

FY2013 Q2
Quarterly Report for the Period Jan. 1st – Mar. 31st, 2013
Center for the Advancement of Science in Space

Cooperative Agreement Number:	NNH11CD70A
Name:	Center for the Advancement of Science in Space, Inc.
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Section I: GENERAL STATUS REPORT

Board of Directors:

The Board conducted weekly telephonic meetings in addition to its first quarterly meeting on March 1, 2013, at the Space Life Sciences Laboratory, Exploration Park, Florida. The next scheduled Board meeting is June 3, 2013, in Houston, Texas. During Q2 the Board performed the following actions:

- Required committees for governance, compensation, audit, and science were established and members assigned
- Proposed and outlined the establishment of a stakeholder workshop from science and industry to discuss "out of the box" ideas for utilization among industry, identifying possible ED candidates, forming new constituency connections, and fostering general awareness
- Worked with the external search firm and recommended a number of ED candidates, which were subsequently contacted by the search firm to establish interest in the position. The Board plans to interview qualified interested candidates during Q3. Approved the Annual Performance Plan for FY 2013
- Initiated development of the organizational strategic plan including the establishment of the organization's vision, mission and over-arching goals
- Initiated the development of a strategic communications plan
- Approved the initiation of a science advisory board and recommended expansion to a science and technology advisory board

Business Development:

Major activities focused on the continued development of a business and partnership ecosystem in the Houston, Texas, area. CASIS' ecosystem model enables access to academic institutions, research-specific organizations, philanthropic entities, and industry partners — localized due to the region's targeted economy and market concentration — that have the potential to benefit from use of the International Space Station (ISS) U.S. National Laboratory in areas of research and technology development. Cambridge/Boston was previously used as the validation for the ecosystem model, focusing on the concentration of biotech, pharmaceutical, and university-based research institutions that might benefit from use of the National Lab. The Houston deployment will focus on the existing strong ties to the space program, the medical research center, and the oil and natural gas industry to generate business opportunities that cut across each of our major research and technology

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development pathways.

Partnerships:

The CASIS executive team engaged with Boeing to discuss a CASIS/Boeing partnership. Boeing's Program Manager for the ISS, John Shannon, was the primary representative for Boeing, and he expressed a significant interest in developing a relationship that will foster outreach, education, and use of the National Lab.

Strategic Communications:

During this quarter the Executive Director, Chief Operating Officer, and strategic communications staff initiated the effort to reach out to all new and existing congressional member offices on authorizing and appropriating committees with jurisdiction over NASA. The House Science, Space, and Technology Committee has been of particular focus, as over half of its membership consists of newly elected representatives. Outreach efforts include the distribution of news announcements, newsletters, and the 2012 Annual Report, to inform stakeholders of the CASIS mission and progress to date. CASIS has also proposed coordinating with member offices to promote the National Lab: for example, potentially hosting educational events in their districts, announcing opportunities in member newsletters, and participating in the newly formed National Lab Caucus.

Other outreach and education activities included:

1. CASIS representatives from strategic communications and operations participated in the Science and Technology Working Group's Congressional Visit Day Exhibit and Reception.
2. CASIS sponsored the participation of a student grant recipient to participate in the American Institute of Aeronautics and Astronautics' Congressional Visit Day. The student researcher along with CASIS' strategic communications staff met with staff in several offices to describe the experience of utilizing the National Lab.
3. The Chief Operating Officer provided a panel presentation at the annual University Space Research Association and Space Policy Institute meeting on the topic of commercial uses of the ISS. The panel topic focused on commercial utilization of the ISS National Lab.
4. The Chief Operating Officer and strategic communications staff conducted a meeting at NASA Headquarters with representatives from other government agencies, including NIST, NIH, and NOAA, to discuss strategic partnership opportunities. Follow-on meetings are planned to establish Memorandums of Agreement (MOAs) and next steps.

