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SPACE DEVELOPMENT PARTNERSHIPS: A NEW WAY TO FINANCE FUTURE PROJECTS

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ABSTRACT

A major problem delaying the expansion of commercial space development is the inability of private companies to raise sufficient capital with which to develop and support long-term space projects promising returns in the future. The Space Development Partnership is a proposed multinational business entity that joins both private and government interests and resources for a common purpose; it involves the sharing of their engineering and manufacturing expertise, their capital and sharing in the profits to be derived from undertaking such large-scale projects as the development of a base on the Moon, Mars or on asteroids for the mining of resources and other useful scientific purposes.

Locating financing for long-term commercial space projects is virtually impossible due in part to the perceived need of private investors for reliable, short-term profits. Venture capital money is currently unavailable and insufficient in amount to finance such large-scale projects. No government is alone willing to undertake such ambitious projects. Only a partnership joining together the resources and capital of private companies, individuals and governments can achieve the space development goals.

The structure of the Space Development Partnership is similar to the limited liability company, a business entity familiar to most nations. Some partners will take an active role in the work of the business while others will not. Liability for all partners is limited. Many nations possess capital or expertise, or both, and an interest in investing in a profitable business venture if other nations, individuals and private businesses are willing to join together for that common purpose. The Space Development Partnership joins together the resources of nations and private businesses in the joint exploration and development of outer space. Such an endeavor is consistent with the spirit of the Outer Space Treaty that states, "...the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development." Multinational investment in a Space Development Partnership assures all participants, no matter how modest their investment, of involvement in the project, limited liability and a future return on their investment.

INTRODUCTION AND BACKGROUND

The purpose of this paper is (1) to demonstrate the need for a new international business entity – The Space Development Partnership – to engage in expensive, long-duration space development projects, and (2) to briefly outline its formation, initial

funding, liability issues and set forth some of the many legal and regulatory obstacles that it must overcome to succeed.

Nations have learned from experience over the past three decades that they will alone be unable to undertake long-term, expensive space exploration and development projects. A combination of commercial businesses, individuals and governments that are willing to join together to pool their financial resources and technical expertise will be capable of developing a viable business plan, attracting investors from many nations and accomplishing their plans for the commercial development of space.

Raising sufficient money to undertake ambitious, long-term space development projects is today and will continue for many years to be the major obstacle to overcome. The recent problems experienced by Iridium, ICO Global as well as Rotary Rocket, and ORBCOMM Global, L.P. provide immediate proof of the difficulty innovative space development companies are experiencing as they attempt to secure financing to advance and continue their projects.¹ Today, venture capitalists consider space companies too expensive and too risky to finance compared to more traditional investments. Venture capital money is unavailable for long-term space projects because investors want a return on their investment within a relatively short period. A detriment to securing venture capital is that control over the commercial enterprise may have to be transferred to the venture capital firm. Securing money directly from private companies is equally unsuccessful. Private companies are alone unwilling to invest substantial sums of money

¹ *Space News*, April 19, 1999, p.1,18; April 26, 1999, p.8,14; July 3, 2000, p.22; July 10, 2000, p.18; See ORBCOMM News Release, September 15, 2000, <http://www.orbcom.com>.

into what they consider high-risk space projects that do not offer a return within a well-defined period of time; the companies must account to their investors and shareholders for such investments.

The Space Development Partnership is the business entity that will combine the resources and finances of private businesses, governments and individual investors for the sole purpose of achieving well-defined commercial goals, such as the construction and operation of a lunar or Martian base for mining and research. Before undertaking such ambitious projects, many technical, legal and regulatory obstacles must be overcome; they are discussed later. Planning for these ambitious commercial space development projects must begin now.

