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## Paper Session II-B - The Emergence of Inland Spaceports

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# **The Emergence of Inland Spaceports**

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## Abstract.

The unfulfilled demand for economical access to space has slowed the progress of many potential commercial projects stemming from NASA research. The commercialization of space is the next major business development on the horizon when the cost to launch can be reduced. This search will ultimately produce reusable launch vehicles. Coinciding with that development will be the demand for additional launch locations. This will lead many companies, such as telecommunications companies, aerospace developers and the newcomers to the travel industry, space tourism companies, to seek launch alternatives for development, testing and launches. At the state level, many lawmakers and economic development specialists have kept a vigilant watch on this current situation and have begun making strides toward establishing new facilities that are owned and operated by state governments. Unlike existing federal launch facilities, many of these facilities are being developed in inland states, such as Oklahoma. These inland spaceports offer the space industry an economically-feasible alternative to the federal launch facilities. This paper will examine the emergence of inland spaceports throughout the US, particularly the progress being made in Oklahoma. Various subtopics the paper will address include legislative needs, funding requirements, barriers and benefits to private industry. Further, readers will find information regarding the effects an inland spaceport may have on a community that is not yet accustomed to the idea.

## Introduction.

In recent years, Americans have become increasingly dependent on NASA-developed technology in their daily lives. Communications, imaging, entertainment and navigation are all currently using forms of space technology that, along with space tourism, are about to open new business frontiers. NASA, whose mission is fundamentally scientific in nature, has recently begun encouraging states to pursue the commercial aspects of space technology. Thus far, fifteen states are working to establish spaceports to support the demand for space technology. Many of these states, including Oklahoma, are inland states, causing a bit of a paradigm shift for Americans who are accustomed to coastal launches. This paper will discuss the need for space technology in the commercial arena, the emergence of inland spaceports and will examine the growing need for legislation at the state and federal levels to support inland spaceports. Oklahoma's efforts and progress will serve as a case study throughout much of the paper.

In 1999, when Oklahoma legislators began drafting two bills that would create a state agency to oversee a burgeoning space industry in our state, the initial reaction was, "Space; in Oklahoma?" Much of this reaction was rooted in the general understanding that space activity was limited to NASA's research and exploration goals. The idea of space commercialization was new and required education campaigns for Oklahomans of all ages. As the Oklahoma Space Industry Development Authority (OSIDA) was establishing forums to educate the public on the need for space industry in our state, Dennis Tito made worldwide headlines by becoming the first space tourist. Concurrently, telecommunications opportunities were opening up at a rapid pace and jobs were among the most desired throughout the United States. The timing of these events bolstered the opinion and knowledge regarding space commerce in Oklahoma.

Body.

Interest in building commercial spaceports was mounting nationwide, as well. Several other states, many of them inland states, were also establishing legislation; working with state and federal leadership on policy regulations and educating their own residents on space commerce and its potential to improve the economy. When leaders in these states first met to discuss their progress and plans for the future, they learned that the foundation of their plans was similar: to specialize in meeting the private sector's demands for space technology in a far less expensive manner. Thus, delegates from all fifteen states (including the inland states) began workshop style meetings to address common needs of establishing commercial spaceports.

For all inland spaceports a reusable launch vehicle (RLV) is a primary need. Without the benefit of a coastline to allow the disposal of various shuttle elements, inland spaceports, are dependent on the design and manufacturing of a fully-reusable vehicle. These inland states recognized this need early on and set about encouraging the aerospace industry to pursue designs and testing. In Oklahoma, this encouragement came about by way of a State Senate Bill that would provide a \$15 million tax credit to one company that meets a specified list of criteria. Currently, a few companies are vying for this credit and are working with state agencies and state leadership to prove their criteria. Once a company is selected to receive the tax credit, their RLV must be built and launched in Oklahoma.

Inland states interested in establishing spaceports received an extra boost, when, in 2002, NASA announced its Space Launch Initiative (SLI) which would invest \$4.8 billion in university partnerships, other government agencies, and the private sector to develop the technology needed to design and build a second-generation RLV. This investment reinforced the inland states' desire to see this vehicle developed.

