46th Colloquium on the Law of Outer Space and is reprinted in PROCEEDINGS OF THE 46TH COLLOQUIUM ON THE LAW OF OUTER SPACE (2004).

5. CAIB REPORT, *supra* note *, at 97.

6. See *infra* note 96 (observing that the *Columbia* crew is survived by two husbands, four wives, and twelve children).

7. Greg Hitt, *Bush Proposes \$12 Billion Fund to Explore Space*, WALL ST. J., Jan. 15, 2004, at A2.

8. Remarks at the National Aeronautics and Space Administration, 40 WEEKLY COMP. PRES. DOC. 66, 67 (Jan. 14, 2004); see also Traci Watson & Richard Benedetto, *Return to Moon Outlined by Bush*, USA TODAY, Jan. 15, 2004, at 1A (reporting President Bush's announcement).

9. Remarks at the National Aeronautics and Space Administration, *supra* note 8,

may not be NASA's last tragedy.¹⁰ Therefore, the appropriate extent of NASA's liability for catastrophic events that claim astronauts' lives will remain a relevant and necessary inquiry not only for today, but for many foreseeable tomorrows.

This Comment analyzes laws affecting NASA's liability with regard to the *Columbia* tragedy and concludes that the current framework provides the crewmembers' families inadequate compensation and allows NASA to escape accountability for its negligent acts and omissions leading to the tragedy. Part II of this Comment summarizes the findings of the Columbia Accident Investigation Board, and Part III argues that these findings support claims alleging NASA's negligence. Part IV discusses NASA's legacy of disasters and reviews the litigation and victim compensation following the *Apollo I* and *Challenger* accidents. The majority of this Comment's analysis occurs in Part V, which begins with a discussion of international law and continues with an analysis of the Federal Tort Claims Act, the current domestic statute enabling negligence suits against the U.S. government. Part VI considers the alternative approach of filing suit against one of the government contractors that supplied potentially defective parts for the *Columbia* space shuttle's ill-fated STS-107 mission. Part VII recommends an amendment to the National Aeronautics and Space Act that would allow private tort suits on behalf of astronauts injured or killed by the negligent acts and omissions of NASA employees. The arguments presented in this Comment are based on the premise that paying for mistakes is a necessary part of progress.¹¹ To the frustration of prospective *Columbia* plaintiffs, the current law is inadequate in both compensating victims and holding NASA accountable for its mistakes. This Comment ultimately seeks to recommend a remedy for this inadequacy.

II. THE COLUMBIA DISASTER: WHAT WENT WRONG

A. *Defective Insulating Foam Damaged Columbia's Left Wing During Liftoff*¹²

At 10:39 a.m. EST on January 16, 2003, the solid rocket boosters of the *Columbia* space shuttle ignited, launching the seven

at 68.

10. *Columbia* was not the first and will likely not be the last NASA tragedy. See *infra* Part IV (examining the *Apollo I* and *Challenger* disasters).

11. I acknowledge Professor Arthur M. Dula, University of Houston Law Center, for making this observation.

12. CAIB REPORT, *supra* note *, at 83.

members of the STS-107 mission into orbit.¹³ Eighty-one seconds later, at least three "pieces of insulating foam separated from the External Tank left bipod . . . ramp area" and showered *Columbia's* left wing.¹⁴ The largest piece of foam, measuring approximately two feet long and twelve to eighteen inches wide, collided with *Columbia* at 416 to 573 miles per hour.¹⁵ Unbeknownst to the crew and NASA managers, the foam "critically damaged the leading edge of *Columbia's* left wing."¹⁶

*B. NASA Managers Made No Effort to Prevent the Accident*¹⁷

The next day, the Intercenter Photo Working Group, which routinely records shuttle launches, discovered the debris strike and reported it to "the Mission Management Team, the Mission Evaluation Room, and engineers at United Space Alliance and Boeing."¹⁸ Soon, contractors and NASA engineers formed the Debris Assessment Team to review and assess the potential impact damage to *Columbia's* left wing.¹⁹

Because the extent of potential damage was unknown, the Intercenter Photo Working Group requested military imaging of *Columbia's* left wing from the Shuttle Program Manager.²⁰ The Board reported, "This would be the first of three discrete requests for imagery by a NASA engineer or manager. In addition to these three requests, there were . . . at least eight 'missed opportunities' where actions may have resulted in the discovery

13. *Id.* at 33.

14. *See id.* at 34, 37 (timing the moment of foam separation at 81.7 seconds after liftoff, and the foam collision at 81.9 seconds after liftoff).

15. *Id.* at 34. The Board concluded that the foam "struck the wing in the vicinity of the lower half of Reinforced Carbon-Carbon panel 8." *Id.* at 49. While the Board's report provided various theories on why the foam separated at launch, the Board could not determine a single cause. *Id.* at 55. The Board explained, "[a]nalysis of numerous separate variables indicated that none could be identified as the sole initiating factor of bipod foam loss." *Id.* Remarkably, the Board also noted that "[n]egligence on the part of NASA, Lockheed Martin, or United Space Alliance workers does not appear to have been a factor [in causing the foam separation]." *Id.* at 53; *see also* Lucy & Smith, *supra* note 4, at 2 (describing the Board's report findings with regard to foam-shedding and debris strikes).

16. CAIB REPORT, *supra* note *, at 83.

17. *Id.* at 199–202 (describing the failure of NASA managers to address warnings about the consequences of the foam strike). The Board also observed that NASA's safety system "did nothing to alter the decision-making that immediately preceded" the accident. *Id.* at 202.

18. *Id.* at 37; *see also id.* at 17 (listing Boeing and United Space Alliance as two of the commercial contractors employed by NASA to provide services and products for the Space Shuttle Program).

19. *Id.* at 37 (noting that forming such a team was in accordance with NASA guidelines).

20. *Id.* at 140.

of debris damage.”²¹ However, Mission Management Team Chair Linda Ham officially terminated the request for imagery on Wednesday, January 22.²² Ham later explained that after consulting with several individuals, including Flight Director Phil Engelauf and the on-duty Mission Evaluation Room Manager David Moyer, she determined that there was no requirement for imagery.²³ Notably, Ham never directly asked the members of the Debris Assessment Team if they had made the imaging request.²⁴ With no pictures of *Columbia*’s exterior to evaluate the potential damage caused by the foam strike, the Debris Assessment Team’s analysis was limited to mathematical modeling, which provided indefinite predictions about the extent of structural damage.²⁵

Despite canceling requests for imaging, Linda Ham and other members of the Mission Management Team were aware of the significant risk to *Columbia* resulting from the foam strike during liftoff.²⁶ The Board observed that “all the key managers were asking the right question and admitting the danger. . . . Yet little follow-through occurred with either the request for imagery

21. *Id.* One of the “missed opportunities” came on Sunday, January 19, when Rodney Rocha, co-chair of NASA’s Debris Assessment Team, sent an e-mail asking a Johnson Space Center Engineering Directorate manager about a Mission Action Request “for *Columbia*’s crew to visually inspect the left wing for damage.” *Id.* at 143, 145. Rocha never received a response to this inquiry. *Id.* at 145; *see also id.* at 167 (enumerating the eight missed opportunities).

22. *Id.* at 152–53 (reporting that the NASA Department of Defense liaison officer’s reason for canceling the imagery request was that “NASA had identified its own in-house resources and no longer needed the military’s help”). The Board also noted a Mission Evaluation log entry—recording “the decision not to seek imaging of *Columbia*’s left wing”—which noted that several NASA managers, including Linda Ham, “have stated that there is no need for the Air Force to take a look at the vehicle.” *Id.* at 156.

23. *Id.* at 153.

24. *Id.* Later that day, Ham also expressed concern “that the extra time spent maneuvering *Columbia* to make the left wing visible for imaging would unduly impact the mission schedule.” *Id.*

25. *Id.* at 38 (describing how the Debris Assessment Team used a mathematical modeling tool called Crater even though this technology was not designed to analyze foam impact damage).

26. *Id.* at 154–56. In an e-mail response to Linda Ham, Lambert Austin in the Space Shuttle Integration Office explained that:

[T]he [Space Shuttle Program] has concluded that it is not possible to PRECLUDE a potential catastrophic event as a result of debris impact damage to the flight elements. . . .

. . . [External Tank] foam loss can result in impact damage that under subsequent entry environments can lead to loss of structural integrity of the Orbiter area impacted or a penetration in a critical function area that results in loss of that function.

Id. at 155.

or the Debris Assessment Team analysis.²⁷ Despite learning the estimated size, location, and extent of damage caused by the foam striking *Columbia's* left wing, Mission Management Team members and Program members refused to believe that *Columbia* was in any real danger.²⁸ Meanwhile, engineers at NASA continued to speculate among themselves about possible complications arising from *Columbia's* return to Earth.²⁹ For example, an e-mail sent on January 28 from Langley Research Center engineer, Bob Daugherty, to Carlisle Campbell, an engineer at Johnson Space Center, illustrates the discussions circulating in the NASA community: "Any more activity today on the tile damage or are people just relegated to crossing their fingers and hoping for the best?"³⁰ Unfortunately, hopes for the best failed to materialize as events took a turn for the worst.

C. *The Columbia Disintegrated upon Re-entry*³¹

At 2:30 a.m. EST on February 1, 2003, sixteen days after liftoff of the *Columbia* STS-107 mission, the Entry Flight Control Team assembled in the Mission Control Center in preparation for *Columbia's* return.³² Right on schedule, the *Columbia* entered the atmosphere at 8:44 a.m.³³ During the next sixteen minutes, as the shuttle "streaked over Utah, Arizona, New Mexico, and Texas," superheated air entered the breach in *Columbia's* left wing, penetrating the Thermal Protection System and leading-edge insulation.³⁴ As the wing melted, *Columbia's* crew lost control of the shuttle and the Orbiter began to break apart.³⁵ The last recorded communication from the crew, Rick Husband's

27. *Id.* at 156.

