Center for Innovative Technology

Summary of Findings and Recommendations Report

2011 Consulting Engagement for the Virginia Commercial Space Flight Authority

August 24, 2011

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Executive Summary and Recommendations

The purpose of this report is to document the collective knowledge developed by the leadership of the Virginia Commercial Space Flight Authority (VCSFA), the VCSFA Board of Directors and members of the commercial space industry with regard to challenges, opportunities and recommendations to ensure continued successful operation and expansion for the Authority. By documenting this knowledge, leaders and directors establish a new management tool to prioritize, plan and monitor the Authority's growth and financial sustainability. This report represents the initial stages of a new planning process designed to position the Authority for expansion and to secure a financially sustainable future.

The recommendations in this report are key to the future of the Authority but should not overshadow the Authority's requirement for financial support from the Commonwealth of Virginia. Without increased investment from Virginia, the Authority will be unable to address the recommendations listed in this report and will continue to receive notice from the Auditor of Public Accounts regarding the risk to continued operations caused by the lack of Commonwealth funding. Essentially, funding the operations of the VCSFA is a priority requirement that must be addressed before the implementation of other recommendations in this report.

The Virginia Commercial Space Flight Authority is undergoing a period of rapid growth associated with the development of its Mid-Class Launch Facility. In addition to current growth related challenges, the VCSFA Board of Directors desires to examine the broader strategy for Authority growth to ensure the VCSFA is positioned to achieve its growth objectives.

In support of examining growth objectives and operational structure, the Board of Directors approved an outside review of certain operating areas of the Authority. The Center for Innovative Technology (CIT) offered to conduct the engagement, at no cost to the VCSFA, since expansion of the VCSFA is closely aligned with the mission of the CIT.

In late October 2010, the Executive Director in consultation with the Authority's governance identified the following areas as relevant to ensure the VCSFA was positioned to achieve its growth objectives. They include:

1. Operational structure and organization as a public authority
2. New business development and pursuit
3. Personnel recruitment and compensation structures
4. Financial management structure and working capital facilities

The scope of the CIT consulting engagement was structured to include all four identified areas of interest listed above. The engagement was conducted as a series of review sessions attended by VCSFA employees and directors and members of the aerospace support community. The

consulting engagement was started on March 15, 2011 and working sessions concluded on June 22, 2011.

Throughout the engagement, participants identified and examples of opportunities, challenges and potential recommendations for Authority review and implementation. At the conclusion of the engagement, CIT personnel reflected on the degree of interest, need and impact associated with for each recommendation and established a list of recommendations categorized as follows:

Immediate Action Required – recommendations in this category require immediate attention by the Authority and Board to address issues that have the potential of creating immediate operational challenges.

Strategic Direction Required – recommendations in this category require the establishment of a strategic plan with milestones for reassessment and/or implementation plan development.

Tactical Direction Required – recommendations in this category require immediate evaluation and directional determination to address growth and performance related challenges that will or currently are impairing mission objectives and performance.

The findings of the interaction engagement sessions are summarized in the following sections.

Immediate Action Required

The following recommendations are categorized as requiring immediate attention and action:

1. Continued operations of the Authority and Mid-Atlantic Regional Spaceport are contingent upon increased annual financial support from the Commonwealth. During the current period of expansion to accommodate Orbital's launch business, the Authority will require sustained new investment to prepare for new launch revenue opportunities. Without this investment, subsequent recommendations and growth cannot be addressed.
2. The existing qualifications and selection criteria for the Authority's board of directors needs to be redefined in the Code of the Commonwealth to place emphasis on space industry expertise, industry advocacy and operational business expertise.
3. To ensure a quorum for Authority board meetings, the Authority should examine and implement a mandatory attendance policy. The policy should allow no more

than two consecutive absences before the Chair requests a member's resignation.

4. The Authority should ensure that its insurance coverage for Authority personnel and directors is adequate for current operations and it should report the level of coverage annually to directors.
5. In consideration of the marketing and sales value associated with successful launch activities, the Authority should place its highest level of effort on the satisfaction of the Orbital launch relationship and place secondary effort on pursuing new clients until the new facility has been determined to have satisfied its original purpose.
6. An executive compensation policy that is approved by the board of directors, including an outside compensation analysis must be completed as soon as possible.
7. The Authority must secure an exemption from FOIA and public meeting requirements for recruitment, interviewing and employment negotiations.

