

Space-Specific Remedies for Torts in Outer Space: What Path Will U.S. Law Follow?***

On January 28, 1986, the United States not only suffered the personal loss of seven outstanding citizens as a result of the Challenger disaster, it also lost much of its momentum in the space race. Before the next shuttle mission is attempted, the shuttle program will have been suspended for over two and one-half years. An article on the subject of space law, especially now, may thus appear to be only food for thought, and lack practical application for the general legal practitioner. Nevertheless, space-related developments on the international level, as well as in the private sector, demand that U.S. lawyers and the U.S. legal system be prepared for the inevitable civil disputes that will arise as a result of torts that occur in space.

Currently, a number of nations are aggressively marketing launch capabilities to private satellite owners, regardless of the satellite owner's country of incorporation.¹ United States private industry has been given the directive to develop private launch capabilities and facilities to carry

*J.D., 1975, University of Chicago Law School. Partner in the law firm of Adler, Kaplan & Begy, Chicago, Illinois.

Mr. Kaplan is currently serving as Vice Chairman of the International Bar Association Committee on Outer Space.

The author would like to thank Teresa I. Graham, an associate with Adler, Kaplan & Begy, for her invaluable assistance to this article.

***The Editorial Reviewer for this article is Lucinda A. Low.

1. Recently the Soviets have been offering their Proton vehicle as a launch alternative to U.S. corporations, and promising to provide a completely sealed system whereby the Soviets will not be able to access any of the technology involved. The U.S. Government is not currently prepared to allow a U.S. satellite owner to launch a payload on a Soviet launch vehicle due to technology transfer concerns. On March 12, 1988, however, the European Space Agency's Ariane 3 rocket successfully carried French and American communications satellites into orbit. *See* N.Y. Times, Mar. 13, 1988, at 12, col. 1 (U.S. and French satellites in orbit after launching of Ariane rocket).

commercial payloads heretofore deployable only through the Shuttle or the Ariane launch vehicle operated by the European Space Agency.²

While the shuttle program is delayed, cooperative international efforts are well underway to deploy a space station utilizing the resources of the United States, Canada, Japan, Germany, and the European Space Agency.

Although the pace of international and private involvement in space projects increases, other than a few hollow treaties that are discussed later, no law anywhere establishes standards of conduct to regulate the duties, rights, and remedies of those who participate in space-related activities. Accordingly, it may be concluded that lawyers inclined to get involved in space law must wait until a body of law specifically addressing space torts is fashioned. It is a good bet, however, that the U.S. courts will not allow victims of space incidents to go without legal remedies. Rather, the courts, when faced with initial space-related claims, are likely, out of necessity, to fashion standards of conduct and remedies from our existing general body of U.S. law.

The development path of this body of law will be unique from the directions taken by aviation or maritime law. Neither aviation nor maritime technology experienced the long, embryonic, experimental phase inherent in space technology. Our national interest may dictate, at least during the foreseeable future, that laws be enacted that are likely to encourage the further development of space technology. This goal could be accomplished by lowering the duty of care owed or by placing a greater assumption of risk on the space user and traveler than exists in other areas of the law.

This article discusses the nature of the laws and precedents that are likely to be applied by U.S. courts to torts occurring in space and offers a prediction as to the way in which a body of U.S. space law may develop.

I. Nature of the Probable Space Tort

As a starting point, it is helpful to identify the types of events that may give rise to space-related liability. Therefore, we must first formulate the definition of a space tort.

Space has been defined as a location, 100–110 km above sea level.³ It has also been defined as a point in time—at the moment the final hatch

2. Exec. Order No. 12,465, 49 Fed. Reg. 7211 (1984). Commercial expendable vehicles are to be given launch sites through the cooperation of the United States Government. Additionally, the United States Department of Transportation is preparing guidelines for the development of private launch sites. *See also* Chicago Tribune, Feb. 12, 1988, at 1, col. 6 (Reagan announces plans for widespread commercial use of space by private industry).