Establishing a lunar base has been under consideration for some years: (1) In 1994, the European Space Agency announced that it added the Moon to its lunar exploration agenda.² A progressive four-phase approach was recommended. The fourth phase involves construction of a human outpost on the Moon by establishing a long-duration scientific laboratory by the year 2015. Prior to the lunar base, the plan is for the robotic exploration of the Moon. Lunar resources utilization is an important phase of the program prior to the construction of any base; (2) The cost of establishing a base upon the Moon has been estimated by NASA to range from \$8 billion to \$20 billion U.S. dollars; (3) The Artemis Society International, the Moon Society, determined that to construct a base on the Moon accompanied by a three member crew would cost approximately \$1.421 billion U.S. dollars (estimated in 1994). The Artemis Society advises that it can achieve its goals at a much-reduced cost

² Sellevag, I., "Back To The Moon The European Way," *Ad Astra*, May/June 1995, pp.34-35.

due in part to their plans to build the spacecraft to commercial aerospace standards and practices rather than NASA standards and practices.³ Private enterprise would also manage the entire project.

The question remains – how will any government or private business raise the necessary money to pay for a lunar base?

NASA has reported that commercial space development will occur in phases over the next twenty-five years.⁴ It is anticipated that space resources will be identified from the present until 2003; this phase will be funded by the government. From 2003 through 2009, it is expected that both government and industry investments will pay for development of space resources. From 2010 through 2023 and later, it will be funded by industry investments alone and will involve “resource utilization” involving a “lunar industrial facility.” The NASA working groups preparing the report recognized the need for government to support commercial development by taking the following actions: (1) Provide incentives for commercial identification and extraction of samples from near-Earth asteroids and the Moon; (2) Establish policy that supports extraterrestrial mining claims and strengthens the property rights of industry to their investments in space; (3) Establish goals and incentives for an industrial facility on the Moon that will support the growth of a space infrastructure for stable Earth/Lunar traffic, propellants, materials and science; (4) Provide policy and resources to stimulate and enable industry to produce commercial products and services off-Earth as is done in the development of

any other new market; and (5) Develop new project plans that include a commercialization phase for transition of the operation of new systems to industry, and requires up-front business planning prior to the development of the system or demonstration mission.⁵ NASA alone does not have access to sufficient money to accomplish these ambitious goals.

Many legal and regulatory obstacles remain to be overcome. In addition to a lack of money, commercial businesses currently do not have legal sanction to undertake large space development projects. No business will invest money into a risky space enterprise without reasonable assurance that the investment is legal and will be protected. A space property rights regime designed to promote the development of a lunar or Martian project and settlements must be developed. National and international space policy must be changed to encourage private investments in space. A regulatory framework must be established to enable profitable space-based business. Issues of liability, property rights and unfavorable international agreements have to be fully addressed. The lack of regulations, guidelines and standards hinder potential space development. Governments may need to intervene and assist private companies by limiting their liability through the enactment of helpful regulations and standards limiting their exposure to civil lawsuits.

THE SPACE DEVELOPMENT PARTNERSHIP

The Space Development Partnership is a business entity modeled after the limited liability company. The partners or members of the Partnership are comprised of private companies, foundations advancing the cause of commercial space development,

⁵ *Ibid.*

³ Report of the Artemis Society, “The Artemis Project” – Private Enterprise On The Moon – Business Concept For The Artemis Project.

⁴ NASA Report, “New Space Industries For The Next Millennium,” NASA/CP – 1998-209006, 1998, pp. 13-14.

individuals, governments or government agencies. The Partnership will be formed, controlled and operated by a consortium of selected partners that have each made a substantial investment in the venture. The original partners will provide some of the money and technical expertise needed to accomplish the commercial goals. The Space Development Partnership is a private business entity formed for the purpose of accomplishing a specific set of space development project goals. All partners must clearly understand and agree with the goals of the Partnership.

A Joint Operating Agreement will be prepared by the original consortium of partners setting forth a short and long-term business operations plan and the specific goals to be achieved. The Joint Operating Agreement provides the legal and operational foundation for the Space Development Partnership. It must state that after the Partnership has begun operations no influential company, small group of investors or government will be permitted to alter the commercial goals of the Space Development Partnership to meet their specific needs by dominating the policy or operations of the Partnership, regardless of the extent of their investment. Additionally, no company, individual or government will be permitted to hold a controlling interest in the Partnership.

