

Senate Finance Subcommittee on the Spaceport Trust Fund

**Interim Report
to the 78th Legislature**

November, 2002

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**Texas Senate Committee on Finance
Interim Committee on the Spaceport Trust Fund
Interim Report**

November, 2002

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Introduction

In 1999, the Texas Legislature passed the Spaceport Corporation Development Act (Senate Bill 1092 of the 76th Texas Legislature). It amended Texas Civil Statutes to allow for the creation of a spaceport authority. Some of the powers delegated to a spaceport authority include:

1. Ability to raise and expend revenues.
2. Authority to issue bonds (maturation in 50 years).
3. Authority to acquire property.
4. Authority to relocate rail, utility or other facility that may interfere with development.
5. Authority to engage in affordable housing programs.
6. Authority to impose restrictions on mineral or petroleum extraction if the authority does not hold rights to the same.
7. Authority to implement job training programs.
8. Authority to develop courses, curricula, and programs of study related to aerospace at area colleges and universities. Any such development is done in concert with the Texas Higher Education Coordinating Board and the Texas Aerospace Commission.

The Texas Aerospace Commission has developed a practical, “stair step” approach to attract a spaceport to Texas. The foundation of this approach is the establishment of one or more centers of excellence for aerospace education, which includes the launch of a suborbital rocket. This process will require the sites to obtain FAA commercial space launch licensure to launch, track and recover the rocket. As a result, the sites will gain experience and credibility to move to a full-scale reusable launch vehicle developer, needed by entities such as Kistler Aerospace and Space Access. All three grant recipients have adopted this approach.

The following diagram illustrates this development process, which TAC presented at the FAA’s Annual Commercial Space Transportation Conference in Washington, D.C., on February 5, 2002.

STAIR STEP DEVELOPMENT

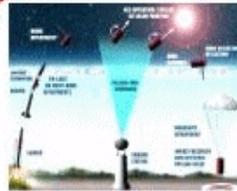
Educational Opportunities



**Phase I
Viability**



**Phase II
Business Plan
and Licensing**



**Sounding
Rocket
Launches**



**S.T.A.R.
Center(s)**



**Spaceport
Vision and
Development**



TEXAS AEROSPACE COMMISSION FAA 2/5/02

SPACEPORT PURSUIT GRANT OVERVIEW

The Legislature also issued a requirement for the Texas Department of Transportation, the Texas Department of Economic Development and the Texas Aerospace Commission to enter into a memorandum of understanding to coordinate efforts and resources towards spaceport development. The process of allocating funds began on November 16, 2001 when the Texas Aerospace Commission published a Request for Qualifications (RFQ) in the *Texas Register*. This RFQ solicited proposals for funding from Texas communities with a spaceport development corporation to pursue the development of a commercial spaceport.

Review of Proposals

When reviewing the grant proposals from each county or spaceport development corporation, the TAC, the Center for Transportation Research at the University of Texas at Austin, which was contracted by the TAC, and other state agencies sought to ensure that each proposal had the following characteristics:

- Appropriate and targeted goals
- Qualified personnel
- Inclusion of Texas educational institutions and educational opportunities for Texas students
- Fiscally appropriate and conservative
- Included opportunities for internal and external review of documentation
- Contingency planning

Other state agencies providing rigorous review of the proposals included:

- Texas Comptroller of Public Accounts
- Texas Department of Transportation
- Texas Department of Economic Development
- Attorney General's Office.

Center for Transportation Research Review of Proposals

The Center for Transportation Research (CTR) provided a detailed review of each proposal's work plan to identify issues with each proposal and report them to the TAC. With the TAC, issues were relayed to representatives of each county or spaceport development corporation, who were required to respond to CTR's concerns. A significant reduction in the proposed overhead and project costs for each proposal resulted from this dialogue. Additionally, this effort required that each county or spaceport development corporation demonstrate a clear understanding of the goals they were seeking and to begin formulating the plans they intended to use to achieve these goals.

Oversight of Grants

Each month through the end of the grant agreement the counties or their spaceport development corporation are required to provide budget information for the previous month. This information includes, but is not limited to:

- Copies of the current reporting period's invoices
- Copies of the previous reporting period's paid invoices
- Statement of remaining funds and funds spent thus far
- Reporting of any outside funds procured during the current reporting period

The grantees are also required to provide monthly updates on their work, as well as copies of any reports or other work products. Each month, the grantees are required to provide the following:

- Description of work effort and identification of any milestones that were reached during the previous month
- Documentation of their efforts to include educational institutions in their pursuit of a spaceport and the identification of any unique educational opportunities
- Report significant changes to the proposed work plan or the implementation of any contingency plans

Center for Transportation Research Oversight of Grants

Each month, CTR will review the progress reports submitted by the counties or their spaceport development corporations. This review will seek to insure that funds are being spent in a fiscally responsible manner. CTR will review all invoices to determine the rate of expenditures for each task and reconcile this with the work effort and products. The goal is to prevent any one task from dramatically exceeding its proposed budget so that it becomes impossible to adequately complete the other proposed tasks. This effort will be in addition to ensuring that each grantee remains within its overall budget. CTR will review all documentation produced by the grantees for its usefulness and reasonableness. CTR will also review technical documentation and will demand supporting evidence if there is any concern about the reasonableness of the results.