Strategic Direction Required

The following recommendations are categorized as requiring strategic direction:

1. To provide uniform knowledge and support for the Authority's work and uniform support for appropriations, the appointments to the VCSFA board of directors should be evenly allocated between the House of Delegates, Senate and Governor of Virginia.
2. As the commercial space tourism industry matures, the Authority should monitor and establish a plan to secure launch opportunities in this field.
3. The Authority should continue to monitor the national security space industry market and establish a plan to secure new launch business in this market.
4. To assess its competitive position with regard to other US spaceports for employment, investment, and governance, the Authority should conduct a bi-annual review of competitive institutions and report the results to the Authority board of directors.

Tactical Direction Required

The following recommendations are categorized as requiring immediate evaluation and directional determination:

1. The current operational structure as a public authority presents numerous challenges in the areas of contract development, recruiting, compensation, governance and operations. Because these complications serve to reduce operational efficiency or prevent the Authority from accomplishing its mission, the Authority should evaluate the establishment of a private non-stock operating entity to execute the mission of the Authority.
2. The Authority's board meetings should be designed to place less emphasis on operational status and more emphasis on collaborative discussion directed at operational challenges. Operational status issues should be accomplished in a committee structure and reported to the full board.
3. While the Authority is satisfied that it has not missed near-term growth opportunities, capabilities should be implemented as soon as possible to position MARS as a launch facility for the emerging space travel industry and commercial transportation industry. Implementing this business development capability can initially be accomplished with 1 to 1.5 FTEs and a travel budget of $25,000.
4. Within 12 to 24 months, the Authority should initiate a technical review of the capability for the MARS to support heavy and/or human launches.
5. To diversify its capital access and reduce reliance on ODU RF capital requests, the Authority should plan and secure an independent credit facility as soon as possible.
6. As soon as practical, the Authority should implement a financial reporting process that reports the annual operating plan, budget and quarterly forecasts using predefined reports approved by the finance committee. These reports should be structured to be compatible with the future operating structure of the Authority.

The Summary of Findings and Recommendations Report is intended to serve as the initiation of a plan to overcome obstacles to the growth and sustainability of the Authority. This report will be provided to the Board of Directors of the Authority for their subsequent implementation and monitoring.

Background

In 1995, The Virginia General Assembly determined that the Commonwealth should address the commercial space industry by disseminating knowledge about research and development and technological advances in space flight and by pursuing economic development opportunities in space flight.

In order to accomplish this, a political subdivision of the Commonwealth known as the Virginia Commercial Space Flight Authority (VCSFA) was created. The Code of Virginia defines the Authority's mission to include commercial space development, human space flight, economic development and aerospace research. The Authority is governed by a Board of Directors appointed by the Governor.

In 1997 Bill M. Reed, Ph.D., VCSFA founder and Executive Director, worked to obtain a Space Act Agreement with NASA, lease land at Wallops Island to build the launch pads, obtain an EDA grant from the federal government to build launch infrastructure and applied to the FAA for a license to send rockets into orbit. The FAA granted the VCSFA a license and the Virginia Space Flight Center was created as one of four US Spaceports with FAA licenses to send rockets into orbit.

In 2004, Virginia Governor Mark Warner and Maryland Governor Bob Enrlich, signed a Memorandum of Agreement (MOA) that formed one of the most unique bi-state economic development partnerships in the nation. This MOA changed the name of the Virginia Space Flight Center to the Mid-Atlantic Regional Spaceport (MARS).

In 2007, NASA selected Loudoun County based Orbital Sciences Corporation, to participate in the NASA Commercial Orbital Transportation Services program. NASA awarded Orbital Sciences a $170 million dollar grant to design, build and demonstrate a new rocket that could resupply the International Space Station (ISS). To launch their Taurus II rocket, Orbital chose the MARS facility which was upgraded using $26 million in bond financing to create a new launch pad. Six months later, NASA awarded Orbital a $1.9 billion dollar contract for eight resupply mission to the ISS to place from 2011-2015. Orbital chose MARS as their launch site for the resupply missions.

