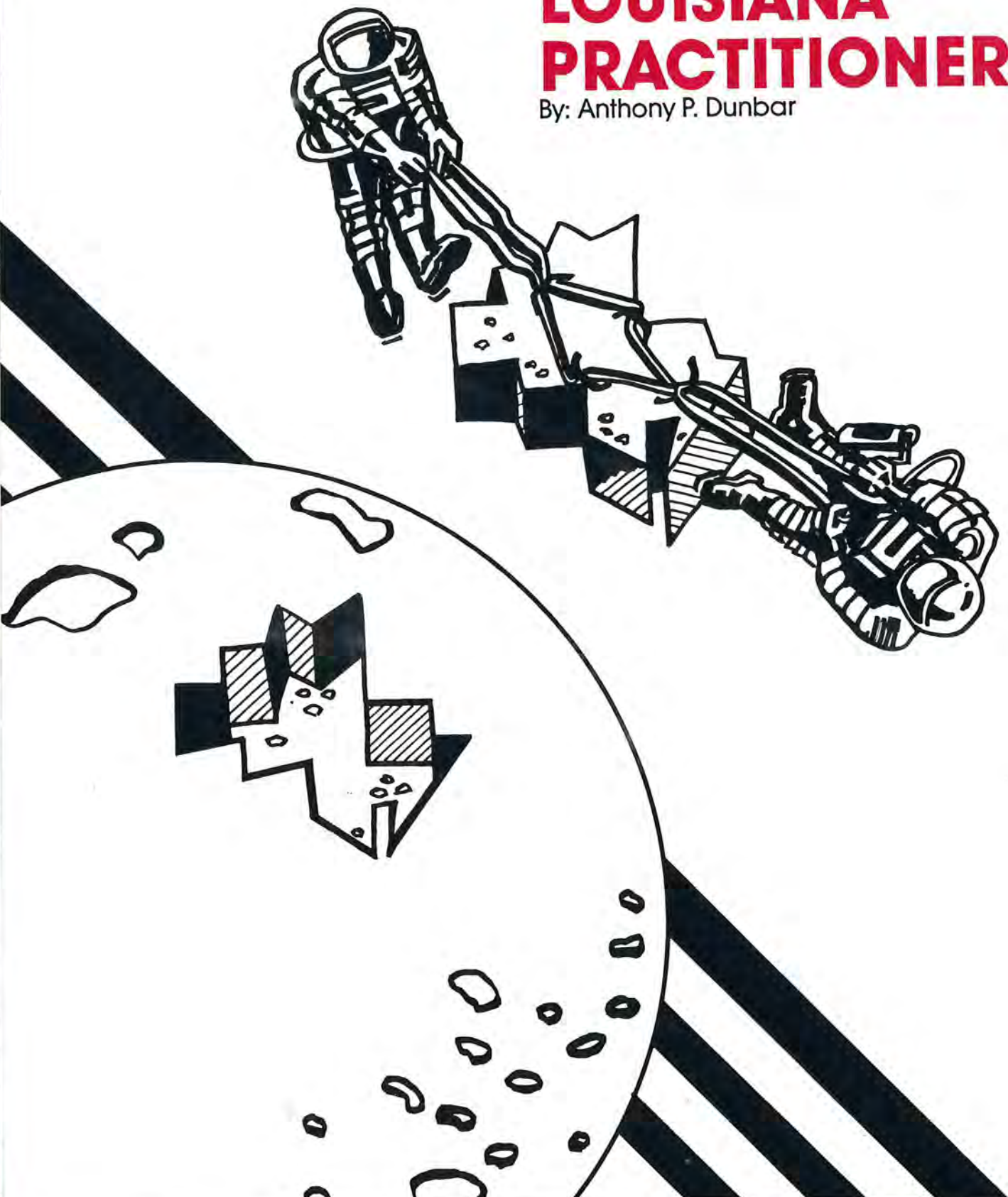


SPACE LAW FOR THE LOUISIANA PRACTITIONER

By: Anthony P. Dunbar



Since the launch of the first artificial satellite in 1957, space has lured private investment. In the communications satellite field commercial promise has become a profitable reality. In other areas, however, such as manufacturing or mining in space, the potential for private enterprise remains unrealized but vast - at least in the imagination. Eventually it may not be uncommon for lawyers to encounter questions requiring some knowledge of "space law." This article outlines some of what an attorney should know to advise an entrepreneur - a Louisiana entrepreneur - who has an interest in a space venture.

