Mini-Satellite Launcher Catapults NPS into Space Race

By Barbara Hongker

Like the Spirtul launch that trig- gered the Cold War space race, Rus- sian miniature spacecraft launches have catalyzed the Naval Postgraduate School to design and build a revolu- tionary new mini-satellite launcher to quickly and affordably launch small spacecraft on orbit.

"Our goal is to create a new 'coach' for students and faculty to conduct a wide range of missions, from earth observations to testing cutting-edge technologies for launch," said the project's new student program manager Lt. Christina Hicks. "Current U.S. launch oppor- tunities for individual CubeSats are limited and expensive, and most are launched by other countries—predominantly on Russian rockets—with the sole U.S. exception being NASA's GENESAT, at three orbits per year. There is a real need for quick and affordable access to space for experi- mentation and education. When NPS President Dan Oliver signed the CubeSat launch contract in October 2011, it will be the world's first high-capacity CubeSat launch and the first U.S. non-NASA CubeSat launch," noted Hicks.

"The wave of the future is space miniaturization, just as mini- turization was a major turning point for the personal computer," said the project's lead principal investigator, Lt. Matthew Crook, "This project is unique hands-on opportunity for Space Systems of- ficer students to build a real piece of space hardware that's a major en- abling technology for future use and that will actually be launched, all within a two-year curriculum. Though each is doing an individual thesis, they work as a team and coordinate at the group level."

Three NPS student teams in addition to Hicks – Lt. j.g. Anthony Harris, Lt. Adam "Tito" Dejesus and Lt. j.g. An- thony "Tony" Harris – are currently working on NPSCubeLite, a varia- tion of the student designer design with eight instead of ten CubeSat containers.

For his thesis, Crook, the project's principal investigator, created a half-scale model and wrote the process by which non-government CubeSats can be added to launch manifests on a space-available basis.

"By capitalizing on excess capac- ity on space-available flights aboard U.S. launch vehicles, NPSCubeLite will catalyze CubeSat development by government, industry and educa- tional institutions. Students and faculty working on CubeSats will be encouraged to launch their projects in space," said the Hicks.

Students interested in carrying the work of the CubeSat team further for their theses or as part of their future professional activities, Hicks concluded.

Naval Postgraduate School Monterey, California

January 2009

By MC2 Kelli Arakana

To unite stakeholders who hold varied interests in the Arctic region, the Naval Postgraduate School Center for Stabilization and Reconciliation Studies (CSRS) co-hosted a two-day conference that addressed the eco- nomic, cultural, scientific, security and political implications of the region's dramatic change in climate.

"When those of us in the conflict management field look at this region, we see it is ripe for political, human confrontation," said Matthew Vacca- no, the CSRS Program Director. "We don't expect violent conflict, but it cer- tainly seems to us there is a high risk for mischief and political confrontation between stakeholders.

CSRS, a conflict prevention and conflict recovery program that provides edu- cational opportunities for practitioners of peace and stability opera- tions, drew guidance for the event from the U.S. military's new maritime strategy. The strategy emphasizes the need to prevent future wars through relationship building and cooperative approaches.

Dr. Tatatsuki Ariki, Assistant Profes- sor of Conflict Transformation for the School for International Training in Brattleboro, Vt., opened the confer- ence by urging participants to estab- lish a responsibilities-based approach to solving potential conflicts. "None of us in this room can solve our own sec- tor's problems without reaching out to other sectors ... that is the challenge," he said. "When things are intercon- nected, it gives us an opportunity to activate peace and deactivat destructive potential."

Throughout the event, researchers and representatives from each stake- holder group shared their knowledge of the Arctic's current environment and led focused discussions on the region's future.

Dr. Wieslaw Maslowski, a research professor for the NPS Geophysics Department, outlined the Arctic's cur- rent and future physical state, offering research that shows the ice is melting at a much faster rate than most mod- els indicate. Maslowski called many of the current prediction models "too conservative of the current realities," and warned that if the warming trend continues, the Arctic may experience an ice-free summer as soon as 2013. The implications of an ice-free Arctic include the establishment of new ship- ping routes, international interests in natural resource development, and de- fense issues posed by limited capabil- ities for search and rescue missions.

Chief Joe Linklater, Chair of the Gwich'in Council, discussed cultural perspectives of the Gwich'in commu- nity on an indigenous nation in the Arctic region. Because global warming has af- fected the region's natural resources, traditional Gwich'in knowledge is be- coming less reliable and transforming the mindsets of younger generations, Linklater said. He emphasized the need to include the indigenous per- spective in decision-making processes, and that all groups, whether political or a part of industry, need to consider how their decisions will affect the lives of indigenous communities.

NPS President Dan Oliver also addressed the participants and said it was fitting for an institution like NPS to co-host an event aimed at prevent- ing conflict. "U.S. national security policy clearly recognizes the effects of the mobilization, and NPS is an interna- tional institution that understands the importance of preventing wars in ad- dition to winning them," Oliver said.

The conference was notable for its involvement of so many different representatives of the NPS commu- nity. In addition to numerous gradu- ate students and faculty participants from across campus, nine NPS fac- ulty and staff served as speakers, and many NPS staff members supported the large event.

For Vaccaro, the conference reaff- rmed the need to unite various com- munities and stakeholders in the spirit of competing interests, to work collectively toward a solution. "The changes that are hap- pening in the Arctic region and the potential for confrontation is so com- plex that you really have to involve a large group of stakeholders to come up with answers," he said.