In 2009, the FAA in its report of state activities in support of commercial space cited Virginia as "the most progressive state in the nation when it comes to supporting commercial space".

Introduction

The purpose of this report is to document the collective knowledge developed by the leadership of the Virginia Commercial Space Flight Authority, the VCSFA Board of Directors and members of the commercial space industry with regard to the challenges, opportunities and recommendations designed to ensure continued successful operation and expansion for the Authority. By documenting this knowledge, leaders and directors have the ability to prioritize, plan and monitor progress for growth related changes and financial sustainability.

The Virginia Commercial Space Flight Authority is undergoing a period of rapid growth associated with the development of its Mid-Class Launch Facility to support Orbital Sciences Corporation's requirements for Orbital's Commercial Orbit Transportation and Resupply Services Contract with NASA. Orbital's selection of the launch facility operated by the VCSFA and the joint investment by the VCSFA and Orbital provide the VCSFA with significant growth opportunities.

In addition to current challenges, the Board of Directors desired to examine the broader strategy for growth, including examination of futures role and mission objectives for the Authority and potential developmental paths and funding options. To ensure the VCSFA is positioned to achieve its growth objectives, the Board of Directors approved an outside review of certain operating areas of the Authority with the intention of examining structural, personnel and operational growth strategies. The CIT offered to conduct the engagement, at no cost to the VCSFA, since expansion of the VCSFA is closely aligned with the mission of the CIT.

In late October 2010, the Executive Director of the VCSFA identified the following areas as relevant to ensure the VCSFA was positioned to achieve its growth objectives. They include:

5. Operational structure and organization as a public authority
6. New business development and pursuit
7. Personnel recruitment and compensation structures
8. Financial management structure and working capital facilities

The scope of the CIT consulting engagement was structured to include all four identified areas of interest listed above. The engagement was conducted as a series of review sessions attended by VCSFA employees and directors and members of the aerospace support community. The consulting engagement was started on March 15, 2011 and working sessions concluded on June 22, 2011.

The engagement was structured into four areas with each area reviewed as outlined below.

Area 1 - Operational structure and organization as a public authority

Area 2 - New business development and pursuit

Area 3 - Personnel recruitment and compensation structures

Area 4 - Financial management structure and working capital facilities

The consulting engagement conducted by CIT consisted of a series of facilitated discussions on the four areas identified above. Each area was examined using the following guidelines:

- Identification of current operational challenges
- Identification of future roles and mission objectives
- Identification of alternative solutions
- Identification of resolution implementation options

At the conclusion of each discussion and review session, participants received minutes from the discussions to confirm the recommendations and positions developed during the session.

The subsequent sections of this report contain the issues and recommendations discussed during the CIT facilitated sessions.

Area 1 - Operational Structure and Organization as a Public Authority

The VCSFA is experiencing significant growth opportunities with its Orbital relationship, NASA's transition to commercially operated space transport for the International Space Station (ISS) and commercial space travel market development.

Review Area 1 was designed to examine the operational structure and organization of the VCSFA as a public authority including the identification of current operational challenges and challenges created by anticipated future roles and mission objectives of the Authority.

To facilitate the discussion of these topics, participants submitted the following questions:

1. What if any obstacle(s) does operating as a public authority provide for attracting and retaining qualified personnel?

2. What if any obstacle(s) does operating as a public authority pose to pursuing business development opportunities?

3. What if any obstacle(s) does operating as a public authority provide for establishing a competitive marketing position in the commercial space market?

4. What if any obstacle(s) does operating as a public authority provide for legal and contractual structures and commitments?

5. What if any improvements need to occur in governance structure and governance commitments?

6. What changes in structure or approach to funding a public authority's mission need to be adopted by the VCSFA?

Discussion participants identified the following challenges, opportunities and options for consideration:

1. The current operational structure as a public authority caused significant complications for the recruitment of a Deputy Director for the Authority. Complications included (1) a requirement that the VCSFA board hiring committee be physically in the same location to discuss potential candidates, (2) requirement to conduct interviews as a board following quorum and advance notice requirements, (3) state salary caps on compensation. These complications eventually led to abandonment of the recruiting process and failure to fill the position.