Withholding of Funds

The Center for Transportation Research will recommend that the Texas Aerospace Commission withhold funds from the grantees in the following instances:

- Failure to identify reasonable launch vehicles for the proposed site
- Failure to produce accurate and/or useful work products
- Production of technically flawed documents
- Failure to show progress in reaching proposed milestones
- Failure to produce a reasonable business plan
- Failure to show a responsible expenditure of State funds
- Failure to provide adequate documentation of the distribution of State funds

- Failure to show a good faith effort to include educational institutions in the spaceport pursuit process
- Any other circumstance that would cause concern to the reviewers.

The TAC met the Legislative-mandated requirements of Rider #3 of the General Appropriations Act. The intent of the Spaceport Pursuit Fund was to provide communities with broad latitude in their effort to attract a commercial spaceport. All funding that is currently being proposed for awards to local communities is assigned from the funds appropriated under Rider #3 (Spaceport Pursuit Funds).

Rider #3 reads as follows:

COORDINATION OF SPACEPORT INITIATIVES.

It is the intent of the Legislature that the Texas Aerospace Commission, the Texas Department of Economic Development, and the Texas Department of Transportation coordinate their efforts and spending related to establishing a reusable launch facility or Spaceport. These agencies shall develop, maintain and adhere to a memorandum of understanding by January 1, 2002, that details the specific responsibilities of each agency and continues to provide interagency coordination and support to achieve the objective of establishing as Spaceport. Out of the amounts appropriated above in Strategy A.1.1., Attract Aerospace Industry, the sum of \$1,574,370 in General Revenue is to be used by the Texas Aerospace Commission for the purpose of awarding grants or assisting with other proposal development costs to selected local Texas communities which may compete for the location of such a facility.

Expenditures from the appropriations made above is conditioned upon the participation by the Comptroller of Public Accounts in the development of guidelines for the grant application process and contract awards as a means of assuring that all applicable state procurement laws and other processes are followed. The Comptroller shall provide assistance in the final grant or contract review and recommendation process and shall recommend other participants as may be required. All such grants or contracts shall be subject to approval by the Comptroller.

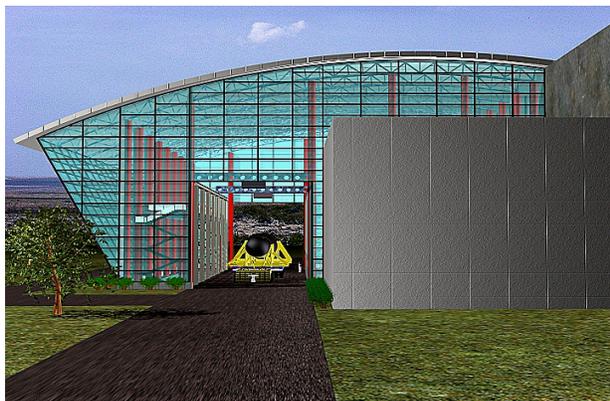
EDUCATIONAL BENEFITS

The Space Technology and Research Network (STAR) concept was developed through a collaborative effort by the state's three candidate spaceport sites, the Texas Aerospace Commission, the Center for Transportation Research at the University of Texas and the Sasakawa Center for Space Architecture at the University of Houston. This two-year program culminates in the launch of a suborbital rocket (i.e., sounding rocket) that carries a payload into the upper atmosphere. Each candidate spaceport site will be the host of a S.T.A.R. with affiliated high schools, colleges and universities throughout the state. The S.T.A.R. curriculum is a two-year, physics-based curriculum that provides students with an opportunity to apply theoretical knowledge to an end project. Brett Williams, the aerospace instructor at Fredericksburg High School, developed the program upon which the S.T.A.R. concept is based. The program has been in operation for six years with a solid record of results. Students graduating from the program have entered into high-tech degree programs at M.I.T., the Air Force Academy, the University of Texas, Texas A&M University and other prestigious institutions. The Aerospace Academy at San Jacinto College sponsored a workshop on August 9th for academic institutions interested in implementing a program tied to a S.T.A.R. Center.



This year, the Texas Aerospace Commission opened a dialogue with the Migrant Education Office at the Texas Education Agency in Austin. As a result, a group of migrant students from Ft. Stockton participated at a space camp in New Mexico in early July. The TAC is hoping to expand this and other opportunities to the South Texas Region for the summer of 2003. There is

also the possibility of expanding the Texas Aerospace Scholars Program at the Johnson Space Center to allow for migrant education slots.



Sasakawa Center for Space Architecture (SICSA)

University of Houston

SICSA was founded in 1987 with a \$3 million gift provided by the Japan Shipbuilding Industry Foundation. The organization's mission is to plan and to implement programs that will advance peaceful and beneficial uses of space and space technology. SICSA also pursues planning and design for difficult and extreme environments on Earth that can benefit from advanced approaches, systems and applications that are revealed through space investigation and concepts.

The Texas Aerospace Commission began to partner with SICSA in 2000. SICSA has played a critical role in developing commercial design concepts for the candidate spaceport sites. SICSA has provided continuous technical support to each candidate spaceport site. For example, students and faculty have provided conceptual designs for emergency response facilities, Space Technology and Research Centers, and launch and payload facilities, etc.

Pecos County has incorporated the University of Houston into its grant processes. However, the vast majority of the support and work provided by SICSA has been conducted as a public interest project and a service to the state. The University of Houston has contributed close to \$100,000 for in-kind services regarding the proposed site in West Texas, in support of the spaceport initiative.

