



The
Liability Atmosphere
Awaiting the
**Commercial Human
Spaceflight Industry**

TIPS Aviation & Space Law
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The Legal Atmosphere: *Composition*

*** **** Federal Law?

- * Commercial Space Launch Amendments Act of 2004 [*Title 49 US Code § 70101 et seq.*] ?
- * Human Space Flight Requirements for Crew and Space Flight Participants (*14 CFR Parts 401 et seq.*) ?

*** **** International Treaties?

- * 1967 Outer Space Treaty ?
- * 1972 Convention on International Liability for Damage Caused by Space Objects ?

*** **** State Law?

The Legal Atmosphere (cont.):

... *STATE LAW* will likely predominate the liability analysis!

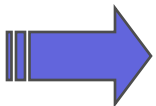
Despite the traditionally federal character of spaceflight activity, liability for human spaceflight accidents will be determined by a given state's *tort law*.

Basic state-based laws of:

* *Negligence*

* *Product liability*









(. . . perhaps derived largely from *aircraft accident cases*)



State tort law is the relevant body of law in terms of a human spaceflight company's ability to economically survive a catastrophic accident, and is therefore the law that a company's risk management decisions should revolve around.

State Law (cont.): Which State's Law?

The States of NewSpace

-  New Mexico
-  California
-  Oklahoma
-  Texas
-  Florida
-  Virginia
-  Wisconsin
-  Alaska



AMERICA'S ROCKET BELT

- 1 SCALED ORBITALICS** - Mojave, California
Scaled Orbital's aerospace engineers have changed the game with innovative airplane designs and, of course, the location of SpaceShipOne.
- 2 XCOR AEROSPACE** - Mojave, California
XCOR's engine developers, researchers, and aviation innovators, creating the power behind the Rocket Racing League.
- 3 MIDWAY INLAND SPACEPORT** - Mojave, California
High up in the California desert, a place where history is made over and over again.
- 4 MOJAVE AIRPORT** - Las Vegas, Nevada
Building infrastructure space habitats and laboratories.
- 5 ARIZONA STATE UNIVERSITY** - Tempe, Arizona
ASU's rocket team for NASA's Mars Orbiter Mission, now racing the Red Planet.
- 6 UNIVERSITY OF ARIZONA** - Tucson, Arizona
ASU's rocket team for NASA's Mars Orbiter Mission, now racing the Red Planet.
- 7 PARAGON SPACE DEVELOPMENT CORPORATION** - Tucson, Arizona
Specializes in orbital control and the support to extreme environments, along to developing key hardware for human-rated spacecraft.
- 8 SPACEPORT AMERICA** - Las Cruces, New Mexico
Home of the annual Spaceport America Cup, as well as the "Rocket Racing League," the American Spaceport Industries and Regio (ASIR) spaceport operations. Work is underway on the first "spaceport built" concept to handle an array of entrepreneurial access to space projects.
- 9 BLUE BRIDGE** - Cary, North Carolina
Aerospace leader Jeff Bezos is refurbishing the New Shepard, a vertical takeoff, vertical landing, orbital program designed to take a crew on a suborbital journey into space from the North Carolina launch site.
- 10 SPACE EXPLORATION TECHNOLOGIES CORPORATION (SpaceX)** - Midway, Texas
Rising rocket engines are the heart of this SpaceX 288 wire leading facility.
- 11 ARMADILLO AIRSPACE** - Mesquite, Texas
Controlled liquid oxygen-ethanol rocket vehicles, with an eye toward piloted suborbital vehicle development.
- 12 OKLAHOMA SPACEPORT** - Broken Bow, Oklahoma
As the future launch site of BlueBird, Oklahoma was first state to get behind building a spaceport for private space flight.

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State Law (cont.): Which State's Law?

Why it matters—

The law from state to state can vary

* Who can be liable for an accident—passive owners?
Independent contractors of the launch provider?

* What is the *qualitative standard* to find a launch product defective -- what is the “*standard of care*”?

* Who is entitled to sue the defendants—just the children? Parents? Siblings?

* What sorts of damages are recoverable—financial well? “Pre-impact fear & suffering”? Punitive damages?

* Are waivers/releases of liability enforceable? Just SFPs’ family members or just the SFPs? Viability of

and of course...

spaceflight company immunity legislation.

HOUSE BILL NO. 3184
Article 24
Spaceflight Liability and Immunity Act.

§ 8.01-227.8. Definitions.