28. *Id.* at 168–69. An e-mail sent from Flight Director Steve Stich to STS-107 Commander Rick Husband and Pilot William McCool on January 23, stated in part,

There is one item that . . . is not even worth mentioning other than wanting to make sure that you are not surprised by it in a question from a reporter.

During ascent . . . photo analysis shows that some debris . . . came loose and subsequently impacted the orbiter left wing . . . [T]here is no concern for RCC or tile damage. We have seen this same phenomenon on several other flights and there is absolutely no concern for entry.

Id. at 158–59.

29. *Id.* at 164–66.

30. *Id.* at 164–65 (indicating that Carlisle Campbell replied by e-mailing: "I have not heard anything new. I'll let you know if I do.").

31. *Id.* at 39.

32. *Id.* at 38.

33. *Id.*

34. *Id.* at 38–39, 49 (summarizing the Board's extensive findings on the physical cause of the accident).

35. *Id.* at 49.

broken response, “Roger, [cut off in midword] . . .,” occurred at 8:59 a.m.³⁶ Videos shot from the ground show *Columbia* breaking apart.³⁷ Seven months later the Board announced, “the foam strike observed during the flight of STS-107 was the direct, physical cause of the accident.”³⁸

*D. The Board Blames NASA’s Culture*³⁹

In addition to determining the physical cause of the *Columbia*’s demise, the Board also found that “NASA’s organizational culture and structure had as much to do with this accident as the External Tank foam.”⁴⁰ Budgetary cutbacks, “schedule pressures, . . . reliance on past success as a substitute for sound engineering practices[,] . . . [and] organizational barriers which prevented effective communication . . . and stifled professional differences of opinion” are among some of the cultural traits and organizational practices that the Board cited as having a detrimental impact on the safety of the Space Shuttle Program.⁴¹

NASA’s defective cultural traits and organizational practices are perhaps best illustrated by the fact that NASA managers were well aware that External Tank foam frequently broke apart during shuttle launches.⁴² Nevertheless, these managers tolerated such losses, despite the fact that “design requirements in the Shuttle’s ‘Flight and Ground System Specification-Book 1, Requirements,’ [specifically] precluded foam-shedding by the External Tank.”⁴³ The Board also reported that NASA managers failed to adequately investigate the causes of foam shedding and

36. *Id.* at 39.

37. *Id.* at 40–41 (displaying some of the images captured by observers of the accident).

38. *Id.* at 59 (explaining that the Board reached this conclusion through a combination of tests and analyses).

39. *Id.* at 177.

40. *Id.*

41. *Id.*

42. *Id.* at 53 (observing that “[f]oam loss has occurred on more than 80 percent of the 79 missions for which imagery is available, and foam was lost from the left bipod ramp [as was the case during the STS-107 lift off] on nearly 10 percent of missions where the left bipod ramp was visible following External Tank separation”). *But see id.* at 55 (stating that “[t]he Board found instances of left bipod ramp shedding on launch that NASA was not aware of”).

43. *Id.* at 122 (reprinting sections 3.2.1.2.14 *Debris Prevention* and 3.2.1.1.17 *External Tank Debris Limits* from the “Requirements” book, which specify in part that space shuttle systems shall be designed to prevent all debris shedding “that would jeopardize the flight crew, vehicle, mission success, or would adversely impact turnaround operations”).

its possible effects on the integrity of the shuttle.⁴⁴ By the time of the STS-107 mission, the complacency of NASA's managers with regard to foam shedding was reflected by the fact that managers dangerously designated the problem a "turn-around or maintenance issue," not a "safety-of-flight issue."⁴⁵ Furthermore, despite the fact that the Flight Readiness Review of a preceding mission "acknowledged that the foam posed a threat to the Orbiter," NASA officials failed to take steps to reduce the risk of foam shedding on the STS-107 mission.⁴⁶ The Board explained that "[w]ith no engineering analysis, Shuttle managers used past success as a justification for future flights."⁴⁷ This example illustrates one of the many ways in which breaches in NASA's culture and organizational practices contributed to the tragedy to an extent at least as great as the breach caused by the foam striking *Columbia's* left wing.

III. ESTABLISHING NASA'S NEGLIGENCE

Relying on the findings presented in the Board's report, it appears that the negligent conduct of several NASA employees contributed to *Columbia's* demise and to the deaths of the seven astronauts on board. However, in order to establish such negligence, prospective plaintiffs must prove each element of the cause of action as defined by the laws of the appropriate jurisdiction.⁴⁸ Determining which jurisdiction's laws apply in the case of the *Columbia* accident is a complicated inquiry in itself, and a complete analysis of the jurisdictional issues is beyond the scope of this Comment.⁴⁹

44. *Id.* at 130–31; *see also id.* at 124 (noting that "the persistent uncertainty about the causes of foam loss and potential Orbiter damage results from a lack of thorough hazard analysis and engineering attention").

45. *Id.* at 130; *see also* Lucy & Smith, *supra* note 4, at 2 (summarizing the CAIB Report findings regarding foam shedding).

46. CAIB REPORT, *supra* note *, at 126.

47. *Id.* (noting that "in retrospect, several NASA managers identified their acceptance of this flight rationale as a serious error").

48. Federal Tort Claims Act § 1346(b), 28 U.S.C. § 1346(b)(1) (2000) (mandating that the liability of the United States depends on "the law of the place where the act or omission occurred"); *see infra* Part V.B (detailing the application of the Federal Tort Claims Act).

49. *See infra* Part V.B.2.c (discussing the possibility that a court may determine outer space as the situs of the *Columbia* accident). *See generally* James A. Beckman, *Citizens Without a Forum: The Lack of an Appropriate and Consistent Remedy for United States Citizens Injured or Killed as the Result of Activity Above the Territorial Air Space*, 22 B.C. INT'L & COMP. L. REV. 249 (1999) (analyzing "creative" interpretations as to where "space" torts occur). It is also possible that the laws of Florida may govern because the precipitating cause of the accident, foam striking the left wing, occurred during liftoff from Kennedy Space Center. CAIB REPORT, *supra* note *, at 31–34. On the other hand, Texas law may govern in potential *Columbia* litigation because the majority of the shuttle

However, a typical *prima facie* negligence claim in most jurisdictions requires proof of duty, failure to exercise reasonable care, causation (both factual and proximate), and harm.⁵⁰ While the duty and harm elements are readily apparent,⁵¹ it is likely that the Government as a defendant would challenge accusations that NASA managers failed to exercise reasonable care and that such a failure caused the astronauts' deaths.

Representatives of the *Columbia* crew may respond to the Government's challenges by arguing that NASA failed to exercise reasonable care by (1) "flying the Shuttle with a known problem that violated design requirements,"⁵² (2) failing to investigate the potential damage caused by the foam,⁵³ and (3) failing to attempt a repair or rescue mission.⁵⁴ The conduct of several NASA managers in response to the known foam loss problems demonstrates not only a failure to exercise reasonable care, but also a failure to conform to the Administration's own safety guidelines and has, in retrospect, been admittedly described as conduct constituting "serious error" by NASA managers.⁵⁵ While the lives of seven astronauts depended upon a safe vehicle to bring them home, NASA managers ignored warnings that a "potential catastrophic event" could occur and essentially did nothing despite the known hazards of their inaction.⁵⁶

The culpability of NASA's management for the tragedy is reinforced by their failure to attempt a rescue or repair mission to save the STS-107 crew.⁵⁷ For example, the Board found that NASA

broke apart over Texas and because responsibility for the mission passed to the Flight Director at Johnson Space Center in Houston, Texas once the shuttle left the launch pad. *Id.* at 32, 44–45.

50. RESTATEMENT (THIRD) OF TORTS §§ 3–4, 6 (Discussion Draft 1999).

51. For example, a court would likely find that NASA managers owed the astronauts a duty to exercise reasonable care in making decisions that affected the integrity of the vehicle in which the astronauts traveled. Furthermore, the "harm" element is likely established because the astronauts died as a result of the shuttle disintegrating.

52. CAIB REPORT, *supra* note *, at 121; *see supra* Part II.D (summarizing the Board's findings with regard to NASA's complacency towards foam-shedding).

53. *See supra* Part II.D (discussing the Board's findings regarding NASA's failure to adequately investigate the extent of shuttle damage resulting from the foam strike).

54. *See* CAIB REPORT, *supra* note *, at 173–74 (discussing the feasibility of a rescue or repair mission).

55. *Id.* at 122–31 (describing NASA's response to foam-loss events during *Columbia's* final flight and preceding liftoffs).

56. *Id.* at 140–72 (explaining how NASA's decisionmaking during the flight of STS-107 contributed to the accident).

57. *Id.* at 173–74. The Board found that one "latent assumption held by Shuttle managers during and after STS-107 [was] that even if the foam strike had been discovered, nothing could have been done." *Id.* at 121. This observation is supported by a personal note obtained by the Board, which states that "Linda Ham said [imagery] was

personnel could have worked around-the-clock to prepare the space shuttle *Atlantis* for launch by February 10 without skipping any necessary testing.⁵⁸ With four astronauts on board, *Atlantis* could have rendezvoused with *Columbia* by February 15, rescued the STS-107 crew, and returned to Earth.⁵⁹ According to the Board, such an operation would have been "challenging but feasible."⁶⁰ The astronauts' lives could have been saved had Program managers been able to "unequivocally determine . . . that there was potentially catastrophic damage to the left wing" prior to Wednesday, January 22, and initiated plans for a rescue or repair mission.⁶¹

While foam striking *Columbia's* left wing at liftoff was the physical cause of the accident,⁶² prospective plaintiffs must argue that the failure of NASA employees to rectify the damage was both a factual and proximate cause of the crewmembers' deaths.⁶³ If NASA managers had acted upon the knowledge that *Columbia* was potentially damaged by the foam strike at liftoff, the crew might have survived. NASA's failure to act despite substantial risk to the lives of the *Columbia* crew not only demonstrates a failure to exercise reasonable care, but can also be blamed for causing the resulting catastrophe.⁶⁴ Given the opportunity to present such arguments, prospective *Columbia* plaintiffs appear to have sufficient evidence to establish the necessary elements of a negligence cause of action.