The possibility that Louisiana could host space-oriented businesses is not so farfetched. Since 1968 there has been, at least on the books a Louisiana Nuclear and Space Authority. Its primary purpose is to issue revenue bonds "to encourage the location within the state of industrial enterprises in the field of space and nuclear energy."¹ While the bonding authority has not yet been used to sponsor space industry, the statute serves as a reminder that the Legislature wishes to provide a hospitable climate for space-related business.

INTERNATIONAL TREATIES

The basic charter for space law is the Outer Space Treaty of January 27, 1967.² It is a product primarily of American and Soviet initiative and establishes general principles to govern the exploration and exploitation of space. Among these is the declara-

tion that space, including the moon and other celestial bodies, shall be the province of all mankind and available for exploration and use by all states "on a basis of equality" and in accordance with international law. While signatory states are pledged to be guided by principles of mutual assistance and cooperation, they must only conduct their activities with "due regard" to the interests of other state parties to the treaty. It is permissible, therefore, for a state to use space for its own purposes, and not exclusively for the benefit of all humanity.

The Space Treaty also clarifies that it is states which bear "international" responsibility for conduct in space. Each state party is responsible for its own "national activities," whether they are carried on by governmental agencies or by private companies, and each state from whose territory or facility an object is launched is liable for any damage the object causes, on Earth or in space, to any other state party or its citizens.³

The Moon Treaty of 1979 declares that: "Neither the surface nor the subsurface of the moon, nor any part thereof or natural resources in place, shall become the property of any State . . . or non-governmental entity or of any natural person."⁴ So long as the moon's natural resources are "in place," they are not subject to ownership. Once extracted, however, they may be owned. While a company may not be able to obtain an exclusive franchise to use or explore the moon, the opportunity exists for private participation in the extraction of any marketable resources found there. One writer has pointed out, however, that, "although the tangible natural resources located on the moon and other celestial bodies ultimately may be proven to be real rather than imaginary, for the moment their economic value would not cover the cost of production."⁵

COMMUNICATIONS SATELLITES

The one area of space law least subject to international agreement is also the only one in which com-

mercial activity abounds: communications satellites. NASA has launched dozens of such satellites for governments and business into geostationary orbit. That is, they are placed in a position at a fixed point above the equator, and they rotate with the Earth so as to appear motionless in the sky. They emit a broadcast "cone" to the surface below which may easily have a diameter of 10,000 miles. Obviously, there are only so many geostationary orbit positions available and only so many frequencies on which it is possible to broadcast without overlapping another signal. In the United States, the Federal Communications Commission (FCC) assigns geostationary orbital positions, but, to date, no international compact has been achieved on this subject.⁶ Nor has accord been reached on the use of the not-yet-profitable "direct broadcast" technology by which satellites can beam messages straight to home receivers. Such a system could transmit entertainment, propaganda, or, for that matter pornography, directly to homes, and its regulation in this country has First Amendment implications.

The rules of the game for placing a communications satellite into orbit are now well known to lawyers who specialize in the field, but the potential exists for a much wider range of private commercial activity, including mining, private launches, solar power, and especially space manufacturing. These are the frontiers that government and risk capital will explore over the next decade.

About the Author . . .

Anthony P. Dunbar, a member of the Louisiana bar, received his B.A. degree from Brandeis University in 1972 and graduated from the Tulane University School of Law in 1985, where he was Associate Editor of the *Tulane Law Review* and a member of Order of the Coif. Mr. Dunbar is associated with the New Orleans law firm of Sessions, Fishman, Rosenson, Boisfontaine, Nathan & Winn.



REACHING SPACE

Whatever the projected venture, there are basically three ways of getting into space. The traditional path is a NASA-assisted launch using an expendable launch vehicle (ELV). Second is a private launch. Third is the Space Shuttle.

NASA now launches ten or so ELV's annually, mostly for commercial customers who bear the cost. A typical contract defines NASA as a contract carrier and not a common carrier, and puts the user at risk for all damages up to \$500,000 from "the start of the physical attachment by bolt or other device of the Payload to the Orbiter."⁷ It has been estimated that the overall cost of launching a communications satellite system by this method (two satellites in orbit; one spare on the ground) is about \$300 million.

It has long been thought that launches might be more economically performed by private businesses akin to commercial airlines. Experience is limited, however, because only one private launch has occurred—the "Conestoga I" launched by Space Services, Inc. (using a Minuteman I rocket purchased from the government), from Matagorda Island off the Texas coast on September 9,

Until it does, the private launcher must deal with a bureaucratic maze. Currently, the Federal Aviation Administration (FAA), the State Department, the FCC, NASA, the Department of Defense, and even the Congress all have a hand in regulating private space activities. The FAA's regulations, adopted in 1963, were designed to keep hobbyists from disrupting commercial aircraft traffic and contain rules such as "no person may operate an unmanned rocket . . . into any cloud." The private launcher's first step is to petition the FAA for an exemption from its regulations.