3. This location was proposed by the USSR at the 1978 COPUOS meeting of the United Nations and rejected by the United States.

to a space vehicle is closed.⁴ The precise moment or place when an event will be considered to have occurred in space for purposes of applying space-specific remedies is likely to evolve on a case-by-case basis. An artificial location boundary, such as 100 km above the earth's surface, is not likely to prove to be practical in all cases, just as the marine league boundary applicable to the Death on the High Seas Act (DOHSA) has not proved practical, or in some instances, rational.⁵

Whether an incident causing damage, injury, or death should be considered a space tort is likely to depend on a number of factors, including the status of the parties, the nature of the operation, the location of the tort, and the time when it occurs. Thus, space law may ultimately be applied to events occurring on the launch pad prior to launch; inside and outside the space vehicle; and up until and including the moment of landing or collision with the earth. Future earth-based recovery or salvage efforts may possibly even fall within the scope of a space-relatedness definition.⁶

Damage or injuries resulting from a space tort may also be varied. Specifically, the damage or injuries may be incurred by the space vehicle, its payload, its occupants, another space vehicle in a collision, or by people or property on the ground. The damage resulting from a space tort may be occasioned by the same range of duty breaches that occur here on earth, such as intentional conduct, gross recklessness, negligence, strict liability, or simply by the ultra-hazardous nature of the product or operation involved.

II. Current State of the Law with Regard to Space Torts

Given the rapid development of space-related projects, a wide range of incidents will inevitably result in space-related damages, injuries or death. Yet, at present, no treaty, statute, or case decision provides space-specific standards of conduct for a space tort.

4. FED. R. CRIM. P 18, § 7. Special Maritime and Territorial Jurisdiction of the United States, Definition of Space, was amended Sept. 21, 1981 to include, "[a]ny vehicle used or designed for flight or navigation in space" and applies "while that vehicle is in flight, which is from the moment when all external doors are closed on earth."

5. Where a death occurred within three miles of shore, the Supreme Court has held that the decedent's dependents may recover for loss of society under a maritime wrongful death remedy. *Sea-Land Servs., Inc. v. Gaudet*, 414 U.S. 873 (1974). No loss of society however, was allowed under DOHSA for a death occurring beyond the three-mile mark. *Mobil Oil Corp. v. Higginbotham*, 486 U.S. 618 (1977).

6. *See* Agreement on the Rescue and Return of Astronauts and the Return of Objects Launched in Outer Space, Apr. 22, 1968, 19 U.S.T. 7570, T.I.A.S. No. 6599, 672 U.N.T.S. 119, 7 I.L.M. 151 (1968).

The international treaties into which the United States has entered create only a national as opposed to a private liability in the event of damage, injury, or death resulting in connection with a space mission.⁷ In particular, the Convention on International Liability for Damage Caused by Space Objects states:

ARTICLE I

For the purposes of this Convention:

- (a) The term "damage" means loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations;
- (b) The term "launching" includes attempted launching;
- (c) The term "launching State" means:
 - (i) A State which launches or procures the launching of a space object;
 - (ii) A State from whose territory or facility a space object is launched;
- (d) The term "space object" includes component parts of a space object as well as its launch vehicle and parts thereof.

ARTICLE II

A launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the earth or to aircraft in flight.

ARTICLE III

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.⁸

This treaty fails to address the myriad of damage scenarios where loss is occasioned other than by the collision of a space vehicle. For example, neither the Weststar and Palapa satellite losses, nor the Challenger accident are covered by this treaty.

7. See Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 U.S.T. 2389, T.I.A.S. No. 7762.

8. 24 U.S.T. at 2391.