IV. NASA'S HISTORY OF DISASTERS

A. *Echoes of Challenger in Columbia*

In many ways the events of February 1, 2003 echoed those of January 28, 1986, when the *Challenger* space shuttle exploded

no longer being pursued since even if we saw something, we couldn't do anything about it. The Program didn't want to spend the resources." *Id.* at 154.

58. *Id.* at 173-74 (noting that NASA was already preparing *Atlantis* for a March 1 launch).

59. *Id.* (observing that as of January, twenty-three eligible astronauts were ready and available to execute the rescue operation aboard *Atlantis*).

60. *Id.* at 174.

61. *Id.*

62. *Id.* at 49 (identifying the foam strike as the physical cause of the accident). The Board also considered and ruled out numerous other factors, such as weather, willful damage, and the *Columbia's* possible encounter with micrometeoroids or orbital debris, as contributing causes of the accident. *Id.* at 85-95; *see also id.* at 203 (stating that an analysis of organizational causes is necessary to explain the *Columbia* disaster).

63. *See supra* note 50 and accompanying text (delineating the requisite elements, including causation, for a tort claim sounding in negligence).

64. CAIB REPORT, *supra* note *, at 97 (blaming the "basic values, norms, beliefs, and practices" of NASA employees for the accident's occurrence).

only seventy-three seconds after liftoff from Kennedy Space Center in Florida.⁶⁵ Like their *Columbia* successors, all seven members of the *Challenger* crew died.⁶⁶ In the aftermath of both events, television reports and newspapers repeatedly showed fiery images of the space shuttles' remains rapidly descending against blue morning skies.⁶⁷ President Reagan and President Bush respectively addressed the shocked nation, which grieved the loss of each shuttle's crew.⁶⁸ Reviewing the events following previous NASA catastrophes provides a historical context for discussions relating to compensating the families of the doomed STS-107 crew.

B. Apollo I: NASA's First Lesson in Loss

Unfortunately, NASA's history of tragic events is not limited to the *Challenger* and *Columbia* disasters.⁶⁹ NASA first experienced the loss of astronaut life aboard a space vessel in 1967 when an electrical fire swept through the capsule of the *Apollo I* during a ground test.⁷⁰ All three astronauts, Virgil I. "Gus" Grissom, Roger B. Chaffee, and Edward H. White, died while trapped inside the capsule.⁷¹ Almost four years after the *Apollo I* fire, Betty Grissom, one of the *Apollo I* widows, filed a lawsuit against North American Aviation (NAA), the *Apollo I* program's prime contractor.⁷² The lawsuit sought damages for the seventeen seconds of pain and suffering that her husband

65. *Id.* at 99; *see id.* at 195 (noting that "Board member Dr. Sally Ride . . . observed that there were 'echoes' of *Challenger* in *Columbia*"); *see also* Beckman, *supra* note 49, at 249 (describing the *Challenger* explosion).

66. CAIB REPORT, *supra* note *, at 99.

67. *See, e.g.*, Editorial, *Mourning Columbia: Spaceflight Catastrophe a Hometown Tragedy Here*, HOUS. CHRON., Feb. 1, 2003, Extra Edition, at 4X.

68. Address to the Nation on the Explosion of the Space Shuttle *Challenger*, 1 PUB. PAPERS 94 (Jan. 28, 1986), available at <http://www.reagan.utexas.edu/resource/speeches/1986/12886b.htm> (last visited Apr. 14, 2005); Address to the Nation on the Loss of Space Shuttle *Columbia*, 39 WEEKLY COMP. PRES. DOC. 151 (Feb. 1, 2003).

69. *See Astronauts Killed in the Line of Duty*, ST. PETERSBURG TIMES, Feb. 4, 2003, at 8A (indicating that ten astronauts were killed during space missions prior to the *Challenger* explosion).

70. Nicholas C. Chriss, *Apollo Widow Urges Shuttle Families to Sue*, HOUS. CHRON., Jan. 20, 1987, at 1A (chronicling the *Apollo I* accident and documenting a plea for *Challenger* families to sue).

71. *Id.*

72. *Id.*

endured prior to perishing in the fire.⁷³ Mrs. Grissom eventually settled with NAA for \$350,000.⁷⁴

C. Challenger Settlements

By the first anniversary of the *Challenger* disaster, families of four of the seven crewmembers had reached multimillion dollar settlement agreements with the Justice Department in exchange for a release of "all future claims" against NASA, the government, or any government contractor possibly involved with the *Challenger* disaster.⁷⁵ The government's payout included substantial contributions made by Morton Thiokol, Inc.,⁷⁶ the government contractor that manufactured and supplied NASA with the O-rings that formed "the joint and seal between the two lower segments of the [*Challenger's*] right Solid Rocket Booster."⁷⁷ The Rogers Commission, created to investigate the *Challenger* explosion, concluded that the failure of a rubber O-ring was "the physical cause of the accident."⁷⁸ Representatives of two other astronauts soon accepted settlement offers from Morton Thiokol for "substantial" amounts.⁷⁹ The widow of *Challenger* pilot Michael J. Smith filed the seventh suit, the only one that did not lead to a settlement with NASA.⁸⁰

73. *Id.*; cf. *Grissom v. N. Am. Aviation, Inc.*, 326 F. Supp. 465, 468 (M.D. Fla. 1971) (dismissing Mrs. Grissom's claim against North American Aviation for wrongful death because the statute of limitations expired two years after Mr. Grissom's death). Mrs. Grissom's suit seeking damages for pain and suffering was subject to a four-year statute of limitations; the suit was filed only three days before the four-year deadline. *Chriss*, *supra* note 70.

74. *Chriss*, *supra* note 70 (noting also that "[t]he two other Apollo widows received payments of \$125,000 apiece from North American Aviation as a result of Mrs. Grissom's legal action").

75. Glenn Elsasser, *4 Challenger Claims Settled*, CHI. TRIB., Dec. 30, 1986, Sports Final Edition, § 1, at 1; see also Warren E. Leary, *Families of 4 Astronauts Received \$7.7 million in Shuttle Settlement*, N.Y. TIMES, Mar. 8, 1988, at A1 (listing the four families as those related to astronauts Bruce Jarvis, Christa McAuliffe, Ellison Onizuka, and Francis Scobee).

76. Elsasser, *supra* note 75 (indicating that such an arrangement between the government and Morton Thiokol, Inc. was negotiated under an agreement separate from the one involving the four families' settlements).

77. CAIB REPORT, *supra* note *, at 99-100 (explaining the physical cause of the *Challenger* explosion).

78. *Id.* (observing that the Rogers Commission "also noted a number of NASA management failures that contributed to the catastrophe").

79. *Challenger Victim's Family Settles Suit Against Thiokol*, J. COM., May 19, 1987, at 13A (describing the settlement between the family of *Challenger* astronaut Ronald McNair and Morton Thiokol, Inc.); *Resniks, Thiokol Settle*, HOUS. CHRON., Feb. 18, 1988, § 1, at 4 (describing the multimillion dollar settlement between Morton Thiokol, Inc. and "Marvin and Betty Resnik, the parents of *Challenger* astronaut Judy Resnik").

80. See *Smith v. Morton Thiokol, Inc.*, 712 F. Supp. 893, 899-900 (M.D. Fla. 1988) (holding in part that the *Feres* doctrine barred Mrs. Smith's Federal Tort Claims Act

D. Challenger *Litigation*: *Smith v. Morton Thiokol, Inc.*

On July 15, 1986, almost six months after the *Challenger* exploded over the Atlantic, Jane Smith filed a \$15 million claim against the United States alleging that NASA was negligent in the launch.⁸¹ Mrs. Smith further alleged that “NASA had made ‘terrible judgments’ and shown ‘shockingly sparse concern for human life.’”⁸² Specifically, Mrs. Smith’s six-count complaint sought damages from three defendants: the United States, Morton Thiokol, Inc., and Lawrence B. Mulloy, the manager of NASA’s “Rocket Booster Program at Marshall Space Flight Center.”⁸³ Mrs. Smith also sought equitable relief permanently enjoining Morton Thiokol from supplying solid rocket boosters to NASA and from participating further in the Shuttle Program.⁸⁴

In filing her claims against the United States, a government contractor, and a civilian federal employee, Mrs. Smith relied on the Federal Tort Claims Act (FTCA),⁸⁵ which allows for the United States to bear liability in tort “in the same manner and to the same extent as a private individual under like circumstances.”⁸⁶ The defendants responded that the FTCA was subject to numerous exceptions.⁸⁷ Because Michael Smith was a captain in the U.S. Navy at the time of the accident,⁸⁸ the relevant limitation to the FTCA’s waiver of sovereign immunity was the *Feres* doctrine, which, according to the *Smith* court, bars FTCA suits filed “on behalf of a service person killed incident to service even if the alleged negligence was by civilian employees of the federal government.”⁸⁹ Mrs. Smith argued, however, that the *Feres* doctrine did not bar her FTCA suit because her husband’s death was not incident to his service in the U.S. Navy.⁹⁰ The court rejected Mrs. Smith’s argument and explained that

claims against the United States); Beckman, *supra* note 49, at 249–50.

81. Beckman, *supra* note 49, at 249–50.

82. William J. Broad, *Challenger Families Cope with Grief, Legal Action and Attention*, N.Y. TIMES, Jan. 6, 1987, at C1 (quoting Jane Smith).

83. *Smith v. United States*, 877 F.2d 40, 40–41 (11th Cir. 1989) (describing Mulloy’s involvement in the litigation); *Smith*, 712 F. Supp. at 894–95 (listing the defendants in Mrs. Smith’s negligence action).

84. *Smith*, 712 F. Supp. at 900.

85. *Id.* at 895.

86. 28 U.S.C. § 2674 (2000); *see infra* Part V.B (discussing the FTCA).

87. *Smith*, 712 F. Supp. at 895.

88. *Court Upholds Decision on Challenger Lawsuit*, J. COM., Feb. 21, 1990, at 13A.