SITE REPORTS

Each development corporation was charged and appropriated approximately \$500,000 to evaluate its site's suitability for sub-orbital launch and spaceport location. The monitored but self-directed efforts and expenditures of each corporation to this end are described in the following site reports.

Gulf Coast Regional Spaceport Development Corporation

Background

The Gulf Coast Regional Spaceport Development Corporation came into existence in March of 2000 as a result of legislation enacted during the 76th legislature allowing local communities to create spaceport development corporations. The mission of the GCRSDC is to advance the technologies needed to create a commercially viable space launch facility that can one day launch government and commercial payloads quickly and efficiently into space. The Gulf Coast Regional Spaceport Corporation has worked as a team player with the Texas Aerospace Commission, West Texas (Pecos) Development Corporation and the Willacy County Spaceport Development Corporation in the advancement of Texas as the right location for commercial space launch development. They have shared resources and ideas on a regional and statewide basis to assure that one or more sites in Texas will move forward in a coordinated manner and succeed. A seven member regional board administers the Corporation from a four county area-surrounding Brazoria County.

Community Support

Community support for the project includes resolutions of support from virtually every incorporated community, school district and the Commissioners' Courts in Brazoria, Galveston and Harris Counties. Additional letters of support have come from regional economic development organizations such as the Greater Houston Partnership, Galveston County Economic Development Alliance and the Greater Fort Bend Council as well as the Brazoria County Partnership. Since beginning the spaceport project in 1998, well over \$250,000 in resources has been expended in terms of cash, staff time and administrative services. Consultant contracts prior to 2001 involved an estimated \$50,000 above that amount. Since being awarded the contract as master project consultant in 2000, the firm of Turner, Collie and Braden has provided in-kind services estimated at over \$150,000. In summary, the local community supporting the Brazoria County Spaceport project and more recently the Gulf Coast Regional Spaceport Development Corporation has contributed in excess of \$450,000 over the past four years towards development of a spaceport.

Project Phases

Phase I activities include three primary tasks:

- (1) Identification of Candidate Launch system(s) for the proposed site,
- (2) Safety analysis of the Candidate Launch system(s) to assure the launch site meets safety requirements of the FAA and other agencies, and
- (3) Development of a sub orbital rocket launch capability as part of the S.T.A.R Center and

spaceport development.

Tasks accomplished to date have identified the candidate launch vehicles that can launch safely from the Brazoria County site using existing safety criteria from NASA and the FAA as the basis. The safety analysis is nearing completion, with range data currently being plotted and reviewed by a safety engineer. We have identified and are working with a group from Johnson Space Center that is developing a reusable launch vehicle and sub-orbital vehicle for research and development purposes. An initial launch of the sub-orbital vehicle could take place as early as the summer of 2003. Data and additional market research is also being compiled within Phase 1 to investigate opportunities with NASA and aerospace industries and identify specific needs in those markets for sub-orbital research as we move toward a reusable launch system. The consultants are developing a compliance framework for the Fredericksburg High School's Sounding Rocket Program to assure that the types of sub-orbital systems proposed by GCRSDC will meet federal regulatory requirements and can be launched in Brazoria County.

The Phase I draft report was completed in August 2002 and has been submitted to the Texas Aerospace Commission and the Center for Transportation Research for Review. The Top-level evaluation performed in Phase 1 will determine the viability of the proposed site as a spaceport and/or STAR Center.

Phase II activities, to be performed between September of 2002 and June of 2003, will focus on the recommended systems, perform additional evaluations, conduct an environmental overview of the proposed site, and initiate the economic evaluation of the spaceport. Tasks to be completed include many elements under the following general outline:

1. Develop operational support requirements for the candidate systems identified in Phase I.
2. Determine the availability and costs of those services.
3. Conduct an environmental overview of the proposed site.
4. Establish and pursue a users group for the facility, obtain letters of intent from potential users to support development of the spaceport facility.
5. Refine the spaceport objectives based on needs of the proposed users and develop a conceptual land plan for the Spaceport / STAR center.
6. Develop a facilities plan and order of magnitude costs for sub orbital launch facilities and other infrastructure to support the site users group.
7. Initiate the development of a business plan for the development of the proposed launch site or spaceport.

**Schedule of Grant Deliverables and Budget
Gulf Coast Regional Spaceport Development Corporation**

<u>PHASE I</u>		<u>AMOUNT</u>	<u>% of Phase PHASE I</u>
Task 1	Identify Candidate Launch Systems	\$24,118.70	24.04%
Task 2	Estimate Planned Performance	\$20,571.80	20.50%
Task 3	Develop Sub-Orbital Rocket Launch Proposal	\$30,378.50	30.28%
Task 4	Phase I Report	\$16,544.40	16.49%
Task 5	Project Management Coordination and Administration	\$8,717.60	8.69%
	TOTAL PHASE I	\$100,331.00	100.00%
<u>PHASE I</u>		<u>AMOUNT</u>	<u>% of Phase PHASE I</u>
Task 1	Definition of Support Requirements	\$29,999.00	7.50%
Task 2	Determine Availability of Support Services	\$18,455.00	4.62%
Task 3	Site Environmental Overview	\$68,633.40	17.16%
Task 4	Develop a Sub-Orbital Rocket Launch Program	\$33,359.85	8.34%
Task 5	User's Group	\$23,764.20	5.94%
Task 6	Develop Launch Site Concept Plan	\$109,934.50	27.49%
Task 7	Prepare Magnitude of Costs	\$8,909.75	2.23%
Task 8	Initiate Business Plan	\$28,560.20	7.14%
Task 9	Phase II Interim Report	\$22,294.00	5.58%
Task 10	Phase II Final Report	\$25,461.20	6.37%
Task 11	Project Management Coordination and Administration	\$30,499.00	7.63%
	TOTAL PHASE II	\$399,870.00	100.00%
	TOTAL PROPOSAL AMOUNT	\$500,201.00	
	TOTAL EXPENDITURES AS OF 8/31/02	\$37,617.65	
	TOTAL CONTRACTED AMOUNT	\$500,000.00	

