The FY09 fiscal year is about to close, with another “banner” year for sponsored programs. Receipts of sponsored funding as of 31 August is over $200M, a 15% increase over receipts for FY08, which totaled $176M. The RSPO will publish their 2009 Annual Report during the first quarter of 2010. This report provides a good overview of sponsored program activities for each of the graduate schools and institutes and serves as a record of our sponsored program activity.

The Centennial Showcase in Washington, DC, was an outstanding success. A compilation of the posters exhibited is online at http://www.nps.edu/Research/Documents/NPS-Centennial-Showcase-09_2009.pdf. We plan on sending a copy of the CD to general officers, research sponsors, and friends of NPS. The next distribution of NPS thesis and the electronic submission of research proposals will provide a link to the showcase. None of this would be possible without the contribution of faculty and students. We deeply appreciate your support.

During the Fall Quarter, we hope to hold a “research showcase” for NPS faculty and students. One of the predominant observations at our showcase events is the interest of our own faculty and students in what others are doing at NPS. Further information on these events will be forthcoming. Once again, thank you for the successes of the past year.

### IMPORTANT DATES

**Brown-Bag Seminar Series**
- Research Initiation Program, Wed 9/23, 1200–1300 SP 101A
- Contracting for Support Services, Thurs, 10/22, SP 101A
- Working with Industry, Mon, 11/24, SP 101A

**Workshops**
- NPS Cyber Security Workshop • Thurs, 10/29, Glasgow Hall (contact Dean Purdue, ppurdue@nps.edu for further info)

**NPS Research Initiation Program**
- Proposals (Year One): Due one month before research quarter begins
- Progress Reports (Year Two): Due 15 October 2009

**Beginning FY10**
- Rollover accounts are available for expenditure 1 October; see your SPIFA for balance available for expenditure. Budget pages will be issued in first two weeks of FY10.
- Accountability training (Fiscal Law, Accountability, Human Subject Protection) must be completed for release of FY10 funding. (See exception for labor below.)
- Labor should be charged to appropriate source from beginning of fiscal year; labor charges are allowed for first two pay periods regardless of whether accountability training has been completed.
- Request an interm account for sponsored activity that must begin prior to receipt of funds. Interims require proposal of record and confirmation from sponsor on intent to fund.
- FY10 indirect rates are at http://intranet.nps.edu/ResAdmin/fy10IndCostRates.pdf.
- All indirect cost recovery accounts (“I” accounts) are available for expenditure 1 October.
- Questions, email research@nps.edu. **HAPPY NEW YEAR!**
Projects funded in August:

- Consulting Regarding the Joint Tactical Radio System, Frank Kragh, Electrical & Computer Engineering (Space and Naval Warfare Systems Center-Pacific)
- Spacecraft Survivability, Christopher Adams, Mechanical & Astronautical Engineering (Lockheed Martin)
- Missile Guidance, and Control Course, Christopher Brophy, Mechanical & Astronautical Engineering (NAWC–Aircraft Division)
- Missile Propulsion Short Course, Christopher Brophy, Mechanical & Astronautical Engineering (NAWC–Aircraft Division)
- Lightning Launch Commit Criteria Analysis, Tom Murphres, Meteorology (45th USAF Weather Squadron)
- Arctic Ocean Flux Buoy to Observe Fluxes, Timothy Stanton,
Graduate School of Business and Public Policy
Funds received to date: $8.9M

By Sponsor

School of International Graduate Studies (National Security Affairs only)
Funds received to date: $29.8M
By Sponsor

Research and Education Institutes and Centers
Funds received to date: $24.8M
By Department

By Sponsor

Projects funded in August:
- Advanced Acquisition Program 40-01, John Dillard, GSBPP (USMC Systems Command)
- Building Strategic Communication Capabilities, Gail Thomas, GSBPP (U.S. Joint Forces Command)

Projects funded in August:
- Leadership Development for DHS/FEMA, Ted Lewis, National Security Affairs (DHS)
- Briefing on the Horn of Africa, Jessica Piombo, National Security Affairs (Commander, Second Fleet)
- Area Studies Seminars, Sandra Leavitt, National Security Affairs (National Security Agency)
- Multi-Modal Transportation Security Networks, Ted Lewis, National Security Affairs (Transportation Security Agency)
- Homeland Security Master’s Degree Program, Ted Lewis, National Security Affairs (US Northern Command)