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Section II: PERFORMANCE METRICS

Operations

Provide a forum for access for other government agencies involved in National Lab utilization to enable regular communication of activities and planning:

CASIS developed an outreach team of representatives from the organization's executive management, business development, operations, and communications departments. The team's first objective was to develop a comprehensive Memorandum of Agreement (MOA) template describing the responsibilities of CASIS and Other Government Agency (OGA) users of the National Lab. The key elements addressed in the draft MOA include:

- Identification of the requirements levied on CASIS by the NASA Authorization Acts of 2005 and 2010 and the Cooperative Agreement with NASA.
- CASIS' recognition of the ability of the OGA to conduct science evaluation and selection.
- OGA's recognition that an economic valuation must be conducted by CASIS.
- An agreement to share records of respective review, selection, and valuation processes.
- The basis for flight prioritization.
- An agreement to coordinate mutually reinforcing activities, such as public engagement, data sharing, and applicable working groups.

The draft document will be submitted to an initial six government agencies for review and comment.

Establish a guide for providing information to investigators that describes all steps of the payload development, testing, and manifest process:

A reference guide that outlines payload development and integration was provided to principal investigators and payload developers via the CASIS website at <http://www.iss-casis.org/CASISBasics/ForResearchers/SupportServices.aspx>. This webpage provides a high-level description of the technical payload integration support provided to CASIS-sponsored principal investigators by the CASIS Operations department, in collaboration with Implementation Partners and various NASA offices and organizations. In addition, a more detailed guide of the payload development and integration process was provided to investigators via a downloadable PDF of the *ISS National Laboratory Baseline Primer for Payload Planning, Integration, and Operations*, also available on the above referenced CASIS webpage.

Science & Technology

Establish the approach for OGAs to collaboratively conduct science reviews for CASIS-sponsored research:

This activity occurred in conjunction with the development of the OGA MOA described above in the General Status Report under Strategic Communications. The primary elements of the approach included:

- The OGA will identify and create research opportunities based on its congressionally appropriated mission.
- The OGA will perform the receipt, review, and selection of qualified proposals based on its prescribed scientific evaluation and review process.

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- CASIS will accept documentation describing the OGA's process for scientific review and selection, performed as equivalent to the CASIS science review process.
- CASIS will perform the operations review to determine flight readiness.
- CASIS will conduct an economic valuation using the OGA's stated mission as the basis for determining economic value to the U.S. citizen.
- CASIS will prioritize the selected projects using the same prioritization method used for all National Lab payloads.

This process was described at a meeting of the Office of Science and Technology Policy's Fast Track Action Committee for use of the National Lab by OGAs. Six government agencies were represented and agreed to move forward with this process.

Additional activities performed during this quarter included:

- CASIS released a request for information to hardware developers in order to understand the current state of available platforms for conducting stem cell research on ISS. The information gathered from the request significantly shaped the structure of the follow on grant announcement.
- CASIS engaged a stem cell subject matter expert to work with the chief scientist and staff responsible for creating the stem cell grant announcement. A review of literature indicated very little research had been performed in microgravity; however, research using ground analog hardware suggested differentiation was enhanced. Further, flight experiments indicated several variables that have direct impact on stem cell differentiation were not adequately controlled for. Based on this information, CASIS began the development of a call for research to address the fundamental question of the benefit of microgravity on stem cell growth and differentiation in order to determine the feasibility of this research advancing on ISS.
- CASIS worked closely with NASA during this quarter to define the preliminary science requirements for commercial rodent research on ISS. The majority of this effort focused on the preliminary flight aboard SpaceX-4 in which hardware validation and crew procedures would be validated; however, CASIS did identify a simple science model that could be demonstrated in parallel. Moving forward CASIS continues to identify commercial clients interested in performing a novel science experiment during the validation flight.
- CASIS awarded two additional PCG experiments during the quarter. Both experiments were evaluated during the initial research call, but were later awarded when additional budget was realized because of the reduction in CASIS overhead and operating expenses.
- In this quarter, CASIS awarded two material technology proposals. Both awardees will utilize the external platform to demonstrate and understand how to improve technology associated with fault tolerance in commercial satellite computers and improved energy generation from photovoltaic materials.
- Because of an earlier request for information, CASIS invited two investigators to submit full proposals for use of the on-orbit HICO hyper spectral analyzer. CASIS received proposals late in the quarter and will conduct a full evaluation and make an award determination early in the third quarter.
- CASIS formed its Science Advisory Board (SAB). The SAB will serve as a dynamic group of subject matter experts that can review unsolicited proposals, propose areas of research that CASIS may issue grant opportunities for, and advise the Chief Scientist on