At present, the primary regulating force with respect to potential space liabilities is the inclusion of risk-allocation provisions in contracts entered into by participants in space ventures. These contractual clauses, which typically require the purchaser of space hardware to waive all rights of liability against the manufacturer, have for years created a sense of security amongst insurers. The contracts typically contain a complete risk-allocation scheme for potential liability resulting from a space mishap.⁹

The risk-allocation clauses that currently exist in manufacturing contracts have been developed as a result of the broad inter-party waiver language contained in the NASA Launch Service Agreement. The applicable inter-party waiver language is as follows:

NASA and the Customer (the parties) will respectively utilize their property and employees in STS Operations in close proximity to one another and to others. Furthermore, the parties recognize that all participants in STS Operation are engaged in the common goal of meaningful exploration, exploitation, and uses of outer space. In furtherance of this goal, the parties hereto agree to a no-fault, no-subrogation, inter-party waiver of liability pursuant to which each party agrees not to bring a claim against or sue the other party or other customers and agrees to absorb the financial and any other consequences for Damage it incurs to its own property and employees as a result of participation in STS Operations during Protected STS Operations, irrespective of whether such Damage is caused by NASA, the Customer, or other customers participating in STS Operations, and regardless of whether such Damage arises through negligence or otherwise. Thus, the parties, by absorbing the consequences of Damage to their property and employees without recourse against each other or other customers participating in STS Operations during Protected STS Operations, jointly contribute to the common goal of meaningful exploration of outer space.¹⁰

In the past, private corporations utilizing the NASA space transportation system were willing to extend pervasive waivers of liabilities to their own contractors because they perceived that NASA would require these provisions in the Launch Service Agreement. The following inter-party waiver of liability was contained in the contract of sale between Hughes and McDonnell Douglas Corporation, for the purchase of a payload assist module (PAM), to be used on the Government of Indonesia's Palapa B-2 satellite, deployed from the shuttle on February 6, 1984.

9. Although the focus of this article is the space tort, it must be recognized that a significant body of space law will be devoted, as in admiralty, to interpreting the standard clauses in space-specific contracts and space-specific insurance policies as disputes arise as to the meaning of indemnity, waiver, and subrogation provisions. As in admiralty, once these contracted provisions are tested and interpreted, the industry will probably see continued use of these same provisions since it is unlikely corporations will want to risk modified, untested language.

10. NASA/Western Union, Launch Service Agreement for Launch of WESTAR VI deployed from the shuttle on Feb. 3, 1984.

In carrying out this Agreement, the Seller, Buyer, User and NASA will bring to a United States Government installation used for STS Operations their property and employees. The property and employees of each party will be in proximity to the property and employees of each other and of other users of the Space Transportation System. To simplify the allocation of risks among Seller, Buyer, NASA, and 811 users of the Space Transportation System and to make the use of the Space Transportation System feasible for the use and exploration of outer space by all potential users, the parties agree to a no-fault, no-subrogation inter-party waiver of liability under which each party agrees to be responsible for any Damage which it sustains as a result of Damage to its own property and employees involved in STS Operations during such operations, which Damage is caused by Seller, Buyer, NASA, the User, or other users or subcontractors involved in STS Operations during such operations, whether such Damage arises through negligence or otherwise. Thus, if NASA's property, while involved in STS Operations, is damaged by Seller, Buyer, the User, or another user or subcontractor, NASA has agreed to be responsible for that Damage and has agreed not to bring a claim against or sue any user, the Seller, or Buyer. Similarly, if any party's property, while involved in STS Operations, is damaged by Seller, Buyer, NASA, or another user or subcontractor, the party whose property is damaged agrees to be responsible for that Damage and agrees not to bring a claim against or sue NASA or another party. It is the intent of the parties that this inter-party waiver of Liability be construed broadly to achieve the intended objectives.¹¹

When private corporations begin to possess their own launch service capabilities, previously the exclusive province of NASA, these risk allocation schemes are likely to break down. Private corporations offering launch resources will not have the same interest in the all-encompassing liability waivers as NASA, which perceived that the national interest of space exploration was fostered by a no-liability format. Indeed, private launch service providers will likely have an economic incentive to recover a judgment from a launch vehicle user they view as being liable for damage to the vehicle. Future launch service contracts may thus be "waiver free."