2. The recently signed FOIA legislation that is specific to providing relief for certain aspects of VCSFA operations would provide protection for confidential documents; but it does not eliminate the physical quorum requirement and teleconference prohibition which prevent the VCSFA from communicating effectively and timely with board members for operational and governance issues. A request to examine additional exemptions that are relevant to the

Authority was noted. Due to similarities in mission objectives, the parent authority for the Center for Innovative Technology, the Innovation and Entrepreneurship and Investment Authority should be examined to ensure that exemptions that exist for IEIA are considered for the VCSFA enabling legislation.

3. As an alternative to structuring waivers for the VCSFA, the Authority should consider the establishment of a private 501(c) or LLC operating entity. This operating company would execute the mission of the Authority under delegation from the VCSFA board and would enable a more efficient, cost effective and compatible private business partner. The implementation of the IEIA/CIT operating model was proposed as a model for review and consideration.

4. In consideration of the option to create an operating entity, it was recommended that the board members of the Authority and the operating entity be identical. Identical board composition ensures no misinterpretation of the execution of the mission of the Authority.

5. If a separate operating entity is determined to be the most effective operational structure for executing the VCSFA mission, the existing functionality provided to the Authority to issue bonds, secure public assets and achieve exemptions from certain taxes must be preserved for the Authority.

6. Given the unique lease and contractual arrangements that exist between the Authority and NASA, a careful review of these obligations and the ability to preserve them must be conducted prior to forming a new operating entity.

7. The Authority previously established a limited liability corporation for specific Authority functions; but then usage of the LLC was limited due to the cost and time associated with the establishment of the entity. A review of the existing structure and intended purpose should be conducted prior to establishing a new entity. Similarly, with the transition of the Authority from the Secretary of Commerce to the Secretary of Transportation, a recommendation to review existing DOT Authority structures was made to enable staff and directors to provide guidance on the feasibility of migrating to a similar structure.

8. A recommendation was made that a more private sector compatible entity be established for contracting with private sector companies since the private sector is reluctant to contract with a public authority specifically, if the contractual relationship does not provide a bi-lateral path for remedy in the event of contractual default. The situation would be resolved if private industry could engage in a balanced contract structure with remedy and damages allowable for both parties. A careful review of the current practice in Florida and California should be conducted with emphasis on understanding the competitive aspects of this structure and associated risks.

9. On the subject of governance, a recommendation was made to establish minimum qualifications for board candidates. These recommendations include space industry experience, space industry advocacy, business operations experience, finance and accounting expertise and space law expertise.

10. To provide uniform knowledge and to secure appropriations support for the Authority, a recommendation was made to split the appointments to the board evenly between the Governor, House and Senate branches of government. The requirement for geographic balancing of board appointments was discussed and it was concluded that industry expertise and appropriations related relationships are more effective in securing support for the Authority than geographic balancing. Nonetheless, statewide popular support for the spaceport is essential.

11. On the subject of governance terms, a recommendation was made to keep the current three-year term with the option for term renewal based on acceptable performance. A discussion on the subject of satisfactory governance participation produced a recommendation for specific board member attendance criteria. A recommendation of no more that 2 consecutive absences should be tolerated before the Chair would request that the member to resign from the appointment.

12. Considering the transition from spaceport development to spaceport operations and growth, a recommendation was made to ensure that adequate directors' and owners' insurance coverage be provided to all members of the board as well as to executives of the operating entity.

13. A recommendation was made to budget and pay out-of-pocket expenses to board members for board meeting participation.

14. A discussion on the structure of the executive committee resulted in a recommendation for a three-member committee that is appointed by virtue of their board position. The executive committee would consist of the Chair, Vice Chair and Treasurer and Secretary of the board.

15. A recommendation was made to transition the board meetings from status briefings provided by the Executive Director to interactive sessions that mobilize board members to support and advance initiatives of the Authority. A request was made for immediate ideas for improving the level of interaction at the board meetings.

Area 2 - New Business Development and Pursuit

In recognition of the pursuit of spaceport business by the states of New Mexico, Florida, Alaska and California, the Authority needs to be cognizant of the increasing role of state government in commercial space industry development as well as the competitive pressures for growth and expansion in new markets including recreational space travel.

Review Area 2 was designed to examine the business development environment and business development challenges faced by the VCSFA.