RAISING CAPITAL

Once formed by the consortium of investors, and with commercial goals established, a private placement or private offer in the form of a prospectus will be prepared in compliance with the securities laws of those nations from which investments – money, expertise and hardware – will be sought. The prospectus will outline the operation of the Space Development Partnership, the nature of

the securities offering, the business plan and the short and long-term goals to be achieved as well as the anticipated investor return expected. It will permit the prospective investor to assess the risk factors involved with investing in the Partnership. The prospectus will encourage investment from a wide variety of companies, governments and individuals. A private placement made initially to sophisticated professional and institutional investors has the advantage of speed, flexibility of timing, selectivity, simplicity and reduced cost. Although the securities laws of some nations do not require a prospectus, most do. In some nations there are limitations on the number of investors that can be solicited and the aggregate selling price for all securities offered. Since the securities offering in the Space Development Partnership would not be listed on the stock exchange, with a stockbroker or with credit institutions, promoting it will require the assistance of securities professionals in each of the relevant nations. Locating sophisticated individuals, companies and governments possessing sufficient investment money, technical expertise or hardware capable of assessing the business and the risks involved in the overall project will require the services of securities professionals.

The prospectus must clearly reveal what each investor can expect to receive by purchasing the securities of the Space Development Partnership. Some investors will elect or be encouraged to invest money, others such as aerospace and manufacturing companies will be requested to invest by permitting the Partnership to employ their technical expertise and space hardware specifically developed for the project.

The goals of the Partnership can best be achieved by soliciting a wide variety of investors. It is anticipated that further private

offerings will have to be undertaken to provide sufficient money and materials to support the long duration project. Some companies and governments may later decide to withdraw from the Partnership for reasons relating to a change of leadership, policy or financial difficulties. The project goals must not be placed in jeopardy or substantially altered because an influential investor must withdraw from the Partnership; such a possibility must be anticipated and a contingency investment plan developed. We must apply the many valuable lessons learned (and still being learned) from the experiences of those nations involved in constructing the International Space Station – the only major international space development project to date that has required substantial multinational business management, long-term development and continuing investment of money and materials.

Attracting investors from diverse groups of individuals, private companies and governments throughout the world will not only insure substantial investment capital to sustain the project but also will be consistent with the spirit of the Outer Space Treaty that states, "... the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development."⁶ The Space Development Partnership will accept investors that can understand the nature of the investment but who are capable of investing only a modest sum. They too may play a role in commercial outer space development along with large private businesses and governments.

In any long-duration space development project, the operational goals will have to be

⁶ 1967 Treaty of Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, 18 UST 794.

redefined as the project progresses. After the Space Development Partnership has begun conducting business and attracted investors other than the original consortium of investors, any changes in the goals will require the approval of a majority of all investors. The Partnership must exert every reasonable effort to retain the good will of its investors over the duration of the project; many of those investors will be actively participating in work on the project rather than being passive investors anticipating a return at some later date. The space development project will not be successfully completed without the direct involvement of many of its active investors.

With one of the primary purposes of the Space Development Partnership to raise sufficient money to fund a long-duration commercial space development project, such as a lunar or Martian base for mining and research, fund raising techniques other than the private securities offering may be necessary and prudent. The Partnership should, however, avoid the temptation to become a publicly owned company in an effort to raise adequate money to fund the project. By so doing, the consortium of investors will likely lose control over the project such that its commercial space development goals will not be achieved.

FORMATION OF THE PARTNERSHIP

As the Space Development Partnership begins to form, an early decision must be made by the consortium of investors as to where it should be formed or organized. That decision will in part be dictated by the legal and regulatory regimes then in place in the various nations being given serious consideration. Tax considerations will also play an important role. The investors must

bear in mind that even though it is a non-government entity, the Partnership will be subject to Article VI of the Outer Space Treaty which states in part, "The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty." Although the "appropriate" State Party is not defined in the Treaty, it is suggested that the nation in which the Partnership is formed and/or conducts its business will be responsible for its "continuing supervision." It has been noted that many states that are parties to the Treaty, have no national laws and regulations enacted with which to regulate the private commercial business.⁷ Despite the absence of laws and regulations in many Treaty states, "There is... [nevertheless] not only a duty of a state to inform itself by way of this supervision, but also a duty to exercise influence in such a way that use of outer space by private enterprises is in conformity with the Outer Space Treaty."⁸