Pecos County/West Texas Spaceport Development Corporation

Background

The Pecos County/West Texas Spaceport Development Corporation has established the following goals:

- Develop an operational Reusable Launch Vehicle Facility in Pecos County.
- Create jobs as a direct result of operations of Reusable Launch Vehicle Facility.
- Promote tourism associated with development and operation of the facility.
- Create ancillary jobs and advance the establishment of associated business development in regards to the launch facility.
- Bring new technology to West Texas.
- Develop a global educational program for Texas public school children and universities in association with the launch facility.
- Acquire environmental, technical and economic data to support the development of the launch site.

The Pecos County/West Texas Spaceport Development Corporation has adopted the following strategies to best reach these goals:

Acquire data to facilitate launch activities at the Pecos County Site. All reports and studies are designed to move the process of launch licensing and launch operations continually forward. Data collected will be tiered so that information gathered about the site and clients may be used for future development.

Contract with Texas educational entities to conduct necessary reports and studies for the launch facility. Contracts for the preparation of reports and data on the Pecos County site are in place with Texas A&M University, the University of Texas of the Permian Basin and the University of Houston. An agreement is pending with Sul Ross State University. Agreements with Midland College, Fredericksburg High School, the Fort Stockton Independent School District and the University of Houston are in place to develop educational programs associated with the site.

Develop multi-tiered educational programs for the region. Education plays a large role in the development of the Pecos County site for several reasons. The Spaceport Corporation feels that the economic impact of educational involvement will be significant. The involvement of students at all levels gives the region a personal stake in the development of the project. In addition, there is a pressing need in rural Texas to expose young people to emerging technologies.

Launch a sub-orbital vehicle to prove the ability of the site and community to support launch activities. In an effort to acquire the necessary data for the development of the launch facility, the Spaceport Corporation searched for a company that could successfully launch a suborbital

vehicle. The end result of this search was the acquisition of JP Aerospace as the source for this launch. An agreement has been signed to launch a suborbital vehicle from the Pecos County site. This launch will be used to collect data and prove the feasibility of the site.

Build regional support for the project. The Pecos County/West Texas Spaceport Development Corporation has received the support of the Permian Basin Regional Planning Commission and the West Texas Association of Commissioners and Judges. Continuing efforts are underway to build and consolidate regional support for the project.

Market the site to potential users. Members of the corporation have visited potential users and attended conferences to secure candidates for launch facility use. Representatives from Kistler Aerospace, JP Aerospace and the U.S. Air Force have completed site visits to Pecos County.

Acquire site for launch facility that meets the needs of potential users. Negotiations are currently underway to acquire rights to conduct launch operations from the primary site as identified by Kistler Aerospace, JP Aerospace and the U.S. Air Force.

Grant Leveraging and Community Contributions Towards Launch Facility Development

Pecos County and Fort Stockton have invested heavily to insure the success of the launch facility initiative. Prior to the formation of the Spaceport Development Corporation, local government entities invested \$250,000 in the pursuit efforts. Since the formation of the corporation, Fort Stockton and Pecos County have precipitated the following:

The Fort Stockton Economic Development Corporation's staff teamed with the Pecos County/West Texas Spaceport Development Corporation to write grants and secure grant funding for the project from the Texas Aerospace Commission and the United States Department of Agriculture. Since these applications for funding were produced "in house", no fees were charged. In addition, the county auditor's office and the FSEDC are administering the grants on behalf of the corporation at no charge. Total local expenditures associated with administration and writing of grants - \$50,000.

The Pecos County/West Texas Spaceport Development Corporation leveraged the Texas Aerospace Commission grant funds to secure a Rural Business Opportunity Grant from the USDA. This grant money is being used to supplement the economic impact and business plan development studies being conducted as part of the TAC grant. Additional funds received - \$50,000

The Fort Stockton Economic Development Corporation has contributed funds for the education of staff and community leaders. The intricacies and technical aspects of the launch facility project have caused community leaders to undertake a very steep learning curve to "get up to speed" for the project. Travel, education and pursuit funding supplied by the city - \$20,000.

Pecos County has supplied money for the corporation's participation in the World Space Congress and has entered in to a contract with the FSEDC for countywide economic development services.

Large portions of these services are directed towards the spaceport initiative. Additional funding from the county - \$25,000.

The Fort Stockton Independent School District, the City of Fort Stockton and Pecos County have invested in telecommunications infrastructure necessary to facilitate launch facility operations and related technologies. This infrastructure will allow for broadband access on site as well as increase the ability to supply distance learning opportunities and job force training. Total investment in telecommunications infrastructure - \$950,000

It is the intent of local government authorities to partner with the state to secure commercial aerospace industries for Texas. To this end, Pecos County and Fort Stockton have invested \$395,000 directly towards commercial aerospace development, as well as nearly \$1 million in telecommunications infrastructure.