To facilitate the discussion of these topics, participants submitted the following questions:

1. What opportunities and markets exist for business development? At what point in the development of the Authority should new business pursuit be a highly ranked operational objective?

2. What resources are available to pursue business opportunities? What resources are required to pursue these opportunities?

3. What funds are allocated to the pursuit of new business opportunities"? What funds are required to support new business?

4. What competitive pressures exist for new business opportunities? How does the VCSFA compare to other competitors?

5. What future services could be provided by the VCSFA? Over what period of time could the market for these services support a new VCSFA service offering?

6. What, if any, obstacles exist to prevent realization of future opportunities for the Authority?

Discussion participants contributed the following challenges, opportunities and options for consideration:

1. On the subject of the appropriate timing for the Authority to pursue business development as an equal priority with contractual performance, participants observed that, historically, it has been more difficult for the Authority to justify investing in business development due to the limited number of launches that had been conducted by the Authority. Since VCSFA now has a number of successful launches to use as proof of performance, the Authority must ensure that all potential clients are aware of the VCSFA facility and launch capabilities.

2. A challenge exists in determining how best to invest in business development. Currently, a number of "paper rocket companies" with great ideas are under development, but the majority of these companies have not yet secured the capital necessary to launch. As a result, investing in courting these companies may not deliver new opportunities. A reasonable balance needs to be established to allow the Authority to be visible to new entities without incurring significant investment expense. The authority should exercise due diligence to determine the capitalization of commercial space launch firms prior to entry into any launch contract services

3. Considering the marketing and sales value of successful launches and satisfied launch clients, the most significant investment the Authority can currently make for new business development is to successfully complete the new launch facility on time and to Orbital's expectations. Orbital's satisfaction will serve as the best validation and opportunity development platform for business development.

4. While the new facility operating agreement allows for multi-tenant launch capability, the timing to transition from concentrating on current contact commitments to concentrating on new business should occur after 2 to 3 successful launches on the new pad.

5. To date, the Authority is satisfied that it has not missed "low hanging fruit" to support growth opportunities; but additional advocacy and communications regarding the Authority's capabilities should be improved immediately to position the Authority for securing new business in commercial and travel space industry segments. The authority should seek to communicate with commercial space launch firms who have active Space Act Agreements with NASA such as XCOR, Masten, Armadillo, Space Adventures, Bigelow Aerospace, Boeing, Lockheed-Martin and others about the potential of utilization of the spaceport assets Implementing the capability to develop launch provider relationships for business development would require 1 to 1.5 FTEs and a travel budget of $25,000.

6. The authority should recognize the both the favorable and unfavorable attributes of the launch inclinations required of commercial space launch firms in launch market analysis, especially to orbital inclinations associated with the International Space Station.

7. Commercial space flight continues to be a potential growth opportunity and the Authority should continue to work with partners and vehicle developers to identify those opportunities. While existing traditional commercial launches are aligned with a launch facility and are not likely to change unless their payload or launch criteria change, new commercial launch firms continue to expand and look for the most favorable launch site based more significantly on the ground business environment, e.g. range costs, favorable state tax incentives, regulatory environment, state space policy, and skilled workforce. As a launch facility is it important to

recognize that we cannot be “all things to all people” and must concentrate on what our facility can support.

8. Because the Authority’s near-term business development opportunities are linked to the size of the vehicle the new facility can accommodate and the long-term opportunities are limited to the maximum size facility that Wallops can accommodate, business development prospects are easy to identify. Because of this, one FTE and a travel budget would be sufficient staffing for business development.

9. Within the next 12 months, the Authority should conduct a technical assessment of its ability to support a heavy launch capability and a human launch capability.

10. On the subject of competition, the participants noted that Florida is the Authority’s only real competitor since geographic location and target azimuth are leading determinants in launch facility selection. However, suborbital space launch has been a historic strength of the NASA Wallops Flight Facility and several FAA/AST licensed suborbital spaceports exist in the US today. NASA is awarding several suborbital space launch contracts. Therefore, Florida, California, New Mexico, and Texas are active competitors in the suborbital market; emerging competitors include Hawaii, Oklahoma, and perhaps others. With regard to the emerging commercial orbital market, Texas, Hawaii, Puerto Rico, and other non-domestic locations are now under active consideration by American commercial space launch providers

11. The Authority’s communications and marketing efforts must concentrate on VCSFA facilities, capabilities and past performance. Large scale advertising campaigns are not necessary to attract a limited client base. The spaceport can serve as an inspiration for science, technology, engineering and mathematics (STEM) education in Virginia's schools, colleges and universities. In addition, general public awareness and popular support for expanded operations at the spaceport are important to the longer-term state financial support of the Mid-Atlantic Regional Spaceport.

