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LEGAL REGIME FOR SPACE ELEVATORS

Abstract

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Arthur C. Clarke's book "The Fountains of Paradise" focuses on possible use of an elevator for access to outer space. Space elevator technology did not exist when Clarke's book appeared in 1978. But in 1992 carbon nanotube (CNT) technology was discovered. CNT fibers can be used to build a virtually unbreakable string that could be used to guide an elevator platform into outer space up to Geostationary Orbit (GSO) or even beyond GSO. The platform itself would be independently propelled by lasers or power beaming. The platform would be used to carry materials and people into outer space. NASA sponsors an annual competition in order to promote space elevator technology. The greatest advantage of space elevators would be low cost launches. Space elevator launches could cost as little as 400 per kilogram compared with the current 20,000 per kilogram. Furthermore the technology is 'green.' Space elevators need legal protection. The applicable legal regime is largely in existence now. It is a combination of international law and national law. International space law applies in non-sovereign outer space and domestic law applies in sovereign space

The laws of outer space attach when the space elevator is in outer space. But where does outer space begin? Outer space is not clearly defined by international law. The 1967 Outer Space Treaty (OST), Art. IV, states that the Outer Space Treaty applies when an object is "in orbit," which may happen at about the 100 kilometer altitude. (Australia has by domestic law defined space above 100 km altitude to be in outer space. The USA declines to identify and designate an exact delimitation but recognizes that the OST applies in outer space.) In summary, the Outer Space Treaty governs the space elevator and its activities in outer space. The OST would permit the space elevator free access to outer space. However, OST, Art. VI, requires States to authorize and supervise all national activities in outer space: that includes licensing and continuing oversight of space elevators. OST, Art VII, makes states liable for damages caused by their launches into outer space, Under Art. VIII the law of the registering 'State Party to the Treaty' applies to objects launched into outer space. That means, for example, that U.S laws would apply in outer space to a space elevator registered in the United States, no matter where it is launched. OST, Art. IX, requires national environmental oversight. States are avoid environmentally harmful activities and shall pay "due regard" to the interests of other States.

A main business concern of the operator of the space elevator will be with liability exposure and possible debris damage because one major accident could ruin the business enterprise. The operator is therefore well advised to seek the protection of existing laws and regulations to limit liability exposure, and to limit dangers of debris, and generally to receive the protection of the state of registry while building the space elevator in non-sovereign outer space, where many other states might interfere with the building and operation of the space elevator. Several states, including the US, will assume liability for catastrophic losses in excess of 500 million or the level of maximum insurability for launches authorized by the US government. It will be in the business interest