The Oklahoma Space Industry Development Authority applauds NASA's foresight in choosing to team with other organizations to develop the new RLV. Ideally, from the perspective of Oklahomans, a second-generation vehicle would have the capability to launch and land horizontally from any licensed spaceport, without disposing of any components.

On the business front, the X-Prize Foundation is renewing the worldwide race for space. This technology challenge, funded by an organization in St. Louis, Missouri, will award \$10 million to the first privately-financed, registered team to "build and launch a spaceship able to carry three people to 100 KM (62.5 miles) altitude[;] return safely to Earth and repeat the launch with the same ship within two weeks."<sup>1</sup> The full value of the X-Prize is scheduled to expire on January 1, 2005. At this time, more than twenty teams have registered from 5 countries. OSIDA has spent the last few years working closely with several of the X-Prize teams, with the confidence that the first RLV may well come from one of the entrepreneurial space companies.

Oklahomans see their proposed spaceport as an ideal place for this new vehicle to be manufactured, tested and operated. Located on 3,000 acres of land, this existing facility features a 13,500 foot runway, a sparsely populated surrounding, hangars and manufacturing facilities, with more room for construction and development. Housed on a Cold War-era military base, the facility Oklahoma is proposing to the FAA to serve as a licensed spaceport is already engaging in leases with aerospace companies. With the licensing procedure underway, Oklahoma plans on being an integral part of the encouragement needed to develop a commercial RLV. Leadership within the state believes that the combination of the \$15 million tax credit and support of private and public space initiatives will bring this revolutionary vehicle to our state. The RLV will serve the private sector well. Whether it is launching telecommunications satellites or offering space tourism and transportation packages, this vehicle promises to be less-expensive to maintain and more useful in meeting the needs of commercial businesses in space. Private companies, including telecommunications companies, space tourism providers and even specialized launch companies, will have the option to use this new vehicle to serve their launch needs. Currently, the Oklahoma Spaceport is involved in the Environmental Impact Statement step in the

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<sup>1</sup> XPRIZE.com

licensing process that is required by the FAA. This study is scheduled to last approximately eighteen months at a cost of more than half a million dollars.

Once operational, through licensing and implementation of a second-generation RLV, inland spaceports will be able to offer cost-effective, secure alternatives to coastal, federally-owned launch sites. Currently, private companies whose business depends on space technology must use existing government facilities. At these launch sites; the initial obstacle for many companies is cost. Due to the overwhelming infrastructure cost built up over the last forty years, the government has found it impossible to offer launches at a cost that is seen as feasible for many companies. Thus, many launches are delayed or combined with other projects due to the inability to cover the fees associated with them. At inland commercial spaceports, the cost would be dramatically less, for a variety of reasons.

First, by its very nature, a state-owned facility will operate on a smaller scale using more modern equipment made possible by advancing technology. This will, in turn, cause the facility to be less expensive to operate. This is primarily due to the core mission of the facility. For the state-owned facility, the primary mission is to provide private industry with launch capabilities. For the government facility, the primary missions are to serve the taxpayers in a variety of exploration and research related manners. By specializing in meeting the needs of private industry, state-owned spaceports will have a greater opportunity to reduce the cost of launches. Further, a government base must operate under the directives of the US government, many of which require personnel, equipment and process that are quite costly. A state government operates in far fewer levels, thus reducing these costs.

Another reason inland spaceports will be able to offer less expensive launch sites involves the comparison of costs of living between most coastal states and most inland states. This cost of living translates into the cost of doing business. This statement is especially so when looking specifically at Oklahoma. In fact, according to a recent online publication, Oklahoma is one of nine states to be ranked as having the lowest business costs.<sup>2</sup> To the aerospace industry, this means a reduced cost of labor, lower energy costs, and reasonable construction costs.