89. *Smith*, 712 F. Supp. at 895 n.2; *see Feres v. United States*, 340 U.S. 135, 138, 146 (1950) (resolving the conflict among the circuit courts as to the proper procedure for suits filed under the FTCA involving a wrong sustained while on active military duty); *see also infra* Part V.B.2.b (discussing the *Feres* doctrine as a limitation to FTCA suits).

90. *Smith*, 712 F. Supp. at 896.

applying the *Feres* doctrine under these circumstances was consistent with previous articulations of the rationales for so limiting the waiver of sovereign immunity under the FTCA.⁹¹ The court also dismissed Mrs. Smith's claim for equitable relief enjoining Morton Thiokol from participating in the Shuttle Program by finding that Mrs. Smith lacked standing to bring such an action.⁹²

On February 22, 1988, the district court filed its order dismissing all of Mrs. Smith's claims against the United States.⁹³ The Eleventh Circuit Court of Appeals affirmed, and the Supreme Court denied Mrs. Smith's petition for a writ of certiorari.⁹⁴ Mrs. Smith eventually settled with Morton Thiokol for an undisclosed amount.⁹⁵

V. CURRENT LAW AFFECTING CLAIMS AGAINST THE U.S. GOVERNMENT FOR NASA'S NEGLIGENCE⁹⁶

A. *International Law*

In recognition of the need to establish international rules and procedures ensuring "a full and equitable measure of compensation to victims of" damage caused by space-related

91. *Id.* at 898–900; *see infra* Part V.B.2.b (discussing the rationales for the *Feres* doctrine).

92. *Smith*, 712 F. Supp. at 900.

93. *Id.* at 893, 900.

94. *Smith v. United States*, 877 F.2d 40, 42 (11th Cir. 1989), *cert. denied*, 493 U.S. 1069 (1990). The Eleventh Circuit also upheld a subsequent order by the district court dismissing Mrs. Smith's claims against defendant Lawrence B. Mulloy, the manager of NASA's Rocket Booster Program, on the grounds that the *Feres* doctrine also barred "suit on a state law tort claim against civilian government employees when injury to a person in military service occurs during activity incident to military duty." *Smith*, 877 F.2d at 41.

95. Jo Ann Zuniga, *Deal Does Not Clear Thiokol, Smith Says*, HOUS. CHRON., Aug. 24, 1988, at 5A.

96. Evaluating the viability of claims filed by representatives of the STS-107 crew is necessary, of course, only if such representatives exist and only if they possess the desire to pursue litigation as a means of obtaining compensation. The seven members of the *Columbia* crew left behind two husbands, four wives, and twelve children. Charisse Jones & Traci Watson, *Families Bear the Human Cost of Touching Space*, USA TODAY, Jan. 29, 2004, at 1A. However, as of January 20, 2005, it appears as if no lawsuits have been filed on behalf of any of the lost crewmembers. Furthermore, some family members have indicated that they are unlikely to assume adversarial positions in a legal battle against NASA. *See* Chelsea J. Carter, *Columbia Widow Says Shuttles Must Fly Again: Evelyn Husband Worries NASA Will Be Treated Unfairly*, HOUS. CHRON., June 8, 2003, at 2A (quoting a speech given by Mrs. Husband, the widow of Commander Rick Husband, in which she stated, "I don't want to see NASA hammered over issues that are irrelevant or unfair' . . . 'I just don't want there to be a witch hunt just for the sake of a national television audience . . . to see NASA get pummeled"). Whether there are any plaintiffs willing to initiate litigation against NASA remains undetermined.

accidents, the United States entered into the Convention on International Liability for Damage Caused by Space Objects (the "Liability Convention").⁹⁷ Article I of the Liability Convention defines "damage" as "loss of life, personal injury or other impairment of health; or loss of or damage to property," and includes a "launch vehicle" in the definition of a "space object."⁹⁸ Thus, the Liability Convention governs any international liability issue arising out of the *Columbia* space shuttle catastrophe.⁹⁹

Article II of the Liability Convention mandates that the United States "shall be absolutely liable to pay compensation" to injured parties to the extent that any damage was caused by the *Columbia* "on the surface of the earth or to aircraft in flight."¹⁰⁰ However, because the *Columbia* space shuttle broke apart at an altitude exceeding 200,000 feet¹⁰¹ and not on the surface of the earth, the United States "shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible."¹⁰² Therefore, any of the representatives of the STS-107 crew seeking recovery under the Liability Convention must prove that NASA, or some other party for whom the United States is responsible, was at fault in causing the *Columbia* accident.

To the misfortune of potential claimants, however, the requirement of establishing fault is not the most substantial barrier to recovery under the Liability Convention.¹⁰³ In fact, the Liability Convention excludes recovery for claims of damage caused by the United States to U.S. nationals,¹⁰⁴ which includes six of the seven crewmembers. Furthermore, relief is also barred for claims alleged by a foreign national who is participating in the operation of the space object.¹⁰⁵ Thus, it appears that the Liability Convention provides no compensation to the *Columbia*

97. Convention on International Liability for Damage Caused by Space Objects, opened for signature Mar. 29, 1972, pmbl., 24 U.S.T. 2389, 2391, 961 U.N.T.S. 187, 188–89 (entered into force Oct. 9, 1973) [hereinafter Liability Convention].

98. *Id.* 24 U.S.T. at 2392, 961 U.N.T.S. at 189.

99. See Lucy & Smith, *supra* note 4, at 3 (stating that the Liability Convention is "[t]he obvious starting point for any analysis of legal liability for the Columbia disaster").

100. Liability Convention, *supra* note 97, 24 U.S.T. at 2392, 961 U.N.T.S. at 189.

101. CAIB REPORT, *supra* note *, at 41 (graphing the descending altitudes of *Columbia* along a re-entry trajectory timeline).

102. Liability Convention, *supra* note 97, 24 U.S.T. at 2392, 961 U.N.T.S. at 190 (stating that proof of fault on behalf of the launching State is required in any claim regarding damage "caused elsewhere than on the surface of the earth" or during a collision of space objects).

103. Lucy & Smith, *supra* note 4, at 3–4 (pointing out the limitations to recovery present in the Liability Convention).

104. Liability Convention, *supra* note 97, 24 U.S.T. at 2395, 961 U.N.T.S. at 191.

105. *Id.* 24 U.S.T. at 2395, 961 U.N.T.S. at 191.

crew's surviving relatives—including those of Israeli Colonel Ilan Ramon, as he was certainly a participant in the *Columbia* Space Shuttle Program.¹⁰⁶ Apparently, the only fathomable claimant to whom the Liability Convention may pertain to is a non-U.S. citizen injured by debris falling on the ground.¹⁰⁷

B. U.S. Law

1. *Federal Tort Claims Act.* In order to file suit "against the United States in federal court, a plaintiff must [first] identify a statute that confers subject matter jurisdiction on the district court and a federal law that waives the [United States's] sovereign immunity."¹⁰⁸ Accordingly, the starting point for all tort claims naming the United States as a defendant is the FTCA, which provides for a limited waiver of sovereign immunity in certain cases.¹⁰⁹ In relevant part, the FTCA allows for payment of damages for injury or death caused by a wrongful or negligent act or omission of a U.S. employee acting within the scope of employment when the United States, if a private person, would be liable according to "the law of the place where the act or omission occurred."¹¹⁰ However, as was the case with the Liability Convention discussed above, the promises of the FTCA to compensate victims of government employees' negligence quickly

106. See CAIB REPORT, *supra* note *, at 27, 29 (explaining that as part of a joint U.S.-Israeli space experiment a colonel in the Israeli Air Force, Ilan Ramon, was a part of the *Columbia* STS-107 mission).

107. See Lucy & Smith, *supra* note 4, at 3–4 (discussing the limited utility of the Liability Convention to the survivors of the *Columbia* disaster and further noting that a non-U.S. citizen injured by falling *Columbia* debris would have to assert a claim within the agreement's one-year statute of limitations, which expired on February 1, 2004); see also Liability Convention, *supra* note 97, 24 U.S.T. at 2396, 961 U.N.T.S. at 191 (prescribing that a claim for compensation be brought within "one year following the date of the occurrence of the damage or the identification of the launching State which is liable").

108. *Clark v. United States*, 326 F.3d 911, 912 (7th Cir. 2003); see also *United States v. Shaw*, 309 U.S. 495, 500–01 (1940).

[W]ithout specific statutory consent, no suit may be brought against the United States. . . . The reasons for this immunity are imbedded in our legal philosophy. They partake . . . of the political desirability of an impregnable legal citadel where government as distinct from its functionaries may operate undisturbed by the demands of litigants.

Shaw, 309 U.S. at 500–01.

109. 28 U.S.C. § 2679 (2000) (establishing that the FTCA is the exclusive remedy for torts committed by federal government employees acting within the scope of their official duties); see also Beckman, *supra* note 49, at 255–56 (analyzing the FTCA and stating that "the FTCA is the exclusive and sole remedy available for injury caused by the negligent actions of the United States or its employees in outer space").

110. 28 U.S.C. § 1346(b)(1).

lose force in light of numerous exceptions limiting the government's liability.¹¹¹ For the purposes of a suit filed on behalf of the *Columbia* crew, the relevant exceptions include the Federal Employees' Compensation Act, the *Feres* doctrine, the "foreign country" exception, and the "discretionary function" exception.¹¹² These barriers to recovery render the FTCA an ineffective instrument for holding NASA liable for the negligent acts and omissions that cost the lives of seven astronauts. While some of the mentioned exceptions allow alternative forms of compensation for the families of the deceased crewmembers, none require NASA to actually acknowledge responsibility for the tragedy.¹¹³ An examination of each exception shows why current law inadequately addresses the liability issues surrounding the *Columbia* tragedy.