“Spaceflight entity” means any public or private entity holding, either directly or through a corporate subsidiary or parent, a license, permit, or other authorization issued by the United States Federal Aviation Administration pursuant to the Federal Space Launch Amendments Act (49 U.S.C. § 70101 et seq.), including, but not limited to, a safety approval and a payload determination. “Spaceflight entity” shall also include any manufacturer or supplier of components, services, or vehicles that have been reviewed by the United States Federal Aviation Administration as part of issuing such a license, permit, or authorization.

§ 8.01-227.9. Civil immunity for spaceflight entities.

A. Except as provided in subsection B, a spaceflight entity is not liable for a participant injury resulting from the risks of spaceflight activities, provided that the participant has been informed of the risks of spaceflight activities as required by federal law pursuant to federal law and this article, and the participant has given his informed consent that he is voluntarily participating in spaceflight activities after having been informed of the risks of those activities as required by federal law and this article.

§ 8.01-227.10. Warning required.

A. Every spaceflight entity providing spaceflight activities to a participant shall have each participant sign the warning statement specified in subsection B.

B. The warning statement described in subsection A shall contain, at a minimum and in addition to any language required by federal law, the following statement:

“WARNING AND ACKNOWLEDGEMENT. I understand and acknowledge that, under Virginia law, there is no civil liability for bodily injury, including death, emotional injury, or property damage sustained by a participant in spaceflight activities provided by a spaceflight entity if such injury or damage results from the risks of the spaceflight activity. I have given my informed consent to participate in spaceflight activities after receiving a description of the risks of spaceflight activities as required by federal law pursuant to 49 U.S.C. § 70105 and 14 C.F.R. § 460.45. The consent that I have given acknowledges that the risks of spaceflight activities include, but are not limited to, risks of bodily injury, including death, emotional injury, and property damage. I understand and acknowledge that I am participating in spaceflight activities at my own risk. I have been given the opportunity to consult with an attorney before signing this statement.”

C. Failure to comply with the requirements concerning the warning statement provided in this section shall prevent a spaceflight entity from invoking the privileges of immunity provided by this article.

2. That the provisions of this act shall expire on July 1, 2013.



The Million \$ Question...

What will be the *Standard of Care*?

Uncharted Territory. . .

- ** Human Space Flight Requirements for Crew and Space Flight Participants (*14 CFR Parts 401 et seq.*)
- ** NASA standards?
- ** Traditional (aviation) FARs?
- ** Launch permit application process?

Standard of Care (cont.):

for  **Launch Providers**
Manufacturers

Part 460.15: Human Factors
An operator must take the precautions necessary to account for human factors that can affect a crew's ability to perform safety-critical roles, including in the following safety-critical areas—
(a) Design and layout of displays and controls;

Different launch architectures, recovery modes, SFP profiles and marketing/competitive considerations prevent common guidelines at all levels, but the industry is well-served by adopting guidelines to the extent of commonly accepted standards.

accordance with 14 CFR part 87, no more than 12 months prior to the month of launch and reentry.



Standard of Care (cont.):

The Reality

THE FUTURE OF A PERSONAL SPACEFLIGHT COMPANY AFTER A CATASTROPHIC ACCIDENT RIDES ON ITS ABILITY TO SATISFY THE JURY THAT FROM THE TIME IT CONCEIVED OF THE ENTERPRISE THROUGH THE TIME OF THE ACCIDENT, IT BEHAVED AND CONDUCTED ITSELF LIKE A SERIOUS COMPANY THAT RESPECTED THE LIVES OF ITS CLIENTS AND DID ITS ABSOLUTE BEST TO ACKNOWLEDGE AND SAFELY OVERCOME THE HAZARDS INVOLVED.

What Companies Can Do-

Conceptual Elements of a *RISK MANAGEMENT ARCHITECTURE* to Ensure Economic Survival of a Catastrophic Accident

1. *Operational* risk management

- ✦ Prevent the accident
- ✦ Enhance accident survivability

2. *Legal* risk management

- ✦ Prevent the lawsuit

- Releases/waivers of liability
- Indemnification agreements
- Immunity legislation
- *Public relations!*

All as affected
by **choice of law**

RISK MANAGEMENT ARCHITECTURE (cont.):



1. *Operational* risk management
 2. *Legal* risk management
-
3. *Litigation* risk management
 - ✦ Win the litigation (based on “*standard of care*”)
 4. *Entity* risk management
 - ✦ Company structuring to isolate liability
 5. *Insurance* risk management
 - ✦ Hull coverage
 - ✦ Liability coverage

WHAT COULD BE BETTER ...



...than lawyers in space?