Contracts Pending:

- Midland College – Educational Support and Coordination
- Sul Ross State University – Environmental Assessment
- La Escalera Ranch – Property
- JP Aerospace – Air Force projects

The Pecos County/West Texas Spaceport Development Corporation has spent \$73,669.37 of TAC grant moneys as of August 1, 2002. The corporation has presented trajectory analysis to TAC for review. The corporation anticipates approval of trajectory analysis and ability to move to Phase II of the grant cycle within the next few weeks.

In an effort to acquire the necessary data for the development of the launch facility, the Spaceport Corporation searched the nation for a company that could successfully launch a sub-orbital vehicle. The end result of this search was the acquisition of JP Aerospace as the source for this launch. An agreement has been signed to launch a sub-orbital vehicle from the Pecos County site. This launch will be used to prove the feasibility of the site.

After their visit to the proposed site, JP Aerospace approached the Spaceport Corporation about the possibility of developing additional Air Force projects in Pecos County. The Spaceport Corporation agreed in principal to the projects and the representatives of the Air Force approved the site June 5, 2002. Since that time, negotiations have been underway between JP Aerospace, the Air Force and the Pecos County/West Texas Spaceport Development Corporation.

The Pecos County/West Texas Spaceport Development Corporation feels that having these projects locate in Pecos County will provide immeasurable positive impact. The involvement of the Air Force lends instant credibility to the site and to the continued development of the project. The acquisition of JP Aerospace will allow for range costs to cover the Pecos County/West Texas

Spaceport Development Corporation's investment in the construction of site-specific facilities for the project. The Pecos County/West Texas Spaceport Development Corporation will be responsible to supply all infrastructure needs to the site. It is the intent of the corporation to amend portions of the current Texas Aerospace Commission grant to fund these costs. This would allow for Pecos County to have the first active commercial site in Texas.

The Spaceport Corporation is still pursuing Kistler Aerospace as the primary prospect for the use of a reusable launch vehicle facility at the Pecos County site. The corporation has maintained contact with Kistler and has developed strategies to secure them for Pecos County. The Pecos County/West Texas Spaceport Development Corporation estimates that it will be three years before the Kistler project will be ready for activation in the United States.

The Pecos County/West Texas Spaceport Development Corporation has received the support of the Permian Basin Regional Planning Commission and the West Texas Association of Commissioners and Judges. Continuing efforts are underway to build and consolidate regional support for the project.

**Schedule of Grant Deliverables and Budget
Pecos County/West Texas Spaceport Development Corporation**

<u>PHASE I</u>		<u>AMOUNT</u>	<u>% Phase I Budget</u>
		\$	-
Task 1	Identify Candidate Launch Systems		0.00%
Task 2	Estimate Planned Performance	\$2,000.00	2.30%
Task 3	Develop Sub-Orbital Rocket Launch Proposal	\$85,000.00	97.70%
	TOTAL PHASE I	\$87,000.00	100.00%
 <u>PHASE II</u>		 <u>AMOUNT</u>	 <u>% Phase II Budget</u>
Task 1	Site Plan Concept Plan	\$100,000.00	24.39%
Task 2	Economic Impact Study	\$30,000.00	7.32%
Task 3	Business Plan Development	\$20,000.00	4.88%
Task 4	System Engineering for the K-1 Vehicle	\$50,000.00	12.20%
Task 5	Environmental Overview for the K-1 Vehicle	\$60,000.00	14.63%
Task 6	Sounding Rocket Implementation	\$100,000.00	24.39%
Task 7	Regulatory Reform	\$50,000.00	12.20%
	TOTAL PHASE II	\$410,000.00	100.00%
	 TOTAL PROPOSAL AMOUNT	 \$497,000.00	
	TOTAL EXPENDITURES AS OF 8/31/02	\$101,337.83	
	 TOTAL CONTRACTED AMOUNT	 \$497,000.00	

Willacy County Spaceport Development Corporation

Background

The South Texas effort began in the spring of 1998 when the Texas Aerospace Commission (TAC) notified economic development groups throughout the state of Lockheed Martin's interest in identifying suitable sites for a spaceport for its VentureStar project. STSC was informally organized in July 1998 for the purpose of submitting a request to TAC to consider South Texas as a viable site for a spaceport. The original partners included Harlingen, Willacy County, Kingsville, Corpus Christi, and the Kenedy Memorial Foundation. Eleven areas in Texas submitted statements of interest. Three, including the proposed South Texas site in Kenedy County, were found to meet the general requirements.

Interest in and support for a South Texas Spaceport site continued to grow over the next 18 months. Interested individuals and organizations contributed funding for preparation of the package to Lockheed Martin and worked closely with the state on this effort. As it became apparent that there were insurmountable technical problems with the VentureStar project, the group began working with other private companies. In April 2000, a meeting was held in Sarita, attracting participants from the region as a whole. The result of that meeting was a consensus that creating a formal organization would strengthen the regional effort.

Articles of Incorporation to create a nonprofit corporation were filed with the State of Texas, and STSC held its organizational meeting in Kingsville on June 12, 2000. Bylaws were adopted, and a Board of Directors and officers were elected.