2. Barriers to Recovery Under the FTCA.

a. Federal Employees' Compensation Act. The status of each crewmember affects the viability of suits filed on behalf of the *Columbia* crew under the FTCA. For example, if a crewmember can be characterized as a federal employee who died "from personal injury sustained while in the performance of his duty,"¹¹⁴ the crewmember's representatives are barred from filing a suit under the FTCA, and must seek recovery exclusively under the Federal Employees' Compensation Act (FECA).¹¹⁵ Specifically, FECA states that it shall be the exclusive remedy for the employee or his or her legal representatives after the employee's injury or death in the performance of his or her duties.¹¹⁶ For the purposes of FECA, "employee" includes "a civil officer or employee in any branch of the Government of the United States."¹¹⁷ Therefore, representatives of astronaut Kalpana Chawla, the only American civilian employee on *Columbia*, are

111. See Beckman, *supra* note 49, at 257 (pointing out that there are "thirteen specific exceptions within the body of the FTCA, which, if applicable, act as a bar to suit against the United States under the FTCA").

112. See *infra* Part V.B.2 (analyzing each of the four exceptions to recovery under the FTCA implicated in the case of a suit filed on behalf of the *Columbia* disaster victims).

113. See *infra* Part V.B.2 (explaining that although families may be able to receive financial help through avenues other than the FTCA, none of these other avenues would force NASA to admit fault of any kind—something that many families seek).

114. 5 U.S.C. § 8102(a).

115. 5 U.S.C. §§ 8101–8193; see also *Johansen v. United States*, 343 U.S. 427, 439 (1952) (construing FECA as the exclusive remedy of federal civilian employees killed or injured in the scope of their duties).

116. 5 U.S.C. § 8116(c).

117. 5 U.S.C. § 8101(1)(A) (defining "employee" for the purposes of FECA).

barred from suing NASA under the FTCA and must seek recovery exclusively according to FECA.¹¹⁸ Thus, at least with respect to claims filed on behalf of Ms. Chawla, NASA committed the negligent acts and omissions that led to the *Columbia* tragedy with legal impunity.

b. The *Feres* Doctrine. An astronaut's status as a member of the U.S. military also affects claims filed under the FTCA. As discussed above in connection with Mrs. Smith's attempt to sue NASA for damages after her husband's death aboard *Challenger*, the *Feres* doctrine places a significant hurdle in the path of potential *Columbia* plaintiffs.¹¹⁹ The doctrine, a judicially created exception to the FTCA, provides the government with immunity from claims by military personnel for injuries related to their military service.¹²⁰ The potential of the *Feres* doctrine to affect suits filed on behalf of the *Columbia* crew is significant because five of the seven astronauts were affiliated with the U.S. military.¹²¹

One relevant issue presented by the *Feres* doctrine with regard to *Columbia* litigation is whether or not NASA's status as a civilian—rather than a military—agency allows for the characterization of an astronaut's service as potentially "not military."¹²² Unfortunately for prospective plaintiffs, the Supreme Court addressed and dismissed this issue in *United States v. Johnson*—a narrow five-to-four decision.¹²³

Johnson involved the death of Lieutenant Commander Horton Winfield Johnson of the U.S. Coast Guard, whose helicopter crashed into the side of a Hawaiian mountain while he

118. See CAIB REPORT, *supra* note *, at 29 (indicating that Kalpana Chawla, *Columbia*'s Flight Engineer and Mission Specialist, was the only member of the STS-107 not affiliated with a military organization). Should Mrs. Chawla's estate decide to pursue this remedy, FECA outlines specific payment schedules that will provide Mrs. Chawla's spouse or dependent(s) "a monthly compensation equal to a percentage," ranging from ten to seventy-five percent, of her monthly pay. 5 U.S.C. § 8133(a). Such payments shall continue until the recipient attains a specified age, dies, remarries, or otherwise ceases to be dependent. 5 U.S.C. § 8133(b).

119. See *supra* Part IV.D (discussing the *Challenger* litigation).

120. *Feres v. United States*, 340 U.S. 135, 146 (1950).

121. See CAIB REPORT, *supra* note *, at 29 (indicating the respective military rankings of the STS-107 crew—U.S. Air Force Colonel Rick Husband, U.S. Navy Commander William C. McCool, U.S. Air Force Lieutenant Colonel Michael P. Anderson, U.S. Navy Captain David M. Brown, and U.S. Navy Commander (Captain-Select) Laurel Clark).

122. See *Smith v. Morton Thiokol, Inc.*, 712 F. Supp. 893, 896–900 (M.D. Fla. 1988) (rejecting a similar argument presented by the plaintiff), *aff'd*, 877 F.2d 40 (11th Cir. 1989), *cert. denied*, 493 U.S. 1069 (1990); see also *supra* Part IV.D (discussing Mrs. Smith's argument).

123. 481 U.S. 681 (1987).

was responding to a distress call from a lost boat.¹²⁴ The crash was blamed on the negligence of controllers employed by “the Federal Aviation Administration (FAA), a civilian agency of the Federal Government,” who had “assumed positive radar control over [Johnson’s] helicopter.”¹²⁵ Johnson’s widow argued that although her husband’s death occurred “in the course of activity incident to service,” the *Feres* doctrine should not bar her FTCA suit against the FAA because a civilian, not military, government employee committed the tort that resulted in her husband’s death.¹²⁶ In rejecting the plaintiff’s argument that “the military status of the alleged tortfeasor is crucial to the application of the doctrine,”¹²⁷ the Court declined to modify the *Feres* doctrine and emphasized three broad rationales underlying its continued relevance under these circumstances: (1) the federal character of the relationship between the government and military personnel, (2) “the existence of . . . generous statutory disability and death benefits,” and (3) the need to “preserve military discipline and effectiveness.”¹²⁸

In subsequently relying on *Johnson*, the court in *Smith* applied the *Feres* doctrine to *Challenger*-related litigation using a two-part test.¹²⁹ First, the court considered whether the death of the *Challenger* pilot, Commander Michael Smith, occurred during activity incident to his military service.¹³⁰ Second, the court examined whether the *Feres* doctrine rationales, as outlined in *Johnson*, precluded the plaintiff’s FTCA suit.¹³¹ Thus, an understanding of the *Feres* doctrine rationales is imperative to an analysis of the applicability of the *Feres* doctrine in potential *Columbia* litigation.

124. *Id.* at 682–83.

125. *Id.* at 683.

126. *Id.* at 683–84 (quoting *Feres v. United States*, 340 U.S. 135, 146 (1950)).

127. *Id.* at 686.

128. *Id.* at 688–91; *see also* *Smith v. Morton Thiokol, Inc.*, 712 F. Supp. 893, 898–900 (M.D. Fla. 1988) (applying the *Feres* rationales cited in *Johnson* to litigation concerning the *Challenger* accident). In his dissent in *Johnson*, Justice Scalia chided the majority for its reaffirmation of the *Feres* rationales, *see Johnson*, 481 U.S. at 694–701 (Scalia, J., dissenting), and he concluded that “neither the three original *Feres* reasons nor the *post hoc* rationalization of ‘military discipline’ justifies our failure to apply the FTCA as written. *Feres* was wrongly decided and heartily deserves the widespread, almost universal criticism it has received.” *Id.* at 700, 701 n.* (Scalia, J., dissenting) (internal quotation marks omitted) (citing numerous court decisions and academic articles criticizing the *Feres* doctrine).

129. *Smith*, 712 F. Supp. at 896–900.

130. *Id.* at 896–98 (finding that Commander Smith’s service upon the space shuttle was incident to his military service).

131. *Id.* at 898–900 (finding that the *Feres* doctrine applied to the plaintiff’s case and consequently dismissing the case for lack of subject matter jurisdiction).

The first of the three *Feres* doctrine rationales is that "[t]he relationship between the Government and members of its armed forces is 'distinctively federal in character.'"¹³² This rationale originated from the Supreme Court's consideration of two relevant aspects of recovery under the FTCA and military service: (1) liability under the FTCA depends upon the "law of the place where the [negligent] act or omission occurred"; and (2) soldiers have no control over where they are geographically located.¹³³ The Supreme Court rationalized that soldiers' ability to recover should not depend on something over which they have no control.¹³⁴ *Feres*'s progeny regard this rationale as the need for uniformity in compensating injured soldiers.¹³⁵ Instead of suits under the FTCA, "application of the underlying federal remedy that provides 'simple, certain, and uniform compensation for injuries or death of those in armed services' . . . is appropriate."¹³⁶

Prospective *Columbia* plaintiffs may argue that there will be no uniformity in compensation relating to this tragedy because only five of the seven astronauts were members of the U.S. military.¹³⁷ Despite their unity in death, the astronauts are segregated into distinct classifications for compensation purposes. This situation begs the question: Why should the family of Kalpana Chawla receive different compensation for Chawla's death than Laurel Clark's family receives for Clark's death?¹³⁸ Ms. Clark's service in the armed forces in addition to her participation in the space program does not justify the difference in compensation between military and nonmilitary victims of NASA's negligence.¹³⁹ Moreover, limiting compensation to statutory remedies such as those available under FECA and the Veterans' Benefits Act precludes uniform compensation

132. *Feres v. United States*, 340 U.S. 135, 143 (1950) (quoting *United States v. Standard Oil Co.*, 332 U.S. 301, 305 (1947)).

133. *Id.* at 142–43 (quoting 28 U.S.C. § 1346(b) (1946)).

134. *Id.* at 143 (noting that each of the several states and territories of the United States have different provisions governing workers' compensation for disability or death).

135. *See, e.g.*, *United States v. Johnson*, 481 U.S. 681, 689 (1987) (basing the argument of uniformity on the relationship between the injured party and the government).

136. *Id.* (quoting *Feres*, 340 U.S. at 144).

137. *See* CAIB REPORT, *supra* note *, at 29 (listing the military ranks of the *Columbia* crew).

138. *Compare id.* (classifying Kalpana Chawla as a civilian crewmember and Laurel Clark as a military crewmember), *with supra* Part V.B.2.a (discussing the classification of the *Columbia* astronauts as either military or civilian, which determines if FECA or the FTCA applies).