Additionally, the survival of risk-allocation provisions has been fostered by the insurance industry, which prefers to place the risk of launch on the satellite insurer who can gauge the risk and charge an appropriate premium. Most first-party satellite insurers are willing to waive their subrogation rights, thus immunizing the third-party product liability insurer who is unable to determine how many of its insured products are likely to be utilized in space ventures during a particular policy period. A number of product insurers further protect themselves by excluding space-related hardware from product liability coverage.

Predictably, as the reliability of space products improves, this general refusal to insure for product liability in the space industry will pass. At

11. Amendment E—Hughes/McDonnell Douglas contract for purchase of PAM for PER-UMTEL's Palapa B-2 Satellite.

that point, obtaining third-party liability insurance for space hardware should be no different from obtaining product liability coverage for aviation products. When this change in the industry occurs, the need for waiver-of-liability provisions in satellite manufacturing contracts will be diminished.

Further, potential liability to third parties, even under the present scheme, cannot always be controlled by contract. While private industry has been somewhat comforted by the U.S. Government's willingness to indemnify any private space participant for third-party exposure beyond that company's policy of insurance, the rapid decline of governmental involvement in space ventures guarantees the elimination of this protection for projects that do not include United States Government participation.¹²

Major, private, space-related corporations that heretofore had no reason—because of waivers of liability and promises of indemnification—to be concerned about the standards of conduct to which they might be held for a space tort must now face the risk of “bet the company” exposure every time they participate in a space venture.¹³ The fact that corporations must face this risk without a clear understanding of the duty a court is likely to impose makes the gamble even greater. It is the possibility that some corporations will refuse to take this gamble, without more clearly established standards of liability, that compels an examination of the law likely to be applied to space torts.

III. Space Law: What Shape and Form?

As private industry plunges headfirst into government-free space ventures, it will be subjected to disputes that U.S. courts will handle as matters of first impression. The body of law that will evolve as a result of these initial decisions is referred to as “space law” for purposes of this article. Space law may take many forms and shapes and may go in many directions. The evolution of new bodies of law, such as aviation and maritime, have developed along three paths, and these routes appear to be the most likely for the growth of space law. First, space law may develop as a purely federal statutory body of law, with rights, remedies, and obligations established by Congress and subject to jurisdiction and interpretation by only the federal courts. Second, space law may develop

12. See also National Aeronautics and Space Administration Authorization Act of 1980, § 308, Pub. L. No. 96-48, 93 Stat. 345 (1979), which allows NASA to indemnify contractors in return for which NASA is named as an insured on the contractor's policy of insurance.

13. No private corporation is likely to have the resources, or the inclination, to offer unlimited indemnity as has the U.S. Government.

in the same manner as has aviation law, with standards of conduct and remedies being fashioned predominantly from state common law, complete with the myriad of duties, rights, and remedies that exist in all fifty states.¹⁴ The third plausible alternative is that space law may develop, as has admiralty law, as a mixture of federal common law and statutory law, with Congress entering the fray when it perceives a deficiency in the federal common law and jurisdiction existing concurrently for most actions with the state and federal courts.

There are arguments to support the likelihood of space law following any one of these three directions. The purpose of this article is not to advocate one over the other, but rather to make predictions based upon the ways in which other bodies of law in this country have developed. Although the development of space law is likely to be unique, we can gain some practical insight by looking to the historical development of the law in other areas.

A. FEDERAL STATUTORY BODY OF LAW

A number of rationales support the prognosis that a federal statutory body of law will ultimately govern space-specific liabilities and remedies. Outer space has been defined by treaty as international territory beyond the sovereign claims of any nation.¹⁵ It could be argued that since space, like the high seas, is a *res communis*, there is no law that applies to an event occurring in space, unless it is covered by international treaty, absent a specific mandate from Congress. If this view is adopted by the courts, and common-law remedies are not available to the victims of space torts, it is predictable that Congress will enact laws governing space-specific liabilities and remedies, since our space treaties do not provide them.

The exploration and commercialization of space is certainly a national interest, and Congress would not run the risk of a states' rights protest if it enacted a federal code governing tortious conduct in outer space. It would clearly be a preemptive right of Congress if Congress chose so to legislate.