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promising research pathways that may benefit from research conducted on ISS. The SAB is intended to expand and contract as needed and provides as needed access to a diverse set of expertise, in essence expanding the qualified resources of the organization within the current operating budget.

Marketing & Communications

Focus media push in support of CASIS Increment 37/38 payloads (ARK1):

In this quarter, CASIS began its promotion of Advancing Research Knowledge-1, ARK-1, signifying the first increment in which research selected, prioritized, and manifested by CASIS will be conducted in the National Lab.

In March, CASIS made its first major public announcement for ARK1 when it unveiled the mission patch for the increment, designed by renowned artist Shepard Fairey. CASIS announced this patch at a live event hosted by Engadget, a tech website with a viewership of over 20 million people per month. Engadget proved to be an ideal partner to announce this patch, creating a new audience not previously familiar with CASIS and the capabilities of the National Lab.

Complete strategic communications plan consistent with the high-level objectives of the CASIS Strategic Plan and begin implementation:

The framework for the strategic communications plan was developed (see attached "*Strategic Communications Plan*"). While the organizational strategic plan continues development, some elements of the communications plan remain TBD pending the identification of high-level goals. Once the Strategic Plan for the organization has been finalized between the consultant and the Board, a corresponding Strategic Marketing Communications Plan will be delivered within 90 days by the CASIS Communications Team. (It is critical that the organizational mission, vision and key messages tied to target markets are, at a high level, defined and socialized by the Board and key CASIS stakeholders before a tactical communications plan is developed to coincide with it.) Within the Strategic Communications Plan, a 12-month, forward looking tactical strategy will be completed, and will include the following elements:

- Communications messaging (key messages that can be used by all spokespersons, including CASIS leadership and the Board of Directors)
- Video campaign recommendations
- Social media tactics
- Refreshed target audience identification
- A media database build
- Tactical timeline development for trade show targets (as well as presentation/meeting opportunities within those targets)
- Editorial calendar database development (for feature story pitch opportunities)
- Definition of initial advertising targets
- Identifying of marketing collateral needs and improvements
- Recommended themes and timeframes for the execution of traditional public relations activities (news releases, op-eds, press conferences, editorial boards, etc.)
- Proven social media strategies, to incorporate proven results from daily interaction/management, as has been initiated to date.

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Fundraising & Development

Develop yearly fundraising campaign planning process:

The development of an annual fundraising plan is progressing well and is projected to be deployed in the third quarter. The focus has been on implementation of plan elements to start raising funds while the plan continues to be fully developed. Areas of focus and accomplishment in this quarter include:

- **Gifts:** CASIS received a \$50,000 five-year commitment (cash and in-kind) from the Houston-based Institute for Collaboration in Health to support partnerships in the Houston ecosystem. In addition, a verbal commitment was received for a \$1 million multi-year gift that will support the CASIS mission and partnerships with institutions in Colorado, particularly Denver. We expect to formalize this commitment in Q3.
- **Partnership Approach to Fundraising:** A major emphasis of the annual fundraising plan is to build partnerships with institutions around the country that will (1) drive science and STEM education into the pipeline and (2) allow CASIS to take advantage of existing nonprofit institutions' resources for broad-based fundraising and to seek private/corporate funding. The two major gifts above are examples of how this approach can work successfully. In Q2, successes were achieved in beginning such partnerships in the Houston ecosystem (Institute for Collaboration in Health, Abramson Center for the Future of Health, Baylor College of Medicine, University of Houston, Boeing), the Denver/Colorado potential ecosystem (Nagel Foundation, Morgridge Family Foundation, University of Denver, Colorado Space Coalition, Space Foundation, Wings Over the Rockies Air & Space Museum), and the Boston ecosystem (Museum of Science, MIT, Mass Challenge).
- **Membership/Annual Giving:** An evaluation of the most effective way to drive unrestricted gifts to support the CASIS mission continues. E-memberships tripled in Q2 to approximately 700, and an emphasis on increasing these to drive awareness of the CASIS mission will continue in Q3. We anticipate a redesign of the CASIS website, along with a greater emphasis on integrating social media, to drive unrestricted giving in Q3.