139. *See Johnson*, 481 U.S. at 695–96 (Scalia, J., dissenting) (arguing that "nonuniform recovery cannot possibly be worse than (what *Feres* provides) uniform nonrecovery").

between the *Columbia* crew and those killed in the *Challenger* explosion.¹⁴⁰ Despite the similarities in the accidents, the victims' families are legally bound to accept disparate compensation.¹⁴¹ Private suits under the FTCA provide for greater uniformity in compensation because the parties to such suits would reach settlement agreements similar to those reached in the aftermath of the *Challenger* disaster. Thus, the *Feres* rationale for uniformity in compensation is undermined by the very application of the doctrine itself. Uniformity in compensation is more likely achieved by allowing private tort claims against NASA under the FTCA.

The second rationale for the *Feres* doctrine is that statutory veterans' benefits already provide sufficient compensation for plaintiffs' losses.¹⁴² This rationale arguably makes a soldier's recovery under the Veterans' Benefits Act (VBA) the exclusive remedy of injuries caused by negligent government employees.¹⁴³ Significantly, however, neither the texts of the VBA nor the FTCA indicate any congressional intent to limit recovery to the VBA.¹⁴⁴ Furthermore, the Supreme Court has found FTCA suits filed by servicemen proper even in cases in which the plaintiffs received VBA compensation.¹⁴⁵ Nevertheless, the *Smith* court found that this rationale was implicated in the *Challenger* litigation because "as a result of his death, Commander Smith's dependents are receiving and will continue to receive Veterans' benefits."¹⁴⁶ As of January 20, 2005, it remains unclear if any of the representatives of the five military *Columbia* crewmembers have received veterans' benefits. Whether or not the second *Feres*

140. See *supra* Part IV.C (discussing the multimillion dollar government payouts to the families of the *Challenger* crew).

141. See *supra* Part IV.A (discussing the similarities between the *Challenger* and *Columbia* disasters); see also *supra* Part V.B.2.a (concluding that the exclusive remedy for injured civilian government employees lies with FECA and not the FTCA).

142. *Johnson*, 481 U.S. at 689–90 (commenting that the statutory benefits provided to soldiers are superior to their remedies under the common law and that these benefits are the upper limit of liability for the federal government).

143. *Id.* at 697 (Scalia, J., dissenting) (pointing out the Court's inconsistencies in applying the *Feres* doctrine to VBA and FTCA suits).

144. *Id.* at 697–98 (Scalia, J., dissenting). The Court emphasized in *United States v. Brown* that "Congress had given no indication that it made the right to compensation [under the VBA] the veteran's exclusive remedy[;] . . . the receipt of disability payments . . . did not preclude recovery under the Tort Claims Act." *Id.* at 698 (Scalia, J., dissenting) (first alteration in original) (quoting *United States v. Brown*, 348 U.S. 110, 113 (1954)).

145. *Id.* at 697–98 (citing both *Brown*, 348 U.S. at 111 & n.* and *Brooks v. United States*, 337 U.S. 49, 53–54 (1949)).

146. *Smith v. Morton Thiokol, Inc.*, 712 F. Supp. 893, 898 (M.D. Fla. 1988).

doctrine rationale will be implicated in any future litigation remains undetermined.

The third and final rationale for the *Feres* doctrine stems from judicial concern that tort suits might undermine military discipline and effectiveness.¹⁴⁷ However, even the *Smith* court failed to find this rationale implicated in the *Challenger* litigation.¹⁴⁸ The *Smith* court found that unlike the decedent in *Johnson*, who died "while acting pursuant to standard operating procedures of the Coast Guard," Commander Smith died "while on a mission for NASA, a civilian agency, during which time he was under the direct supervision of NASA, not military, personnel."¹⁴⁹ Nonetheless, because the *Smith* litigation implicated the first two rationales underlying the *Feres* doctrine, the court found that *Feres* applied and dismissed Mrs. Smith's case.¹⁵⁰

Despite arguments to the contrary, the *Feres* doctrine will hinder suits brought by the five potential plaintiffs representing the military members of STS-107. Notwithstanding the absence of explicit language in the FTCA itself, or any evidence of congressional intent to exclude service members injured by the negligence of government employees from the private-suit remedy provided by the FTCA, *Feres* and its progeny effectively preclude service members from exercising this legislative right.¹⁵¹ Thus, compensation for the deaths of *Columbia's* military crewmembers is limited to the arguably diminutive amount of veterans' benefits available under the VBA.¹⁵² Furthermore, as

147. *Johnson*, 481 U.S. at 690–91 (citing *United States v. Shearer*, 473 U.S. 52, 59 (1985)). Interestingly, this rationale was not mentioned in the *Feres* decision. *See id.* at 699 (Scalia, J., dissenting) (stating that "[i]t is strange that Congress' 'obvious' intention to preclude *Feres* suits because of their effect on military discipline was discerned neither by the *Feres* Court nor by the Congress that enacted the FTCA").

148. *Smith*, 712 F. Supp. at 898–99.

149. *Id.* at 899 (internal quotation marks omitted). The *Smith* court also dismissed several other reasons offered by the United States as to why this third rationale is implicated, including that the suit could "require military officers to testify as to each other's decisions and actions," and that the "claims would call into question 'basic choices about the discipline, supervision, and control of a serviceman.'" *Id.* (quoting *Shearer*, 473 U.S. at 58).

150. *Id.* at 898–900.

151. *See Johnson*, 481 U.S. at 692–93 (Scalia, J., dissenting) (arguing in part "that Congress not only failed to provide such an exemption [barring service members from bringing suits under the FTCA], but quite plainly excluded it," and "[r]ead as it is written, this language renders the United States liable to *all* persons, including servicemen, injured by the negligence of Government employees").

152. 38 U.S.C. § 1122 (2000). Families of deceased service members who qualify for veterans' benefits may be "entitled to Dependency Indemnity Compensation [(DIC)], life insurance, and funeral expenses." Jennifer L. Carpenter, Note, *Latchum v. United States: The Ninth Circuit's Four-Factor Approach to the Feres Doctrine*, 25 U. HAW. L. REV. 231,

with FECA, the *Feres* doctrine allows NASA to avoid acknowledging legal responsibility for the negligent acts and omissions that caused the deaths of the *Columbia* crew.

c. The “Foreign Country” Exception. Compensation for NASA’s negligence through the FTCA is limited not only by the status of the *Columbia* crewmembers, but also by the situs of the accident.¹⁵³ The foreign country exception, a third hurdle placed in the path of potential *Columbia* plaintiffs, may prevent a suit if a court determines the accident occurred in outer space.¹⁵⁴ While a court has not specifically addressed the issue of whether or not outer space is a foreign country for the purposes of the FTCA, the applicability of the term to a sovereignless region such as outer space has been the subject of judicial controversy.¹⁵⁵ The FTCA’s explicit statement that it does not waive sovereign immunity to “[a]ny claim arising in a foreign country” initially appears to be fairly straight-forward.¹⁵⁶ However, the simplicity of the exception begins to deteriorate upon inquiry of the meaning of the phrase “foreign country.”¹⁵⁷ The issue originates in the lack of a definition of the term in the text of the FTCA¹⁵⁸ and is further

236–37 (2002) (citations omitted) (describing veterans’ benefits under the VBA). DIC is limited to \$881 per month for all military ranks unless the service member died before 1993 and held a particular position during service or suffered a completely disabling injury for at least eight continuous years before death. 38 U.S.C. § 1311(a)(1)–(3). The VBA also provides that Servicemembers’ Group Life Insurance (SGLI) is automatically provided for active-duty service members in the amount of \$250,000. 38 U.S.C. § 1967(a).

153. 28 U.S.C. § 2680(k) (providing that “[t]he provisions of this chapter . . . shall not apply to . . . [a]ny claim arising in a foreign country”).

154. The line demarcating “territorial air space” from “outer space” is imprecise. See Beckman, *supra* note 49, at 252–55 (discussing various theories of where “outer space” begins). Beckman concludes that the majority rule is that the “boundary exists at the lowest altitude . . . at which artificial earth satellites can remain in orbit”—roughly ninety kilometers (approximately 295,000 feet) above the earth’s surface. *Id.* at 255. *Columbia* first experienced distress upon re-entry at an altitude somewhere between 400,000 and 243,000 feet. CAIB REPORT, *supra* note *, at 38–41. Thus, a court could determine that the accident occurred while the shuttle was in outer space.

155. See *Smith v. United States*, 507 U.S. 197 (1993) (considering various theories on the meaning of the “foreign country” exception to the FTCA); see also Mark Dean, Note, *Smith v. United States: Justice Denied Under the FTCA “Foreign Country” Exception*, 38 ST. LOUIS U. L.J. 553 (1993) (analyzing the arguments presented in the *Smith* decision and other cases considering the FTCA’s foreign country exception); R. Thomas Rankin, Note, *Space Tourism: Fanny Packs, Ugly T-Shirts, and the Law in Outer Space*, 36 SUFFOLK U. L. REV. 695, 699–701 (2003) (examining the Antarctica situation’s potential impact on litigation involving outer space incidents when the U.S. government is named as a defendant).

156. 28 U.S.C. § 2680(k).

157. See Beckman, *supra* note 49, at 256–64 (chronicling the debate over the appropriate meaning that should be assigned to the phrase foreign country in application of the FTCA).

158. 28 U.S.C. § 2671 (defining only the phrases “Federal agency,” “Employee of the

complicated by two lower court rulings providing conflicting definitions of a foreign country in this context.¹⁵⁹

In *Beattie v. United States*, representatives of victims of an Air New Zealand flight that crashed in Antarctica sued the United States under the FTCA.¹⁶⁰ The suit alleged that the United States was negligent in selecting, training, and supervising the air traffic personnel at McMurdo Naval Air Station, a facility operated by the United States.¹⁶¹ The plaintiffs' argument that Antarctica, as a sovereignless region, was not a foreign country had support in the legislative history of the FTCA, which indicated that the exception was established out of congressional concern that the FTCA would expose the United States to liability under the laws of other countries.¹⁶² Thus, it appeared that torts committed by federal employees in regions such as Antarctica, which are not subject to the laws of any country, would fall within the purview of the FTCA.¹⁶³ Holding in favor of the plaintiffs, the *Beattie* court stated, "Antarctica is not a foreign country; it is not a country at all; and it is not under the domination of any other foreign nation or country."¹⁶⁴ Antarctica, the court explained, "is an area without any law whatsoever."¹⁶⁵

An Oregon district court came to the opposite conclusion in *Smith v. United States*, which involved a widow's suit under the FTCA for her husband's death that also occurred in Antarctica.¹⁶⁶ John Emmett Smith, employed at the same McMurdo Base involved in the *Beattie* litigation, died after venturing off an approved walking route and falling into a crevasse.¹⁶⁷ His widow argued that the United States "negligently caused her husband's

government," and "Acting within the scope of his office or employment").