12. A recommendation was made to examine the sub-orbital launch market for potential business development. It was noted that our preference to date in that vehicle class was for guided vehicles only.

13. On the subject of inhibitors to new business pursuit, the participants’ contributions concluded that obstacles are not preventing the Authority from pursuing new business. The issue of FOIA’s reach for contractual vehicles and negotiations documents was a significant obstacle that recent legislation has resolved.

14. The contemplated creation of an operating entity for the Authority would serve to prevent future issues like the FOIA complication from inhibiting growth opportunities.

Area 3 - Financial management structure and working capital facilities

Since its creation, the VCSFA has been incubated and supported by the Old Dominion Research Foundation (ODURF). The ODURF has provided operating capital and financial management services for the Authority.

Considering the expansion of the Authority's spaceport assets and revenues, section 3 was designed to examine the benefits and constraints that exist today and/or could develop in future VCSFA growth scenarios.

To facilitate the discussion of these topics, participants submitted the following questions:

1. Does the current relationship with Old Dominion Research Foundation (ODURF) provide adequate working capital access and repayment options in order to meet to contractual commitments?

2. Does the current accounting relationship with ODURF provide adequate financial planning, management and reporting tools for staff and the board of directors?

3. Is there a practical ceiling for the amount of working capital the Authority can request from ODURF?

4. What strategic objectives or opportunities would stress the existing financial relationship between ODURF and the Authority?

Discussion participants identified the following challenges, opportunities and options for consideration:

1. On the topic of the relationship between Old Dominion Research Foundation and the VCSFA it was noted that the ODURF and the Authority have always had a mutually supportive and positive relationship that enabled the Authority to start and create MARS.

2. The ODURF has provided a working capital 'float' to the Authority for daily operations as well as non-recurring charges like those associated with the new launch facility.

3. During the establishment of the Authority the ODURF served as the signatory for the Authority's contracts. This has now been assumed by the Authority.

4. The Authority does not have a credit facility and has depended on the ODURF to manage its financials. The current upgrade project has placed approximately $80M of expense on the ODURF books for management. This has stretched the ODURF in-place capabilities.

5. Establishing an independent credit facility was determined to be critical for the Authority. The facility would be used to finance large equipment purchases that have long-term depreciation schedules.

6. On the topic of working capital for business operations, participants reported that approximately $3.0M to $6.0M is required for operational working capital. This capital has been provided by the ODU RF and the Authority has operated successfully within this structure.

7. Historically, no administrative charges have been applied to the working capital provided by the ODURF for Authority operations.

8. Considering the unique structure of the ODURF/VCSFA financial arrangement in conjunction with the current transition to oversight by the Secretary of Transportation, members recommend that the Secretary of Transportation's transition team and consultant should be informed about the ODURF/VCSFA relationship and benefit for both parties.

9. Since the Authority's appropriation currently comes from within the VEDP budget line item, the mechanism for this appropriation under the Department of Transportation needs to be reviewed to ensure that proper budget placement and funds access is operational.

10. Members noted that existing financial management reports are structured as operational reports for the Authority using the ODURF financial reporting tools. These reports have been adequate for VCSFA operations to date, but do not provide complete reports that are necessary for the advancing level of complexity and revenues that the VCSFA will incur to support new business under contract.

11. As a baseline for comparison, the CIT financial structure was outlined:
    a. CIT develops an Operating Plan with a budget. The budget is included in all CIT and IEIA financial reporting on a monthly basis.
    b. CIT includes a balance sheet and cash flow projection for management and board governance.
    c. CIT's budget is refined using a forecasting process targeted to monitor the company's financial performance for the fiscal year.

12. A Finance Committee member noted that as a VCSFA board member he believes that the current financial reporting format could be upgraded to support standardized financial reports that follow commercial or non-profit financial reporting standards. This recommendation becomes more of a requirement if the Authority creates an independent operating entity.