STSC is made up of two groups, the Board of Directors and the Board of Governors. The Board of Directors, which oversees the operations of the organization, consists of 10 members. The Board elects seven of the directors, and three are the co-chairs of the Board of Governors.

The Board of Governors includes representatives from state, county and city governments, institutions of higher education, ports, chambers of commerce, economic development organizations, and private entities throughout the region. Governmental or other entities from 13 South Texas counties are represented on the Board of Governors. (A partial list of members is in the Attachment). Various state and federal officials also serve as ex-officio members. The Board of Directors took a leadership role in the regional effort including providing testimony to committees, coordination with TAC and the other sites, publication of newsletters mailed to over 1700 individuals, working with the media and multiple other activities. The Board of Directors meets regularly; the Board of Governors meets, on average, twice yearly.

STSC members and other supporters have actively supported and funded the spaceport effort. More than \$200,000 in local funds have been directly contributed to the effort along with considerable volunteer resources and funds from entities to support travel, time and expenses of members.

From 1998 through the summer of 2001, STSC worked closely with officials and residents of Kenedy County. In August 2001, a public meeting was held in Kenedy County. At the meeting, residents expressed opposition to the possible location of a spaceport in their county.

Willacy County Judge Simon Salinas and other leaders proposed that an area in Willacy County be considered. The area is similar to the Kenedy County site in terms of its ecology and its location from a launch perspective and had been considered in the original search for a candidate spaceport location. Willacy County was one of the initial partners in the VentureStar effort and an active participant in the South Texas Spaceport Consortium. In addition, there is broad-based community support for the effort.

Talks with landowners and the community encouraged Willacy County to establish the Willacy County Spaceport Development Corporation for Spaceport Facilities (WCDCSF), a required step to apply for a Spaceport Pursuit Grant. The County appointed a seven-member Board of Directors and submitted a grant proposal to TAC. The proposal was accepted and Willacy County was awarded funding for Phase 1 of the Spaceport Pursuit effort.

WCDCSF is building on the regional and cooperative efforts of the STSC. The entities and their memberships continue to work together to promote a South Texas site that will attract space-related business and industry to the region. There has been considerable media coverage of the South Texas effort. Willacy County has committed local funds to the effort, and STSC continues to raise funds for its efforts. As an example, STSC has secured funding to produce a brochure providing site information to launch and other aerospace companies and dues are being collected from member organizations.

The STSC Board of Directors and the Board of Governors held their annual meetings in July and August 2002, respectively, and elected new directors, officers and co-chairs. (The attachment contains the latest list of directors and officers). More than 70 individuals attended the Board of Governors meeting. Additional entities are joining as members of STSC, and the group plans to continue its proactive role in the effort.

Project Phases

Phase I work will be substantially complete by October 1, 2002. Spaceport Pursuit Grant Phase II work, for which planning is underway, will include launch site conceptual planning, infrastructure assessments and safety evaluations. The technical evaluations are being performed by Interorbital Systems, Inc. (IOS), a firm that has wide experience in the space launch community. IOS has developed and is currently operating a sounding rocket program and is developing an RLV as well.

Other work will involve identifying the site launch operator services, infrastructure and logistical systems necessary to support the expected launch operations. The Phase II work will include identification of specific tracts of land and development of acquisition strategies as well as initial

evaluation of potential cost and revenue streams. Other planned activities include:

- Beginning development of the Regional Business Plan, a marketing plan and launch operations management plans.
- Licensing for initial sounding rocket /sub-orbital vehicle/small orbital vehicle launches will be initiated.

This effort will provide the learning basis for starting the site licensing for future sub-orbital and RLV launches. It is expected that the following Phase II work will be substantially complete in January 2003:

1. Assessing the state of current launch vehicle development programs for the next generations of both suborbital and orbital reusable launch vehicles,
2. Verifying the viability of a location in Willacy County in South Texas for the most likely launch operations involving both sub-orbital and orbital reusable launch vehicles,
3. Developing a proposal for a sounding rocket program to operate from the site, and
4. Providing guidance and assistance in integrating the public, the private sector and the education community at all levels into the regional space launch program.

In addition to IOS, one other sub-orbital/orbital vehicle developer, JP Aerospace, Inc.(JPA) and RLV developer Space Access, LLC have stated that they want to launch their vehicles from the South Texas Spaceport. JPA is working under contract to the U.S. Air Force to develop an orbital insertion program for small payloads by adapting current and evolving suborbital launch systems to orbital launch operations. JPA is performing its initial development work now and will ground test the system at the Pecos County spaceport site. The two spaceport teams, the South Texas and West Texas sites, and JPA are currently developing a memorandum of understanding and partnering plans to support the project. Initial orbital launches could take place as early as mid-2004. A major element of future work will be continued promotion of partnerships with the space launch industry and other private sector elements to supplement state and local funding. Grant funding sources are also being assessed for possible assistance with site development or other costs. Examples of such sources include NASA, the National Oceanic and Atmospheric Administration, and the U. S. Department of Commerce.