159. *Beattie v. United States*, 756 F.2d 91, 100, 105–06 (D.C. Cir. 1984) (holding that Antarctica was not a foreign country under the FTCA); *Smith v. United States*, 702 F. Supp. 1480, 1482 (D. Or. 1989) (holding that Antarctica was a foreign country under the FTCA).

160. *Beattie*, 756 F.2d at 92–93; see also Beckman, *supra* note 49, at 260 (summarizing the facts of *Beattie*).

161. *Beattie*, 756 F.2d at 93.

162. Dean, *supra* note 155, at 561; see also *Smith v. United States*, 507 U.S. 197, 200 (1993) (observing that "Congress enacted the foreign-country exception in order to insulate the United States from tort liability imposed pursuant to foreign law").

163. See *Beattie*, 756 F.2d at 94 (noting that with respect to Antarctica, it may be deduced that the FTCA does apply); see also Dean, *supra* note 155, at 562 (observing that "allowing claims in a sovereignless land such as Antarctica would seem to promote the FTCA's purpose of fair play and justice").

164. *Beattie*, 756 F.2d at 94 (quoting *Beattie v. United States*, 592 F. Supp. 780, 781 (D.D.C. 1984)).

165. *Id.* at 106.

166. *Smith v. United States*, 702 F. Supp. 1480, 1481, 1483–84 (D. Or. 1989).

167. *Id.* at 1483–84.

death by failing to adequately warn him that there were dangerous crevasses in areas off the flagged paths.”¹⁶⁸ Like the *Beattie* plaintiffs, she further argued “that the FTCA was intended to apply to a foreign country without a government and without laws, and that the FTCA does not limit the liability of the United States to acts occurring within the territorial boundaries of the United States.”¹⁶⁹ The Oregon district court, however, held that Antarctica was a foreign country, and therefore, the suit was barred under the FTCA.¹⁷⁰ The Ninth Circuit affirmed the district court’s decision, and the Supreme Court, recognizing the conflicting *Smith* and *Beattie* rulings, granted certiorari to resolve the issue.¹⁷¹

The Supreme Court affirmed the Ninth Circuit’s holding in *Smith* and explained that even though Antarctica is not a “country” in the sense that it was not controlled by a foreign power and has no recognized government, it is still a foreign country for the purposes of the FTCA.¹⁷² Otherwise, the Court explained, provisions of the FTCA would not make sense.¹⁷³ The Supreme Court’s holding in *Smith* is significant for potential *Columbia* plaintiffs, because outer space—like Antarctica—is a sovereignless region; therefore, suits seeking compensation for injuries sustained during an accident occurring while the *Columbia* was in outer space likewise fall into the foreign country exception of the FTCA.¹⁷⁴

Thus, even if prospective *Columbia* plaintiffs make it past the FECA and *Feres* hurdles, the fact that the *Columbia* may have disintegrated while in the sovereignless region of outer space appears to bar an FTCA suit against the government for NASA’s negligence.¹⁷⁵ In addition to further limiting the FTCA’s ability to provide an adequate legal remedy for the *Columbia* astronauts’ deaths, the foreign country exception provides one more opportunity for NASA to escape accountability for the negligence that caused this tragedy.

168. *Id.* at 1481.

169. *Id.*

170. *Id.* at 1482–83.

171. *Smith v. United States*, 507 U.S. 197, 199–200 (1993); *see also Beckman, supra* note 49, at 260–61 (chronicling the procedural posture of *Smith*).

172. *Smith*, 507 U.S. at 201–02 (stating that “the commonsense meaning of the term [country] undermines petitioner’s attempt to equate it with ‘sovereign state’”).

173. *Id.* at 201–03; *see also Beckman, supra* note 49, at 261–62 (reiterating how the Court concluded that such a result would be inconsistent and nonsensical).

174. *See Beckman, supra* note 49, at 264 (linking the “far reaching” ramifications of the *Smith* decision to suits by U.S. citizens injured while in outer space).

175. *See id.* (emphasizing this possible outcome within the context of the space shuttle *Challenger* accident).

d. "Discretionary Function" Exception. Notwithstanding suits dismissed under the FTCA's foreign country exception, FECA and the *Feres* doctrine apparently bar suits filed by the families of six of the seven STS-107 crewmembers.¹⁷⁶ The family of the seventh astronaut, Israeli Colonel Ilan Ramon, does not appear to be barred from filing suit against NASA under the FTCA.¹⁷⁷ However, the Ramon family would nevertheless face a tough legal battle because the discretionary function exception to the FTCA's waiver of sovereign immunity presents a substantial remaining obstacle in their path to the courtroom.¹⁷⁸

The text of the FTCA provides an explicit exception for "[a]ny claim . . . based upon the exercise or performance or the failure to exercise or perform a discretionary function or duty on the part of a federal agency or an employee of the Government, whether or not the discretion involved be abused."¹⁷⁹ This exception is a product of Congress' desire to "prevent judicial 'second-guessing' of legislative and administrative decisions grounded in social, economic, and political policy through the medium of an action in tort."¹⁸⁰ If the government can effectively argue that NASA personnel were exercising their discretion in making the decisions leading up to the *Columbia* catastrophe, then a court will likely find that the case is barred under the FTCA.

The Supreme Court has devised a two-part test to determine whether or not a government employee's negligent action is considered discretionary.¹⁸¹ First, the action must have been the product of judgment or choice (i.e. the action was not specifically

176. See *supra* Part V.B.2.a (describing the impact of FECA on a claim filed on behalf of Kalpana Chawla); *supra* Part V.B.2.b (describing the impact of *Feres* on claims filed on behalf of Rick Husband, William McCool, Michael Anderson, David Brown, and Laurel Clark).

177. Lucy & Smith, *supra* note 4, at 4 (noting that it is ironic that the only apparent litigant allowed under the FTCA is the family of a foreign citizen, Ilan Ramon).

178. *Id.* at 4–5 (noting also that "the existence of a Status of Forces Agreement between the United States and Israel" may further complicate any possible FTCA suit brought by the Ramon family against NASA); see also Rankin, *supra* note 155, at 701 (stating that Ilan Ramon "may have also signed a waiver agreeing not to hold the U.S. government liable for harm to him as a result of the *Columbia* mission").

179. 28 U.S.C. § 2680(a) (2000); see also Lucy & Smith, *supra* note 4, at 5 (commenting that "the discretionary function exception to the FTCA can (and does) provide an exceptionally large loophole through which the federal government can escape liability").

180. *United States v. Varig Airlines*, 467 U.S. 797, 814 (1984).

181. *Berkovitz v. United States*, 486 U.S. 531, 536–37 (1988); see also Tarik Abdel-Monem, *Foreign Nationals in the United States Witness Security Program: A Remedy for Every Wrong?*, 40 AM. CRIM. L. REV. 1235, 1258 (2003) (analyzing the *Berkovitz* test for discretionary function).

prescribed in a federal statute, regulation, or policy).¹⁸² Second, that judgment or choice must have been “based on considerations of public policy.”¹⁸³

In *United States v. Varig Airlines*, the Supreme Court applied this test to two consolidated suits filed against the FAA, a civilian organization similar to NASA.¹⁸⁴ The issue in *Varig* was whether the FAA’s allegedly negligent certification of two airplanes satisfied the discretionary function test when both of the planes failed to conform to FAA standards of airworthiness and subsequently experienced deadly fires while in flight.¹⁸⁵ In holding that “[t]he FAA’s . . . mechanism for compliance review is plainly discretionary,” the Court explained that “[d]ecisions as to the manner of enforcing regulations . . . require the agency to establish priorities for the accomplishment of its policy objectives by balancing the objectives sought to be obtained against such practical considerations as staffing and funding.”¹⁸⁶ Furthermore, the discretionary function test was met because FAA employees “took certain calculated risks, but those risks were encountered for the advancement of a governmental purpose.”¹⁸⁷

It is difficult to imagine that a court considering potential *Columbia* litigation will not likewise find that the decisions made by NASA employees leading to the disaster resulted from making judgments in consideration of NASA’s various policy objectives.¹⁸⁸ As a result, the discretionary function exception to suits filed under the FTCA appears to have hammered the final nail in the coffin of private tort claims against the government by the families of the *Columbia* crew—providing NASA one final route to dodge legal responsibility for its negligent acts and omissions.

VI. BLAMING A GOVERNMENT CONTRACTOR

A final glimmer of hope for prospective *Columbia* plaintiffs seeking compensation lies in the possibility of suing a private defendant, instead of the government.¹⁸⁹ Such an argument may

182. *Berkovitz*, 486 U.S. at 536.

183. *Id.* at 536–37.

184. *Varig*, 467 U.S. at 799–803 (summarizing the facts and procedural histories of the two suits consolidated in the *Varig* litigation).

185. *Id.* at 814–15.

186. *Id.* at 819–20.

187. *Id.* at 820.

188. See Lucy & Smith, *supra* note 4, at 5 (arguing that “it is hard to imagine a more discretionary governmental function than space flight or the operation of a spacecraft such as the space shuttle”).