Projects funded in August:
- Maritime Information Sharing Taskforce, Jeff Kline, NSI (Office of the Director of National Intelligence)
- Graduate Research Studies Program (Phase I), Ed Lesnowicz, NSI (U.S. Special Operations Command)
- Scan Eagle Operations at Camp Roberts, Bob Bluth, CIRPAS (Naval Special Warfare Group One)
- TAMDAR Support, Bob Bluth, CIRPAS (AIRDAT, LLC)
- Evergreen Scan Eagle Flight Training Support, Bob Bluth, CIRPAS (Evergreen Helicopters, Inc.)
- Saber Focus PGCS Support, Bob Bluth, CIRPAS (NAVAIR)
- Massive Multiplayer Wargame over Internet Study, Donald Brutzman, MOVES (NUWC–Newport Division)
- Modeling, Analysis and Visualization for Harbor Exercises, Donald Brutzman, MOVES (Naval Installation Command)
- Run-Time Action for Simulated Entities, Christian Darken, MOVES (TRADOC Analysis Center–Monterey)
- Social Networks, Steve Lieberman, MOVES (TRADOC Analysis Center–Monterey)
- Standard Heat Experiment Modeling and Analysis, Michael Melich, Meyer (NRL)
THE SPACECRAFT RESEARCH AND DESIGN CENTER GAINS ASSET

The Spacecraft Research and Design Center (SRDC) provides six state-of-the-art facilities: the FLTSATCOM Laboratory, Spacecraft Attitude Dynamics and Control Laboratory, Smart Structures Laboratory, Spacecraft Design Center, NPS–AFRL Optical Relay Mirror Spacecraft Laboratory, and Adaptive Optic-Beam Control Laboratory. These assets will soon be complemented by a segmented-mirror test bed. Construction is underway in Halligan Hall to receive the test bed.

This new asset will be used for instruction and research in the space-systems-engineering and space-operations curricula to provide students with experience in the design, analysis, and testing of space systems and to offer facilities for experimental research. The research emphasis is on acquisition, tracking, and pointing of flexible spacecraft with optical payloads; optical-beam control for high-energy lasers jitter control; adaptive optics for correcting optical-beam aberration due to mirror surface errors and turbulence; active vibration control; and space-system design.

Segmented Mirror Test Bed (SMT) will Increase Research Capability in Adaptive Optics

For persistent surveillance, an imaging satellite must be placed in a higher orbit to allow a longer imaging period. To obtain the same resolution as in a lower orbit, the mirror must be larger. Due to launch-vehicle constraints, the larger mirror must be lightweight, flexible, and segmented for space deployments. To meet performance expectations, the segments must be very accurately aligned and the surfaces of the segments must be controlled actively. This is accomplished by adaptive optics (AO). AO systems work by determining the shape of the distorted wavefront and use an “adaptive” optical element—usually a deformable mirror—to restore the uniform wavefront by applying an opposite cancelling distortion. AO has many civilian and military applications including imaging stars and galaxies through a turbulent atmosphere, viewing retinal problems through non-homogeneous eye fluids, satellite imaging of terrestrial features, and transmitting high energy laser beams by correcting aberration in laser beam and reduction in laser power due to atmosphere turbulence.

The SMT is a 3-meter, six-segment mirror telescope. It has over 100 actuators on each segment for surface control and three actuators on each segment for alignment. It has Shack Hartman and Phase Diversity wavefront sensors. In this application, the Shack Hartman wavefront sensor is used to determine wavefront error due to surface errors, and actuators on the surface are used to correct the surface. The phase diversity sensor is used for segment alignment.

The SMT is a unique test bed for research in AO and developing wavefront sensor techniques and adaptive control techniques. It is an excellent test bed for research in system identification of large space structures and control of flexible structures. The SRDC plans collaborative research using the SMT with national laboratories, industry, and universities. The telescope is similar to the James Webb telescope under development by NASA.

WORKING WITH INDUSTRY

NPS works with industry and nongovernmental agencies through Cooperative Research and Development Agreements or “work for others.” The following agreements were executed in August 2009.

- City of Los Angeles, Emergency Management Department, David Banks, Center for Asymmetrical Warfare
- Evaluation of Streaming Network Appliance, Pacific Interface, Inc., Jeff Weekley, MOVES
- TAMDAR Payload Support, AirDat, LLC., Robert Bluth, CIRPAS
- Fuel Injectors for Pulse-Detonation Engines, Weidlinger Associates, Inc., Chris Brophy, MAE
- Scan Eagle Flight-Training Support, Evergreen Helicopters, Inc., Robert Bluth, CIRPAS

RELATIONSHIPS

The following MOUs/MOAs were executed in August 2009.

- Educational Alliance, Air Force Institute of Technology, Pete Boerlage, COS
- Mutual Support of Research and Education, Naval Surface Warfare Center, Dahlgren Division, Kevin Smith, East Coast Outreach Director
- NPS Serving as a DAU Equivalent Provider, Defense Acquisition University, John Dillard, GSBPP

Volume 1, No. 4 4 August 2009