**Schedule of Grant Deliverables and Budgets
Willacy County Spaceport Development Corporation**

<u>PHASE I</u>		<u>AMOUNT</u>	<u>% of Phase I Budget</u>
Task 1	Identify Candidate Launch Systems	\$35,000.00	28.00%
Task 2	Verify Potential for Orbital Access	\$23,000.00	18.40%
Task 3	Coordinate with Higher Education Community	\$12,000.00	9.60%
Task 4	Sounding Rocket Program Proposal	\$20,000.00	16.00%
Task 5	Public Outreach	\$15,000.00	12.00%
Task 6	Project Management & Administration	\$20,000.00	16.00%
	TOTAL PHASE I	\$125,000.00	100.00%
<u>PHASE II</u>		<u>AMOUNT</u>	<u>% of Phase II Budget</u>
Task 1	Develop Spaceport Operations Strategy	\$25,000.00	6.67%
Task 2	Develop Regional Business Strategy	\$110,000.00	29.33%
Task 3	Identify Launch System Support Needs	\$30,000.00	8.00%
Task 4	Assess Regional Infrastructure Resources/Needs	\$25,000.00	6.67%
Task 5	Develop Launch Site Concept Plan	\$15,000.00	4.00%
Task 6	Preliminary Noise Assessments	\$20,000.00	5.33%
Task 7	Preliminary Environmental Investigation	\$45,000.00	12.00%
Task 8	Sub-Orbital Sounding Rocket Program	\$50,000.00	13.33%
Task 9	Public Outreach	\$25,000.00	6.67%
Task 10	Project Management & Administration	\$30,000.00	8.00%
	TOTAL PHASE II	\$375,000.00	100.00%
	TOTAL PROPOSAL AMOUNT	\$500,000.00	
	TOTAL EXPENDITURES AS OF 8/31/02	\$83,059.97	
	TOTAL CONTRACTED AMOUNT	\$500,000.00	

CURRENT TRENDS IN COMMERCIAL SPACE

Demand for satellite launch vehicles is growing. The National Reconnaissance Office and the Pentagon are planning to replace virtually their entire inventory of imaging satellites during the next decade at a cost of more than \$60 billion. The plan is to buy a fleet of vehicles with much keener eyes than today's optical imaging satellites and eventually to purchase equipment that can, unlike current satellites, provide continuous visual data about a target.

The key obstacles: Not only must the system provide a penetrating view of "denied" territory from a great distance, well above where an airplane can fly, but it must also be integrated with existing communications equipment so that information can be instantly relayed to forces on the ground and in the air. And even if these problems are overcome, using existing satellite technology it may not be possible to place enough of these devices in space to achieve full coverage because of the billions of dollars it takes to build and launch them. Congress has already rejected one proposed satellite radar network, known as Discoverer II, because it didn't meet cost expectations, and the Air Force and MIT's Lincoln Laboratory are currently conducting an analysis of alternatives expected to be completed in November of next year.

One possibility is the Technology Satellite of the 21st Century, or TechSat 21, a concept being studied by the Air Force Research Laboratory (see "One System, Many Eyes," left). Instead of large satellites the size and weight of cars, TechSat 21 would use "virtual satellites"-clusters of microsatellites weighing about 300 pounds apiece. Each microsatellite would have a bistatic receiver that would not only detect radar signals bouncing off Earth from its own transmitter, but also the signals sent by its neighbors, improving the resolution of the images collected.

Researchers are convinced that mass-produced micro-satellites, working in groups, will eventually make today's bulky and more costly devices obsolete. Among the advantages: If one microsatellite fails, the entire system doesn't have to be replaced. And they'll be much more flexible, because by simply reconfiguring clusters, operators will be able to conduct different missions. For example, the same group of microsatellites could be initially widely spaced to provide worldwide radar coverage, and then within hours moved closer together to conduct fine-toothed searches of smaller areas.

Much work remains to be done before TechSat 21 will be ready. For example, researchers must determine how to keep microsatellites in their tight pattern of slightly different orbits without burning too much fuel. The first real demonstration of the TechSat 21 concept will occur in 2005, when the Air Force plans to launch a cluster of three identical microsatellites to determine whether they can fly in a precise formation.

Companies are using LEO constellations for asset tracking. AMCI, for example, creates instrument packages that are placed on oil wells and other remote mechanical systems. These packages sense the status of the equipment and report it via satellite to a central location. The

customer - the asset owner- then checks the asset status via the Internet. Other companies provide similar instrumented packages for transoceanic freight containers, climate controlled rail cars, and fleets of trucks and buses. Other uses of for launched satellites are:

1. Navigation/Security: some companies provide integrated packages to consumers that enable satellite navigation in their cars or boats as well as instant access to help in the event of an emergency. Such systems use the Global Positioning Systems satellites for navigation and LEO communications satellites for communications,
2. Earth Imaging: the earth imaging industry continues to grow. Recent advances in hyperspectral imagers allow satellites to detect soil composition, plant populations and other detailed information from orbit, and
3. Air Traffic Control: Boeing and the FAA are working to develop a satellite based air traffic control system that will enable more rapid growth in airspace capacity.

Options for Action

The Subcommittee has determined that options are necessary for consideration in order to address the potential development of a spaceport in Texas. The ultimate goal is to further the economic development of this state. The Subcommittee was charged with evaluating whether a spaceport in Texas accomplishes this goal.