Two principal reasons, however, militate against enactment of an all-encompassing federal space code governing space-specific liabilities and

14. An example of the diffusion in state law standards of liability for aviation-related incidents is the law of vicarious liability for owners and operators of aircraft.

15. Treaty of Principles Governing the Activities of States in the Exploration and Use of Outer Space and Other Celestial Bodies (the Other Space Treaty), Oct. 10, 1967, art. 1, 18 U.S.T. 2411, T.I.A.S. No. 6347, 610 U.N.T.S. 205 (1967); *see also* G.A. Res. 34/68, 34 U.N. GAOR Supp. (No. 46) at 17, U.N. Doc. A/34/664, *reprinted in* 18 I.L.M. 1434 (1979) (further clarification of the Other Space Treaty).

remedies. First, is the improbability that the courts would ever refuse to entertain lawsuits that allege space torts even though no federal space code exists. Whether appropriate or not, no court has yet seen fit to dismiss a case on the theory that there is no law that is applicable to actions arising in outer space.¹⁶

Without this compelling reason to step in, Congress is less than likely to enact a space code due to the problem of foreseeability. There is no question that it is easier to develop a common law as events occur and then to codify the emerging standards of conduct as law, rather than attempt to enact laws for events that cannot be predicted. When Congress enacted various federal maritime statutes, it had the benefit of a maritime history as long as history itself. In all probability, Congress will be reluctant to "crystal ball" the potential spectrum of causes of action that could arise in space. Congress is more likely to allow the matters of first impression to be resolved by the courts on a case-by-case basis until deficiencies in standards of conduct, remedies, or the need for uniformity dictate congressional action.

B. STATE LAW

Litigation has already been filed in this country in which attorneys have argued that a space tort is not unique. Accordingly, they argue, a state court should be free to apply its own law to a civil dispute arising from an incident in outer space.¹⁷ Advocates of this position will argue that the failure of an apogee kick motor is no different from the failure of a can opener for purposes of assessing liability; that uniformity of the law is no more necessary for space incidents than for aviation incidents. In aviation actions, the law of an individual state provides the basis for establishing rights, remedies, and duties. It could thus be argued that for space torts, the law to be applied can be determined, as in aviation cases, by virtue of a "significant contacts" or other choice-of-law analysis.

This reasoning could be persuasive to a state court judge in several types of tort actions. Take the example of a ground station operator who fails to communicate a wind shear reading to launch handlers. Will a judge be required to consider any different standard of conduct than the exposure the United States faced with respect to the Delta crash in Dallas, Texas, where it was alleged that wind shear weather information was not reported to the aircraft crew? Likewise, where a space occupant incorrectly deploys a satellite resulting in the destruction of that satellite's sun

16. *Appalachian v. MDAC*, Case No. 481,712 consolidated with Case No. 481,713, Superior Court for the State of California for the County of Orange.

17. *See supra* note 13.

shield, is there a good reason why the standard earth-based definition of negligence should not be applicable?¹⁸

There are certainly specific factual instances where advocates of a state law scheme, like that applicable to aviation incidents (with the odd federal statute or international treaty thrown in),¹⁹ will be able to make a persuasive argument in favor of the application of state law.

C. MIXTURE OF FEDERAL COMMON LAW AND STATUTES

Although it is unlikely that Congress will enact an all-encompassing space code dealing with all potential causes of action arising from a space tort, it is conceivable that as our activities in space increase, Congress will attempt to codify those areas of conduct where actions leading to injury, death, or property damage occur with some frequency. Many believe that civil liabilities and remedies for space torts should be governed by federal law comprised of a mix of federal common law and statutory law.²⁰ This result will be more likely if Congress is not satisfied with the common-law remedies that develop as a result of the initial case decisions.

In many ways, if the law governing space torts evolves to be a mixture of federal common law and statutes, it will be similar to the development of our body of maritime law. In the maritime field, Congress has frequently enacted laws to regulate certain levels of conduct where Congress believed an appropriate standard of care had not been established by case law or where Congress believed an appropriate remedy had not been established in the courts.