13. Regarding the amount of advance notice that the ODURF could give in the event that the ODURF could not provide the float necessary for the VCSFA request, a specific amount of time could not be provided. Participants acknowledge that the current ODURF/VCSFA financial relationship is satisfactory for current operations; however, it is feasible that the float requirements for future operations may exceed the ODURF desire or capacity to fund. Specific amounts or timeframes were not discussed in this regard but were recognized as areas that require further review and planning.

Area 4 - Personnel Recruitment and Compensation Structures

Success with employee job satisfaction, retention and recruitment are top priorities for all successful enterprises. The VCSFA Board acknowledges the contributions made by the Authority staff and leadership and has determined that compensation and employee benefits should be actively managed and reviewed by Authority governance.

Section 4 was designed to review current compensation practice and to test the relevance of current practice to the state of the Authority and its growth projections.

To facilitate the discussion of these topics, participants submitted the following questions:

1. Are existing employees compensated at a competitive rate such that personnel loss due to compensation-motivated resignations is minimized?

2. What validation mechanisms are employed to ensure that key employee compensation is competitive to industry averages?

3. Does offered senior executive compensation satisfactorily meet market expectation for the recruitment of senior executives?

4. Do existing recruitment and interview processes support the timeline requirements and candidate pool necessary to meet the Authority's staffing requirements?

5. What if any strategic objectives would require a structural change in personnel recruitment, compensation and employee retention.

Discussion participants identified the following challenges, opportunities and options for consideration:

1. Regarding turnover and compensation satisfaction, participants reported that significant turnover due to compensation is not reported. However, recent failed hire offers are now indicating that current compensation ranges should be reviewed and validated.

2. Regarding compensation validation, existing employee compensation has been based on ODU Research Foundation salary schedules and guidelines. While this mechanism may be sufficient for current compensation structures, it needs to be validated by an outside compensation assessment entity to determine if the technical and management expertise required by the Authority is being adequately compensated according to industry standards.

Even though the current ODURF compensation ranges may have upward flexibility, this flexibility may require a mismatch with job descriptions or titles and may not serve as a validation check for compensation ranges required by the Authority. This further defines the need for an independent compensation assessment.

3. In terms of the role of governance of the Authority, while the Authority has operated as a "start-up company" structure since establishment, the recent growth of launch business and potential for new launch business mandate that a structured compensation policy be established and approved by the Board of Directors.

4. With regard to executive compensation for recruitment of new leaders, it was noted that during the recent recruitment process for of the Deputy Director of the Authority, the proposed compensation ranges were below the expectations of interviewing candidates. To avoid this complication and prevent executive turnover, future new compensation offerings should be validated by an outside third party entity.

5. Regarding the recruitment process, it was noted by participants that during the recruitment of the Deputy Director, the compliance requirements for open meetings and related FOIA procedures made it impossible to conduct the interview and selection process.

6. The only strategic objective that was identified as necessitating changes in compensation policy management was the establishment of an operating entity such as a 501(c)3 company. A transition to a new operating entity would require the transition from the ODU RF compensation policy to a policy and compensation administration established specific to the Authority's operating entity. This transition and policy development requirement would be a positive transition for the Authority.

Epilogue

The success achieved to date by the Authority was not easily accomplished. Every new enterprise encounters significant risk and the potential for failure. In addition to starting a new enterprise, the Authority's founders were challenged with addressing a new market in the highly technical and specialized field of launch operations. The progress achieved by the Authority has been remarkable and represents the type of commitment described by President John F. Kennedy in his 1962 speech at Rice University "The United States was not built by those who waited and rested and wished to look behind them. This country was conquered by those who moved forward, and so will space."

The Center for Innovative Technology is pleased to have had the opportunity to work with the Virginia Commercial Space Flight Authority to assist the Authority to identify challenges and pursue its growth objectives through the 2011 Consulting Engagement. Since the Commercial Space Flight Authority's establishment, CIT has supported the development and governance of the Authority. In recognition of the significant success achieved to date by the Authority and its staff, the CIT is proud to have contributed this engagement and looks forward to future opportunities to support the success of the VCSFA.

Peter Jobse

President and CEO
Center for Innovative Technology