189. *Id.* (noting that plaintiffs have obtained “some relief from the limitations of the FTCA and FECA by suing civilian contractors who created the dangerous condition or

exist if the *Columbia* plaintiffs establish that the foam that damaged *Columbia*'s left wing at liftoff was defectively designed or negligently manufactured by one of NASA's contractors.¹⁹⁰ In this way, *Columbia* litigation could resemble suits filed after the *Apollo I* and *Challenger* disasters in which the victims' families sought damages from suppliers of defective shuttle components.¹⁹¹ Nevertheless, suing a government contractor is a route to recovery with nearly as many hurdles as a suit against the government and will most likely lead plaintiffs to yet another dead end.¹⁹²

The first challenge facing prospective *Columbia* plaintiffs seeking to affix blame on a corporate defendant is finding evidence that the foam was defectively designed or negligently manufactured.¹⁹³ The Board's report suggested that this challenge may be insurmountable because the Board found that the basic quality of the foam does not appear to have contributed to the accident, nor does "[n]egligence on the part of NASA, Lockheed Martin or United Space Alliance . . . appear to have been a factor" in causing the foam loss.¹⁹⁴ Furthermore, although the Board was unable to determine the precise reason why the left bipod ramp lost foam during liftoff, it identified several factors, including wind shear and liquid oxygen sloshing in the external tank, which may have contributed to the foam loss.¹⁹⁵ Accordingly, plaintiffs who choose to litigate on this theory of recovery should not anticipate relying on the Board's findings for evidence of defectively designed or negligently manufactured foam, and should prepare for extensive independent discovery to reveal such evidence. Thus, despite NASA's growing reliance on

instrumentality that [led] to their death or injury"); see also Carrie Johnson, *Shuttle Contractors May Face Liability Suits: But Contract and Court Ruling Could Prevent Repeat of Challenger's \$10 Million in Settlements*, WASH. POST, Feb. 4, 2003, at E1 (quoting Houston attorney Ronald Krist: "The only avenue of relief would be if some corporation put profits before safety").

190. Lucy & Smith, *supra* note 4, at 5.

191. See *supra* Part IV (describing the *Apollo I* litigation against North American Aviation, and the *Challenger* litigation against Morton Thiokol).

192. See Zachary Berman, *The Legal Cleanup: Lawyers Consider Issues Stemming from Crash of Space Shuttle Columbia*, A.B.A. J., Aug. 2003, at 19, 20 (paraphrasing *Challenger* attorney Ronald Krist: "Space law has become less pro-plaintiff over time").

193. See *id.* (suggesting that the *Columbia* plaintiffs may have a case if they can show that "the cause of the accident was a manufacturing defect" (quoting Ronald Krist)).

194. CAIB REPORT, *supra* note *, at 53; see also *id.* at 50 (identifying Lockheed Martin as the contractor responsible for construction of the external tank); *id.* at 17 (explaining that NASA contractor United Space Alliance "essentially conducts the day-to-day operation of the Space Shuttle").

195. *Id.* at 53.

contractors, a private defendant may be difficult for the *Columbia* plaintiffs to identify.¹⁹⁶

Even if the *Columbia* plaintiffs discovered sufficient evidence to affix blame to a particular government contractor, Supreme Court rulings decided since the *Challenger* disaster have limited the liability of such defendants by establishing the “government contractor” defense.¹⁹⁷ In *Boyle v. United Technologies Corporation*, the Court held that a military contractor is immune from liability caused by its performance of a government contract when it can prove “(1) the United States approved reasonably precise specifications [for the contractor]; (2) the equipment conformed to those specifications; and (3) the supplier warned the United States about the dangers in the use of the equipment that were known to the supplier but not to the United States.”¹⁹⁸ It is likely that the contractors supplying foam to NASA for use on the *Columbia* STS-107 mission meet these three factors.¹⁹⁹ The Board’s report indicated that the use of foam on the shuttle resulted from a close collaboration between NASA and private contractors.²⁰⁰ As long as prospective plaintiffs lack evidence indicating that “contractors disregarded instructions from [NASA] in making or installing shuttle parts, or that contractors hid information about product dangers from government workers,” private contractors will likely enjoy the immunity granted them by the *Boyle* decision.²⁰¹

Prospective plaintiffs may, however, argue that the *Boyle* decision should not affect claims against private contractors because *Boyle* was only meant to indemnify suppliers of military, not civilian, equipment.²⁰² Thus, contractors supplying defectively

196. J. Lynn Lunsford & Anne Marie Squeo, *Shuttle Probe Faults NASA Culture*, WALL ST. J., Aug. 27, 2003, at A3 (explaining that approximately “85% of NASA’s total budget in fiscal 2002 . . . went to private contractors”).

197. See *Boyle v. United Techs. Corp.*, 487 U.S. 500, 512–13 (1988) (solidifying the elements of the government contractor defense); see also Berman, *supra* note 192, at 20 (describing how arguments similar to those made by the *Challenger* plaintiffs against Morton Thiokol are probably not available to survivors of *Columbia*’s crew because *Boyle* grants immunity to government contractors that supply government-approved component parts).

198. *Boyle*, 487 U.S. at 512.

199. See Johnson, *supra* note 189 (quoting attorney Philip Lacovara as stating, “[i]t would be hard, I think, for a plaintiff to say what went wrong here was the fault of the manufacturers without any government involvement”).

200. CAIB REPORT, *supra* note *, at 17 (stating that “[t]he Space Shuttle Program employs a wide variety of commercial companies to provide services and products”); *id.* at 50–55 (describing how foam was used in operating the shuttle); Johnson, *supra* note 189 (characterizing the cooperation between NASA and contractors as “extraordinarily close”).

201. Johnson, *supra* note 189 (paraphrasing attorney Ronald Krist).

202. *Boyle*, 487 U.S. at 512; see also Lucy & Smith, *supra* note 4, at 6 (noting that

designed or negligently manufactured parts to NASA, a civilian agency, should not be entitled to the protection of the *Boyle* government contractor defense.²⁰³ The effectiveness of this argument is currently unknown as courts have not yet resolved the question of whether *Boyle* protects civilian government contractors.²⁰⁴

Although seeking damages from a private contractor may be an attractive alternative to suing the government, especially when considering the large payouts made by contractors to victims of the *Apollo I* and *Challenger* tragedies, the lack of evidence supporting allegations of contractor liability and the existence of the *Boyle* government contractor defense will likely cause prospective *Columbia* plaintiffs to once again come up empty-handed.²⁰⁵ Moreover, even if this route provides compensation to the crewmembers' families, it offers no relief to prospective plaintiffs seeking to hold NASA accountable for the accident.

VII. RECOMMENDATIONS & CONCLUSION

The preceding discussion repeatedly concludes that existing laws are inadequate mechanisms for compensating the survivors of the *Columbia* crew and for requiring NASA to acknowledge legal responsibility for the catastrophe. As a possible remedy, Congress should consider amending the National Aeronautics and Space Act²⁰⁶ by inserting a provision waiving sovereign immunity for private tort suits under these circumstances. Such a limited provision could model the language of the FTCA and state: The United States shall be liable for tort claims filed by or on behalf of astronauts injured or killed in the service of the Administration, "in the same manner and to the same extent as a private individual under like circumstances."²⁰⁷

In this way, prospective *Columbia* plaintiffs and similar victims of any future NASA negligence could seek relief through the courts. Such private suits would likely result in settlement agreements similar to those following the *Challenger* accident.²⁰⁸

federal circuits are split on whether or not the *Boyle* government contractor defense should extend beyond noncommercial military products).

203. Lucy & Smith, *supra* note 4, at 6.

204. *Id.*

205. Furthermore, contractual indemnity provisions may further limit contractor liability. *See id.* at 7.

206. 42 U.S.C. §§ 2451–2484 (2000).

207. *See* 28 U.S.C. § 2674.

208. *See supra* Part IV.C (describing the *Challenger* settlement agreements).

Thus, the provision would merely codify an existing practice of the government as demonstrated by the *Challenger* agreements, and help ensure uniform compensation to all injured or killed astronauts and their survivors.

Adding such a provision to the National Aeronautics and Space Act is also reasonable considering the small number of potential plaintiffs. In over thirty years of manned space exploration, twenty-four astronauts have died in the course of their service to NASA.²⁰⁹ Allowing private suits on behalf of such astronauts will not likely lead to a flood of litigation against the government.

Finally, allowing private tort suits on behalf of astronauts injured or killed because of NASA's negligence might help achieve the Columbia Accident Investigation Board's mandate that NASA must alter its management of high-risk activities.²¹⁰ According to the Board, without changes to NASA's risk-management procedures, "we have no confidence that other 'corrective actions' will improve the safety of Shuttle operations."²¹¹ Imposing liability for the consequences of negligent acts or omissions may be the necessary impetus that forces NASA employees to institute and observe the enhanced safety procedures that the Board recommends.

Three days after the *Columbia's* tragic demise, President Bush acknowledged that society remains indebted to the brave astronauts whose lives were sacrificed in pursuit of discovery.²¹² As American space quests become increasingly ambitious, so must our commitment to the safety of the men and women who make the incredible journeys into the "unmapped darkness."²¹³ Part of that commitment means paying for mistakes, not only as the law requires, "but because it's the right thing to do."²¹⁴

Marcy Darsey

209. See *Astronauts Killed in the Line of Duty*, *supra* note 69.

210. CAIB REPORT, *supra* note *, at 97.

211. *Id.*; see also *id.* at 203 (stating that NASA's "[t]op administrators must take responsibility for risk, failure, and safety"). After the writing of this Comment, the *New York Times* published information on internal NASA documents—given to the paper on the condition of anonymity—revealing that NASA is struggling to meet the safety goals set forth by the Board. John Schwartz, *NASA Is Said to Loosen Risk Standards for Shuttle*, N.Y. TIMES, Apr. 22, 2005, at A1 (explaining that the internal NASA "documents suggest that the agency is looking for ways to justify returning to flight even if it cannot fully meet [the Board's] recommendations").

212. Remarks at a Memorial Service, *supra* note 1, at 157; see also CAIB REPORT, *supra* note *, at 3 (quoting President Bush).

213. Remarks at a Memorial Service, *supra* note 1, at 157.

214. Lucy & Smith, *supra* note 4, at 7–8.