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." 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 22, 1967. It is a product primarily of American and Soviet initiative and establishes general principles to govern the exploitation and exploration of space. Among these is the declaration 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 states 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.

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...nor governmental entity or of any natural person." 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."

COMMUNICATIONS SATELLITES

The area of space law least subject to international agreement is also the only one in which commercial 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. 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. Each country has its own domestic regulations, and in the United States there is 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.
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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.” 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.

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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 out 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. 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.” 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 tangibles 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.”

COMMUNICATIONS SATELLITES

The one area of space law least subject to international agreement is also the only one in which commercial 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. 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 is regulated under regulations that 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.
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), Shuttle or commercial launch.

The Space Shuttle

NASA now launches ten or so ELVs annually, mostly for commercial space activities. The PALS regulations, adopted in 1963, were designed to keep hobbyists from disrupting commercial activities and contain rules such as "no commercial user 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 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 traffic monitoring through the North American Air Defense/Space Command, and it must provide the communications needed to prevent collisions. The insurance industry which had paid $180 million in claims for the wayward satellites and now could re-cover at least $50 million by reinsuring them. In September 1985 a Shuttle rocket malfunctioned in orbit, killing two crew members and leaving Dead Satellite Number Two floating above the Earth for repairs. The rescue cheered the insurance industry which had "jump-started" a dead satellite owned by Hughes Aircraft. Senator Bennett 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 carries a payload of approximately 65,000 pounds. Theoretically, the cost of launching the entire sixty-five-by-twelve feet cargo bay of the Shuttle is less than most would think. It has been estimated that the cost of leasing the entire sixty-by-twelve feet cargo bay of the Shuttle is about $39 million. How ever, 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.

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 $100 million annually, which is more than the insurance industry which had paid $180 million in claims for the wayward satellites and now could re-cover at least $50 million by reinsuring them. In September 1985 a Shuttle rocket malfunctioned in orbit, killing two crew members and leaving Dead Satellite Number Two floating above the Earth for repairs. The rescue cheered the insurance industry which had "jump-started" a dead satellite owned by Hughes Aircraft. Senator Bennett Johnston sits on the Appropriation subcommittee that provides NASA with funds.

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In addition to research, four major commercial uses have been developed by 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 orbit. The Delphi communications insurance industry which had paid $180 million in claims for the wayward satellites and now could re-cover at least $50 million by reinsuring them. In September 1985 a Shuttle rocket malfunctioned in orbit, killing two crew members and leaving Dead Satellite Number Two floating above the Earth for repairs. The rescue cheered the insurance industry which had "jump-started" a dead satellite owned by Hughes Aircraft. Senator Bennett Johnston sits on the Appropriation subcommittee that provides NASA with funds.

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Second, McDonnell Douglas Corporation, in a joint venture with Johnson & Johnson, has placed a continuous flow electronic pump aboard the Shuttle. The technology applies an electric field to fluids so that suspended particles separate according to their size. The pump is designed to produce a certain pharmaceutical hormone, as yet undisclosed, that might be more effective than it can be manufactured under the gravity of Earth.

Mimicking McDonnell Douglas Manufacturing Co. performed crystal growth experiments on a recent Shuttle flight in an attempt to develop a cheaper commercial launch. One private company, goes, and McDonnell Douglas's, were both certified free aboard the Shuttle as a demonstration of the potential 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 General Dynamics Convair. These platforms will be leased for research, manufacturing, and the launching of satellites. Currently, NASA estimates that its annual rental charge on the first platform, scheduled to be erected in 1986, will range from $40 and $50 million. While it seems clear that international and U.S. law generally will control on these platforms, nevertheless, future questions remain to be answered concerning the specific legal regime that will control the use of these "severe estates in space."" At congressional hearings held in 1982 to review NASA's role in developing commercial uses of outer space, witnesses representing private businesses presented a number of interesting ideas. The president of McDonnell Douglas Astonautics Co., which makes the Delta-H and the most widely used expendable launch vehicle - stated that the commercial future for ELVs is limited because the same launch service can be obtained more cheaply by using the Space Shuttle. The president of the Aerospace Industries Association foresaw little commercial 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 so. But, there are a market: private businesses would be willing to spend $100 million annually, and the warship and vessels to transport the cargo.

In conclusion, "While only a few major companies have added their names to the list of companies that will be developing and managing a space station, the time is approaching when the increased reliability and frequency of launching services, and government incentives, will open the sky to smaller players." For example, new transportation systems will allow for faster and more efficient space travel.

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REACHING SPACE

Whatever the projected venture, there are basically three ways of getting there: (1) the Space Shuttle, (2) suborbital launch vehicles, and (3) satellites. Today's private launches are a combination of the last two, mostly involving an expendable launch vehicle (ELV) such as those used by Sorrento (DOT) or by Space Services, Inc. (using a Minuteman I rocket purchased from the government). From Magellan orbiting the moon to the Texas coast on September 5, 1983 — and 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 operations, and contain rules such as “no man 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 through its accepted proposals from General Dynamics, Convair Division and Transpace Carriers, Inc., to commercialize, respectively, the Atlas-Contour 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

In a joint venture with Johnson & Johnson, he placed a continuous flow electrophoresis system aboard the Shuttle. This technology allows an electric field to force fluids that suspects to separate according to their molecular weight. The system’s cost is $15 million. While only a few 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.

Finally, Fairchild Industries, Inc. announced that it would provide risk capital needed to start any business sophisticated enough to be operated partially in space at least $15 million. Recuperated from the success of the November 1984 Shuttle flight NASA announced that it would provide reduced fares and even seed money to NASA waivers all rights to inventions made in the course of the McDonnell Douglas/Johnson & Johnson electrophoresis experiments.

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1983 - it was not successful. On February 24, 1984, President Reagan signed an executive order designating the Deep Space Station (DSS) 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. However, it has yet to issue regulations governing private launches.

traffic monitoring through the North American Air Defense/Space Command, and it must provide the commercial airliners with information needed to prevent collisions with other aircraft. A private launch company is also required to maintain a biannual testing schedule.

For example, Robert Russell Long, Jr., of the Commerce, Science, and Transportation Committee which authorizes NASA programs, Senator Bennett Johnstons 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 kilometers above the Earth and can carry a payload of approximately 65,000 pounds. Theoretically, the cost of launching the entire sixty-by-twenty-five-foot Shuttle spacecraft and its canister would be approximately $39 million. 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.

100 million. It has long been thought that launches might be more economical by private businesses than by the government. Experience is limited, however, because only one private launch has occurred the “Westport 1” launched by Space Services, Inc. (using a Minuteman I rocket purchased from the government), from Magellan orbiting the moon to the Texas coast on September 5, 1983.

At congressional hearings held in 1983 to review NASA's role in space activity, the time is approaching when the increased reliability and frequency of launching services, and government incentives, will open the sky to smaller players.

CONCLUSION

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