In the space field, as our experience base increases, it may also become necessary to regulate certain types of conduct by statute. For example, let us assume that in the next thirty years we encounter a number of instances wherein astronauts, or space travelers, incur injury or death as a result of the conduct of their fellow astronauts or space travelers. Be-

18. On Aug. 27, 1985, the shuttle Discovery launched an Australian communications satellite insured for 60 million dollars on an emergency basis after a sun shield jammed partially open, threatening to free the satellite's inside components and bake its skin. The shield snagged on an antenna atop the satellite when the astronauts opened the sun shade. Although the Discovery crew members were able to use the 50-foot robot arm to nudge open the shade, had the attempt been unsuccessful and had the satellite been a loss, Australia and its insurers would have been barred by the NASA standard contract from seeking any redress from NASA.

19. The Warsaw Convention is an example of an international treaty which provides remedies for aircraft accidents. Warsaw Convention, Oct. 12, 1929, 137 L.N.T.S. 11, U.S.T.S. 876, 49 Stat. 3000, *reprinted in* 49 U.S.C. app. § 1502 (1982).

20. *See* address by J. Hennelly & C. Dombek, *Can Erie v. Tompkins, Survive in Zero Gravity? The Case for a Federal Common Law of Space*, presented to the International Bar Association, New York, New York (Sept. 16, 1986).

cause of the very fragile environment in a space station or space vehicle, the cohabitants of these enclosed outer space living environments would presumably need to maintain the highest degree of care and safety to one another. We may also discover that if the "reasonable man" standard is applied to these situations, we will discourage future participants in space ventures because of a heightened liability potential. It is conceivable that Congress may determine that it is in the United States' national interest to establish a special standard of conduct to apply to a certain class of cases involving space torts in order to encourage, rather than discourage, participation in outer-space ventures.

In the maritime field, liability-related legislation applies to both standards of conduct and remedies. It is probable, however, that the laws enacted by Congress with respect to space torts will not address the remedy side of the question. Maritime law has been distinguished by a history of congressional intervention inspired by Congress's belief that a particular class of maritime victims did not have access to adequate remedies. The Death on the High Seas Act (DOHSA) was enacted in response to the United States Supreme Court's decision in *The Harrisburg* in which the Supreme Court held that there was no remedy in admiralty for wrongful death since a remedy did not exist in common law and because Congress had not enacted a wrongful death admiralty cause of action.²¹

Remedies, however, have changed completely since 1920. Now, state common law and code remedies are so broad that plaintiffs try to avoid the application of DOHSA.²² The predominant effort in Congress is no longer aimed at expanding the legal remedies of the common law but rather at contracting the remedies by virtue of various proposed federal tort reform statutes. Thus, there is not likely to be concern on the federal level as to the sufficiency of remedies if the states are left to their own devices in fashioning their own remedies for space torts.

IV. Conclusion

The rapid privatization and commercialization of space requires that lawyers be prepared for the legal disputes that inevitably will arise out of space activity. The current status of the law in the United States for dealing with potential civil disputes in space is that there are no established space-specific liabilities or space-specific remedies for torts to private persons

21. *The Harrisburg*, 119 U.S. 199 (1886) (admiralty afforded no remedy for wrongful death in the absence of an applicable federal or state statute).

22. *See Offshore Logistics, Inc. v. Tallentire*, 477 U.S. 207, (1985). The plaintiffs in *Offshore Logistics* unsuccessfully attempted to obtain the remedies provided by the Louisiana Wrongful Death Act. The court held that the more restrictive remedies contained in the Death on the High Seas Act were the exclusive remedy.

that may occur in outer space. It is difficult to predict the path of development our body of space law is likely to take because the uniqueness of the space industry argues against reliable comparisons or analogies to any other body of law. Most likely, U.S. space law will develop as a mixture of federal and state law. With respect to the establishment of standards of conduct for space-specific products and activities it is more likely that a federal law will ultimately evolve. With respect to non-space-specific conduct and especially remedies, state law is likely to govern.