STEM Education

Complete development of STEM strategic plan and begin implementation:

The STEM education plan is complete and is being implemented. The plan was delivered in the first quarter of 2013.

Identify partnerships; for example, with other nonprofits, universities, institutes, and National Labs of value in executing the STEM strategic plan:

CASIS STEM has established partnerships with the following entities:

- National Center for Earth and Space Science Education – CASIS is supporting Missions 3 and 4 of the Student Spaceflight Experiments Program.
- MIT – CASIS is supporting the middle school Zero Robotics program.
- Conrad Foundation – CASIS is a Champion Partner participating as a panel judge in the Spirit of Innovation Challenge.
- BioServe Space Technologies – CASIS is supporting the BioServe CSI-06 program.
- University of Denver – UD has pledged matching funds for a graduate student to support the Story Time from Space program.
- PGA Center for Golf Learning and Performance – CASIS is supporting STEM Golf Camps for middle- and high-school students.

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- Kennedy Space Center Education Foundation – CASIS will provide technical expertise about National Lab research pathways for KSCEF education initiatives at the KSC Visitor Complex.

Administration

Quarterly budget and performance review with NASA:

CASIS reviewed the budget versus actual with NASA and continues to do so on a quarterly basis.

File FY12 "Form 990 Return of Organization Exempt from Income Tax" with the IRS:

The form 990 was filed with the IRS on February 15, 2013.

Conduct annual review and recertification of subcontractors per the OCI and PCI plans:

CASIS certificated (including recertification of subcontractors) 30 individuals during the quarter.

Contracts Update:

Executed grants between Jan and March: the California Institute of Technology, the University of Alabama at Birmingham, Woodward and Hauptman, St. Louis University (Crystallization), the University of Florida (plant biology), and the Museum of Science (Boston).

Executed Consultant Agreements: Science Advisory Board members J. Trent, S. Collicut, P. Trefonas, and T. Orntoft.

Executed Subcontracts: Mayo Clinic (Dr. Folmes), McKinsey & Co. (to identify sensor sources), Coleman Research Group (expert reviewers), Science Environmental Applications (K. Zarillo), and Elizabeth Loving (cancelled; she is now full time).

Award letters for Materials Science Grants: Dr. Morse and Dr. Ready.

Policy Update:

CASIS employees received the employee handbook with an overview of company policies. Annual evaluations will begin in June, and annual compliance training will be held in November.

Staffing Update:

As of April 1, 2013, CASIS has thirty staff members and nine open positions to be recruited during the current fiscal year.

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Section III: BUSINESS STATUS REPORT						
March 31, 2013						
	Budget Q2 2013	Actuals Q2 2013	Variance	Budget YTD 2013	Actual YTD 2013	Variance YTD 2013
	\$4,834,672	\$3,025,376	\$1,809,296	\$12,253,891	\$6,194,888	\$6,059,003
Direct Labor	1,486,787	1,045,185	441,602	2,831,483	2,027,476	804,007
Grants to be Awarded	1,040,533	200,000	840,533	4,567,574	838,259	3,729,315
Equipment: Permanent > \$5k	50,700	5,162	45,538	99,900	88,757	11,143
Equipment: Expendable & Supplies	19,120	46,467	(27,347)	43,540	102,462	(58,922)
Other Direct Costs	202,472	139,604	62,868	460,749	356,215	104,534
Subcontract Costs	1,824,031	1,448,333	375,698	3,826,429	2,508,560	1,317,869
Travel	211,029	140,625	70,404	424,216	273,159	151,057