NASA has no direct authority to regulate private space activities, but it is at this time the only source of ELVs though it has accepted proposals from General Dynamics Convair Division and Transpace Carriers, Inc., to commercialize, respectively, the Atlas-Centaur and the Delta rockets.

The State Department is responsible for registering with the United Nations all space objects launched from the United States, and the department has also asserted its authority to require launchers to obtain an export license for *arms* under the Arms Export Control Act. The blessing of the Department of Defense is also vital. It is responsible for space

Johnston sits on the Appropriation subcommittee that provides NASA with funds.

The third method of reaching outer space is aboard the Space Shuttle, which can reach an orbit of about 600 nautical miles above the Earth and can carry a payload of approximately 65,000 pounds. Theoretically, the cost of leasing the entire sixty-by-twelve feet cargo bay and financing the launch itself would be approximately \$39 million.⁸ However, no commercial user has yet leased all of the Shuttle's space; the government has paid for all launches, and the commercial users have been subsidized by NASA. The cost of using the Shuttle is less than most would think.

NASA regulations provide that a shipper must reserve space three years ahead of time, and NASA will attempt to launch within ninety days of the desired date. There is a 20-percent discount for users who fly "stand by." A package weighing under 200 pounds and smaller than five cubic feet which requires no Shuttle services, such as electric power of deployment, can be flown for between \$3,000 and \$10,000 in 1975 dollars. Earnest money for such a package is \$500; for a larger item it is \$100,000.⁹

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1982 - and it was not successful. On February 24, 1984, President Reagan signed an executive order designating the Department of Transportation (DOT) as the lead agency responsible for encouraging commercial expendable launch vehicle activities by the private sector, and the Office of Commercial Space Transportation was established in DOT. DOT, however, has yet to issue regulations governing private launches.

traffic monitoring through the North American Air Defense/Space Command, and it must provide the computations needed to prevent the privately launched rocket from colliding with others in space. A private launcher confronting this bureaucratic thicket might find congressional guidance valuable. For example, Senator Russell Long sits on the Commerce, Science, and Transportation Committee which authorizes NASA programs. Senator Bennett

COMMERCIAL VENTURES

In addition to research, four major commercial uses have been developed for the Shuttle. First is carrying communications satellites into space. When the first two launched by the Shuttle malfunctioned in 1984, the craft proved its importance to the satellite industry by retrieving the errant orbiters and returning them to Earth for repairs. The rescue cheered the insurance industry which had paid \$180 million in claims for the wayward satellites and now could recoup at least \$60 million by reselling them. In September 1985 a Shuttle crew repeated the accomplishment by "jumpstarting" a dead satellite owned by Hughes Aircraft.

Second, McDonnell Douglas Corp.,

in a joint venture with Johnson & Johnson, has placed a continuous flow electrophoresis system aboard the Shuttle. The technology applies an electric field to fluids so that suspended particles separate according to their different charges. The purpose is to produce a certain pharmaceutical hormone, as yet undisclosed, at a much cheaper cost than it can be manufactured under the gravity of Earth.

Minnesota Mining & Manufacturing Co. performed crystal growth experiment on a recent Shuttle flight in an attempt to develop a cheaper commercial process. Three M's cargo, and McDonnell Douglas's, were both carried free aboard the Shuttle as a demonstration to other private enterprises of the vessel's potential.

Finally, Fairchild Industries, Inc. has entered a joint venture agreement with NASA to produce large, mobile, permanent, Shuttle-serviced platforms in space. They will be built by private capital, and space on the platforms will be leased for research, manufacturing, and the launching of satellites into deeper space. Fairchild estimates that its annual rental charge on the first platform, scheduled to be erected in 1988, will range from \$40 and \$50 million. While it seems clear that international and U.S. law generally will control on these platforms, many interesting questions remain to be answered concerning the specific legal regime that will be established on these "severed estates in space."¹⁰