Aside from the evident economic advantages of inland spaceports, companies will no doubt be encouraged by the services offered by a spaceport that solely exists to serve its tenants. At government facilities, commercial launches are scheduled to meet time-phased research projects of the federal government. This creates launch delays for commercial customers, based on governmental launch needs. As state governments are not in the business of exploration (as is NASA), private launches will likely only be delayed for weather and safety reasons. This is sound business to private industry. As minutes become dollars to companies looking to launch commercial payloads the idea of a more reliable launch schedule is an asset that makes the state-owned commercial spaceport a desired development.

Further, inland spaceports offer one element that coastal facilities cannot, and that is the security of being landlocked. Although the September 11<sup>th</sup> attacks proved to Americans that we are not completely invulnerable, it is a fully-accepted notion that an inland facility is less vulnerable than a coastal one. This is a notion that has been utilized for decades by the US military. In Oklahoma, the government has used the state's geographic advantage to locate several military bases, for all branches of the service.

Certainly, the benefits are not isolated to those gained by the tenants. For the people of the state, commercial spaceports offer high-tech industry a new place to settle. For decades, Oklahomans have watched its oil and gas industry dwindle as high-tech industries throughout the rest of the nation have thrived. Further, the phenomenon known as the "Brain Drain" has taken Oklahoma's top university graduates to other parts of the country in search of opportunity. With the success of Oklahoma's spaceport, many of these current economic concerns will be alleviated.

Beyond the employment opportunities in the space-commerce arena, other opportunities for employable Oklahomans will open as well, due to tangent industries in and around the spaceport. These include business in manufacturing and service industries from sheet metal producers to retail and tourism companies. For the businesses already established in the region, added population and an infused income to the current residents will bring greater traffic in their businesses, higher sales and opportunities for

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<sup>2</sup> Francis X. Markey. "Cost of Doing Business." *Economy.com*, 2002.

expansion. Currently, property taxes are quite low in the region surrounding the spaceport. As this property becomes more valuable, the taxes will increase, bringing greater funds into the area schools. Finally, the general population of the state will benefit from the spaceport's success by the added tax base these companies will provide.

The opportunities for success are not limited to Oklahoma. Many of the other inland states looking to futures in the space industry have, no doubt, experienced similar needs to bolster their economic foundations. Further, the current economic situations faced by all states are furthering this need for financial opportunity. This need has led the states to work closely together to encourage one another as well as to discuss the legislative and funding needs they each face. These emerging spaceport states are clear in their needs for federal support: that the federal government must recognize the role of space technology in contemporary society, as we've become more mobile and more technological, and as our priorities regarding security and defense are rapidly changing.

At this time, some legislation has already been attempted. With the introduction of such bills as H.R. 2177 Invest in Space Now Act of 2001, drafted partially by Oklahoma's Rep. Frank Lucas, Congress is taking the appropriate steps toward making commercial launches more economically sound while creating a new and thriving industry in these inland states. This, however, must not be where the attention to space commerce should end. Much in the way the federal government encouraged commercial air travel in the last century; it must be prepared to encourage commercial space travel. This includes, but is not limited to creating clear guidelines for the SLI; offering economic incentive to companies working on launch vehicles; and streamlining the spaceport licensing process.

#### Conclusion

Without a doubt, \$4.8 billion is a large investment in space commerce. Finding this amount of money may prove to be difficult for Congress; however, they must see to it that this task is done. Given the potential benefit the second-generation RLV will have on American society, it is only natural that the government sees to it that SLI is given clear guidelines and made available to industrial, state and university partners throughout the nation. This project must be seen, not only by NASA, as a priority and one that promises to revolutionize the way America travels and communicates.

For Oklahomans, the prospect of a network of spaceports throughout the US is an exciting one. Much in the way aviation pioneers found ways to expand the network of airports throughout the US, space industry pioneers must be ready to establish spaceports. From the perspective of most Oklahomans, success in other states will only enhance the success found at home. With more opportunities for private launches, the idea of inland spaceports will become commonplace to many. No longer will there be any question of "Space: in Oklahoma..." or elsewhere.