To this end, we offer the following options towards development of a spaceport:

1. The Texas Aerospace Commission should file, by March 1, 2003, a consolidated plan using an objective assessment process and offering a conclusion to:
 - a. Focus only on one site
 - b. Focus only on two sites
 - c. Develop unique capabilities at each site
 - d. Eliminate project

2. Given the constraints of the upcoming budget cycle, the Texas Aerospace Commission should evaluate other possible revenue sources such as:
 - a. Private Sector Funds
 - b. Launch Fees (similar to California)
 - c. Smart Jobs-Type Program
 - d. Federal Funds

Executive Summary

On Sept. 2, 2001, Lieutenant Governor William Ratliff issued six charges to the Senate Finance Committee. On Oct. 24, 2001, Senator Rodney Ellis, Chair, Senate Finance Committee, announced the creation of the Subcommittee on the Spaceport Trust Fund, appointing Senator Mike Jackson Chair, and issued the following interim charge corresponding to Charge Four:

- *Monitor the use of \$1,574,300 appropriated to the Texas Aerospace Commission in FY 2002-03 (Spaceport Pursuit Funds) to be awarded to counties and related development corporations for the pursuit of Spaceport clients.*

The Committee held four public hearings related to the interim charge in Austin and Brazoria, Pecos and Willacy counties. These counties' development corporations submitted successful proposals to the Texas Aerospace Commission (TAC) for grants to pursue and develop a spaceport in their community. Hearings were held in Austin, on March 7, 2002; in Lake Jackson, Brazoria County, on May 22, 2002; in Raymondville, Willacy County, on July 2, 2002; and Fort Stockton, Pecos County, on August 22, 2002.

This report includes background, an overview of the methodology used to select interested spaceport development corporations, reports from the three corporations on their efforts and achievements to date, and options identified by the Sub-Committee regarding the further development of a spaceport.

The Committee provides these options to assist the 78th Legislature in determining funding priorities.

DEVELOPMENTS TO DATE

In the 77th Legislature (2001), the Texas Aerospace Commission (TAC) received an appropriation of \$1,574,300 for the specific purpose of awarding grants to communities to pursue a spaceport or reusable launch vehicle facility. The TAC anticipates that the sum of these activities will prepare each qualifying community to apply and acquire a commercial launch or site license from the Federal Aviation Administration Administrator of Commercial Space Transportation (FAA/AST) office. To assist with the allocation of the appropriated funds, the TAC entered into a contract with the Center for Transportation Research (CTR) at the University of Texas at Austin in October 2001. The defined role of CTR was to provide support to the TAC during the review of the communities' proposals and to provide an ongoing review of activities and deliverables produced during the 2002-2003 funding period. The TAC worked with the following entities to formulate the grant program:

- An experienced team of professionals at the Comptroller of Public Accounts
- The Center for Transportation Research at the University of Texas
- TAC's Administrative Counsel at the Office of the Attorney General
- The Aviation Division of the Texas Department of Transportation

The grant program was announced in the Texas Register in the form of a Request for Qualifications (RFQ) on November 16, 2001. Communities that applied for Spaceport Pursuit Funds were required to submit proposals that met the goals of a two-phase process. The first phase is directed towards determining the feasibility of specific launch systems and to determine any potential fatal flaws at their site. The second phase requires communities to develop a business plan and to perform several planning exercises for a space launch facility. As a preparatory act for a commercial space facility and a community educational tool, each applicant was also required to give due consideration to the licensing and launching of a sub-orbital rocket. Grant awards were made in February 2002 to the Gulf Coast Regional Spaceport Development Corporation, the Pecos County/West Texas Spaceport Development Corporation, and the Willacy County Spaceport Development Corporation for Spaceport Facilities.

Key Dates

October 1, 2001: The TAC enters into a contract with CTR to provide a third party review of proposals for the spaceport funds and the subsequent activities and deliverables.

November 16, 2001: The TAC publishes an RFQ in the Texas Register soliciting proposals from Texas communities with a spaceport development corporation to receive grants for the pursuit of a commercial spaceport.

January 11, 2002: Three Texas communities - Brazoria County, Pecos County, and Willacy County - respond to the RFQ and submit proposals to the TAC.

January 12 - January 29, 2002: TAC, the Texas Comptroller of Public Accounts Office, the Texas Department of Transportation, the Texas Attorney General's Office, and CTR review the proposals submitted by the three Texas communities. The Texas Comptroller's Office, TxDOT and the Attorney General's office report that the sections of the proposals that they were requested to review are adequate to enter into contracts with local communities. CTR provides a detailed list of issues concerning each county's proposed work plan that need to be addressed before it is willing to support signing the contracts.

February 2002: Contract awards issued to the Gulf Coast Regional Spaceport Development Corporation (\$500,000), the Pecos County/West Texas Spaceport Development Corporation (\$497,000), and the Willacy County Spaceport Development Corporation for Spaceport Facilities (\$500,000).

February 12, 2002: The TAC and CTR meet with the FAA/AST office to update the office on the TAC's progress to date and to clarify technical issues that have been raised during the review of the community proposal.

August 19, 2002: JP Aerospace announces intent to locate its Combat Access and Ascender programs at the Ft. Stockton (Pecos County) site.

October 14-19, 2002: All three Texas sites, the Texas Aerospace Commission and the University of Houston Center for Space Architecture partner with the Clear Lake Area Economic Development Foundation and area partners to exhibit at the World Space Congress in Houston.

January 2003: Willacy and Pecos Counties anticipate suborbital launch capability.

June 2003: Grant recipients anticipated completion of Phase II grant process.

July 2003: Final report issued of FY 2002-03 Spaceport Pursuit activities by Texas Aerospace Commission (projected).