"We know that we've built new rela- tionships and new understandings, but what the participants do with that, is up to them."
Faculty Notes

Associate Prof. Christopher M. Brophy of the Department of Mechanical and Aerospace Engineering received the 2008 NPS Menkens Award for Excellence in Scientific Research.

Prof. Dorothy Deming received the Outstanding Teacher Award from the ACM Special Interest Group on Security, Audit, and Control.

Distingushed Prof. Buyaprasert of the MAE department became a fellow of the American Institute of Aeronautics & Astronautics.

Prof. Wizalude Maalosowan of Oceanography received a personal call from former vice president Al Gore who invited Maalosowan to attend The 14th Conference of the Parties to the United Nations Framework Convention on Climate Change. The meeting marks the halfway point in negotiations for an ambitious and effective international climate change agreement to be clinched in Copenhagen in 2009.

Prof. Glenn Robinson, Defense Analysis, has authored The Battle for the Stary: Jihad Information Strategy, which will be published by Stanford University Press in 2009. Because of his contributions to COMET training modules on Coastal Meteorology and other publications, Prof. Wendell Nau was invited by the The Weather Service, Servicio Nacional de Meteorologia e Hidrologia (SENAMH), to teach a course on Coastal Meteorology to their forecasters and other researchers in the region.

Message From

The defense establishments in the U.S. and elsewhere are confronted with costly failures of defense acquisition programs. Escalating technological complexities involved in the design and assembly of advanced weapons along with the political, economic, and management components of defense acquisition processes have made the challenge of dealing with cost overruns and delays a critical part of designing and executing programs. Scientific discoveries and engineering innovations help advance the frontiers of technology while demanding the refinement of systems engineering and the specialization of research and education. Engineering failures such as the Titanic, Tacoma Bridge, Hindenburg, Comet aircraft accidents, Space Shuttle Challenger, Chernobyl and satellite-in-orbit and launch failures, etc., on the other hand, have historically provided the main impetus for the evolution of a highly interdisciplinary technological underpinning of engineering and applied science disciplines and systems engineering. Although not as transparent as these well-known engineering counterparts, failures in defense weapons acquisition programs have highlighted the need for a broadening of the scope of this new area of engineering to incorporate financial and risk management aspects in addition to the traditional boundaries of engineering and sciences.

The National Academy of Engineer (NAE) summarizes its concern from Engineer of 2020 as having the following attributes:
• Strong analytical skills
• Creativity
• Practical ingenuity
• Leadership skills
• Agility
• High ethical standards and professionalism
• Resilience and flexibility
• Global awareness

In particular, NAE's aspirations for the future systems engineering or system engineering or system engineers of today began their career with traditional training in engineering or physics and attained professional maturity in their fields through problem-solving experiences in the industry and defense sectors. This is in one’s professional career growth. Our challenge however, is to create a revolutionary M.S. and Ph.D. program in system engineering to produce those renaissance engineers with the attributes of NAE 2020, who will have adequate depth in traditional engineering disciplines, along with very strong training in acquisition and management.

The renewed emphasis on Ph.D. degrees for all programs offered by GSEAS will enrich the classes and laboratory projects with advanced students and stimulate faculty research productivity. We are committed to maintaining accreditation by ABET and WASC to ensure institutional effectiveness as measured by student learning, program quality, and faculty scholarship. Our distinguished lecture series features Nobel Laureates to provide the students and faculty an intellectual climate of the highest caliber. GSEAS will seek ways to share the quality of education and research enjoyed by the resident students with the distance learning students and embedded educational facilities across the defense establishment. This requires a flexible viewpoint that is non-traditional and a level of institutional commitment that has no counterpart in the civilian university engineering. I wish to invite the GSEAS faculty in building such a unique school to produce the renaissance engineers and scientists who are desperately needed for national security and defense.

Announcements

After a national search led by Prof. Phil Durkee, on Jan. 5, 2009, Dr. Karl Van Bibber will become the NPS Vice President and Dean of Research. The search committee had a number of strong candidates to consider, a testament to the Naval Postgraduate School’s growing national reputation as a research university. Van Bibber, auncate Scientist of the Physical Sciences Directorate and Lawrence Livermore National Laboratory (LLNL) with experience in strategic planning.

Richmond was also the Public Affairs Officer for KION TV (CBS) and KWAV 97 FM radio, where Richmond also served as the top-rated morning show host.

After a national search by a review committee, Alan Richmond has been appointed to the position of Director of Management and Information Systems of the National Security Institute while continuing as the Chair of the IS department. The campus congratulates Mr. Richmond to a job “Well Done” and wishes him well in his new responsibilities.

After a national search by a review committee, Alan Richmond has been appointed to the position of Director of Management and Information Systems of the National Security Institute while continuing as the Chair of the IS department. The campus congratulates Mr. Richmond to a job “Well Done” and wishes him well in his new responsibilities.

After a national search by a review committee, Alan Richmond has been appointed to the position of Director of Management and Information Systems of the National Security Institute while continuing as the Chair of the IS department. The campus congratulates Mr. Richmond to a job “Well Done” and wishes him well in his new responsibilities.

After a national search by a review committee, Alan Richmond has been appointed to the position of Director of Management and Information Systems of the National Security Institute while continuing as the Chair of the IS department. The campus congratulates Mr. Richmond to a job “Well Done” and wishes him well in his new responsibilities.