LIABILITY OF PARTNERSHIP

As the Partnership commences operation, appropriate liability insurance coverage must be in place. Liability insurance carriers are familiar with coverage issues relating to rocket launch activities, communications satellites operations and other near Earth orbit commercial activities. No liability insurance currently exists for the commercial work that will be undertaken by the Partnership on another planet, an asteroid and in outer space. The Partnership will have to work

cooperatively with an innovative insurance carrier to fashion the necessary coverage for a reasonable premium. Unless the liability and risk management issues are promptly addressed by the consortium of investors, the prospects for long-term investment by other private companies, individuals and governments are doubtful.⁹ If adequate insurance coverage is unavailable, the Partnership will be required to so advise in its private offering prospectus. Investors simply do not want to be exposed to major liability given the predictable risks involved in completing the commercial space development projects mentioned. Further, if appropriate liability insurance coverage is not in place, many national regulatory/supervisory bodies will not permit a launch to occur let alone sanction commercial construction activities on the Moon or Mars.

Liability for damage caused by the Partnership activities would be controlled by the Outer Space Treaty. Article VII of the Treaty states that "Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, including the moon and other celestial bodies." It appears that the state in which the Partnership is formed or organized will be held primarily responsible to another State Party or "natural or juridical persons" for injury or death occurring on the space development project.¹⁰ Therefore, in its own

⁷ Böckstiegel, K.-H., "Reconsideration of the Legal Framework for Commercial Space Activities," *Proceedings of the Thirty-Third Colloquium on the Law of Outer Space*, 1990, p.5.

⁸ *Ibid.*

⁹ *Supra* at 6.

¹⁰ See Ospina, S., "The Privatisation of the 'Province of Mankind' - Time To Reassess Basic Principles of Space Law?" *Proceedings of the Thirty-Third Colloquium on the Law of*

self-interest, the state will undoubtedly require adequate commercial liability insurance coverage be obtained by the Partnership.

CONCLUSION

The Space Development Partnership, operating as a limited liability company, will face many challenges, some of which were outlined earlier. A major concern for the investors will be the lack of laws and regulations relating to commercial space development activities by private commercial entities; the existing treaties deal primarily with the responsibilities of states. New treaties will be needed to deal with the anticipated commercial space development projects. The investors of the Partnership will be required to expend considerable time and energy lobbying for helpful legislation in each of their home nations and for the enactment of a new international commercial space treaty through the auspices of the United Nations. Only then will the numerous unresolved outer space business issues be addressed. As the investors go forward with their business plans, it would be wise for them to remember the following advice: "The legal regime to be developed must be neutral both in the sense of potentially competing programs, as well as in the context as arbiter of the rights and responsibilities to be regulated, enforced and protected. The regulatory environment... must be developed

without regard to promoting or furthering any particular commercial venture or purpose."¹¹

Professor DeSaussure noted that over a period of time a common law for space activities will develop just as maritime law is the common law for the sailor. "With routine participation of private enterprise in outer space, a similar common law for space will develop. It will grow to accommodate the interests of private spacefarers who require a space law merchant law to govern their extraterrestrial activity."¹² If the investors in the Partnership are to be successful, they must take the initiative in having new, favorable legislation enacted—they cannot wait for a common law for space to evolve over the remainder of the 21st century.

So long as the Space Development Partnership remains a private commercial business and actively pursues its business goals, it will succeed despite the many obstacles it must overcome.

Outer Space, 1997, p.93; See also, Reijnen, B., "International Law and Business In Space-In Europe," *Proceedings of the Thirty-Third Colloquium on the Law of Outer Space*, 1990, P.69; and see also Bourelly, M. and Courteix, S., "National Institutions Responsible For Space Activities: A Comparative Law Approach," *Proceedings of the Thirty-Ninth Colloquium on the Law of Outer Space*, 1996, p.236.

¹¹ Sterns, P. and Tennen, L., "Institutional Approaches To Managing Space Resources," *Proceedings of the Forty-First Colloquium on the Law of Outer Space*, 1998, p.36.

¹² DeSaussure, H., "The Two Sides of Law of Outer Space," *Proceedings of the Thirty-Third Colloquium on the Law of Outer Space*, 1990, p. 289.