At congressional hearings held in 1983 to review NASA's role in developing commercial uses of outer space, witnesses representing private businesses presented a number of interesting facts and forecasts. The president of McDonnell Douglas Astronautics Co., which makes the Delta - the most widely used expendable launch vehicle - stated that the commercial future for ELVs is limited because the same launch service can be obtained 30% more cheaply by using the Space Shuttle. The president of the Aerospace Industries Association foresaw little com-

mercial potential for mining the moon or asteroids before the 21st century. Most agreed that the most likely manufacturing possibilities would be products that could *only* be made in space, or much more efficiently there, with a market of at least \$100 million annually, and which were extremely valuable in small quantities. Pharmaceuticals, exotic metals, and crystals were the likeliest bets. A banker estimated that the

va Convention on the High Seas, may serve as a model for preserving the rights of countries that cannot reach space without crossing foreign airspace.¹¹ The principle of freedom of navigation on the high seas might well apply, as might the right of a warship to approach a suspicious vessel and verify her nationality and innocent purpose.

Coastal lawyers may also consider whether astronauts are not, like sea-

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risk capital needed to start any business sophisticated enough to be operated partially in space was at least \$15 million.

Buoyed by the success of the November 1984 Shuttle flight NASA announced that it would provide reduced fares and even seed money to "high-cost and/or high-risk technologies and space facilities which encourage private investment." The two criteria are that the private sector have significant capital at risk and that there be potential benefit for the nation. To spur investment, NASA waived all rights to inventions made in the course of the McDonnell Douglas/Johnson & Johnson electrophoresis experiments.

MARITIME LAW

Louisiana lawyers, in the mainstream of commerce but remote from the centers of U.S. legislation and administrative law, may yet find that their contribution is needed in the development of a lasting body of space law. In seeking precedents for an international law of space, an inviting source is the law of the sea. It has been suggested, for example, that maritime law's right of innocent passage, or the provisions for landlocked states contained in the Gene-

men, entitled to a spaceworthy vessel and to maintenance and cure. The analogy becomes more compelling now that personnel employed by private industry are going aloft. It has been suggested that a federal wrongful death statute for outer space is needed which would preempt state law and that the Death on the High Seas Act might be extended for this purpose.¹²

NASA's regulations give the Shuttle commander powers very much like those of the captain of a ship at sea. He or she may essentially take whatever action is necessary, including the use of physical force, for the protection of the vessel, its payload, its personnel, or its passengers.¹³ And, finally, maritime rules and jurisprudence may prove useful in defining the rights of salvage in space. Since roughly three-fourths of the approximately 5,000 objects now orbiting the Earth are non-functional, salvaging them may be both necessary and commercially attractive.¹⁴

CONCLUSION

The opportunities for commercial activity in space grow with each successful launch and return of the Space Shuttle. At the same time grow the opportunities for practicing space-related law. While only a few

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major companies have to date ventured into the risky field of space manufacturing, the time is approaching when the increased reliability and frequency of launching services, and government incentives, will open the sky to smaller players. International treaties broadly defining the rights of space travelers are in place, and domestic regulatory law is beginning to catch up with the technology. As space activity increases, conflicts between persons and states will occur. The task of resolving these conflicts may fall less upon diplomats and international lawyers than it does upon commercial lawyers who can make traditional rules of land and sea meaningful in the celestial context. ↗

FOOTNOTES

1. La. Rev. Stat. §51:1351-1355 (West Supp. 1985).

2. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967.

3. See Convention on Registration of Objects Launched into Outer Space, Jan. 14, 1975; Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972.

4. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Dec. 5, 1979.

5. C. Christol, *The Modern International Law of Outer Space* 43 (1982).

6. Order, Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service, 84 F.C.C. 2d 584 (1981).

7. Launch Agreement (sample) Between the United States of America and Satellite Business Systems for Launch and Associated Services, S. Gorove, *United States Space Law: National & International Regulation* (1983).

8. Computed by adjusting 1975 figures presented in *U.S. Space Law*, NASA Launch Agreement, *Id.* at Annex A. 145.

9. 14 C.F.R. §1214.102 (1983).

10. See D. Smith & M. Rothblatt, *Geostationary Platforms: Legal Estates in Space*, 10 J. Space L. 31 (1982).

11. H. DeSaussure, *Maritime and Space Law, comparisons and Contrasts (An Oceanic View of Space Transport)*, 9 J. Space L. 93, 98 (1981); *Astronauts and Seamen - A Legal Comparison*, 10 J. Space L. 165, 171 (1982).

12. *Id.*

13. 14 C.F.R. §1214.700 - .704 (1983).

14. Article V of the Agreement on the Rescue of Astronauts and the Return of Objects Launched into Outer Space, April 22, 1968, provides that objects found outside the territory of the launching state shall be returned to that state, and it provides for the recovery of expenses.

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