



U.S. Navy Photo by Javier Chagoya

NPS Helps Test New Maneuvers on Orbiting Craft

By Amanda D. Stein

Dazzling sun spots and stunning solar flares were just another day in the life of the Transitional Regional and Coronal Explorer (TRACE) spacecraft over the past 12 years. Designed to record solar activity, TRACE transmitted images and data back to NASA until earlier this year when it was set to be shut down and replaced by a newer craft.

Before shutting TRACE down, NASA decided to give a team of scientists a shot at conducting their experiments on the fully operational vehicle in space. That opportunity made its way to NPS when Professor Mike Ross and Researcher Mark Karpenko, shown right to left above, received an offer to man the spacecraft for four weeks of experiments that could transform industry standards.

"After our success on the first day, we decided to go for it and do our big test the next day. If we were only going to get one shot at this, this was the test that we really wanted to do." - Mark Karpenko

On August 10, Ross, Karpenko, and several others from NASA gathered at Goddard Space Flight Center in Maryland to perform a series of slew maneuvers that would reorient the spacecraft by taking advantage of the physics of the craft as it orbits. Using trajectories designed by Draper Laboratory, the craft would appear to be "dancing" around before ultimately zeroing in on its end point. This winding path would, according to their theory, allow the craft to slew more quickly than if it was maneuvered along a straight path.

The experiments included two tests a day, three days a week, during which the optimal maneuver commands were transmitted to the satellite, and then executed.

"We wanted to start off small and move the vehicle only by about 10 degrees to make sure that things were working correctly," said Karpenko. "After our success on the first day, we decided to go for it and do our big test the next day. If we were only going to get one shot at this, this was the test that we really wanted to do."

That test, a 50 degree slew, proved to be a success. The tests that followed would slew the spacecraft up to 90 degrees off the sun line before returning back again to its starting point. Given the success of the experiments, there is hope of future opportunities to demonstrate the optimal control maneuvers on other satellites in orbit. For more information on this effort, check out the full story at www.nps.edu/news.



NAVAL POSTGRADUATE SCHOOL

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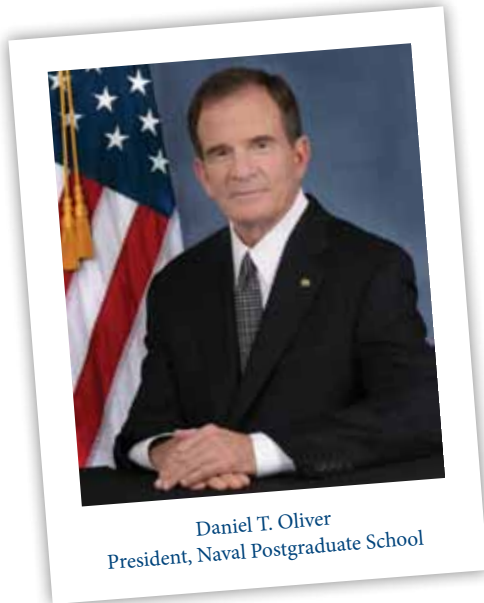
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JANUARY 2011

A Message From ...

Daniel T. Oliver, President, Naval Postgraduate School



Daniel T. Oliver
President, Naval Postgraduate School

Dear Colleagues,

We have just started a new year, a new decade, and with the passing of our Centennial this past May, a new century for the Naval Postgraduate School. It is indeed an era of new beginnings for our campus community. And as so many do at this time of year, I have pondered over the common practice of forming resolutions, those self-improving promises we make to the one individual to whom we are truly most accountable – oneself.

When I last wrote a message for Update NPS in November, I spoke on the topic of civility and its important role in an academic institution, where freedom to explore and break through barriers of knowledge must be nurtured. Now, with the arrival of the New Year, as thoughts of resolutions – promises we make to ourselves – dominate my thoughts, I can think of another commitment we should collectively embrace.

At the Naval Postgraduate School, we have a particularly compelling responsibility to demonstrate the highest standards of ethical behavior because we are charged with educating future leaders of our nation. For our students, part of that education is, I believe, constant modeling of the ethical conduct we expect of them as officers of the military – responsible and disciplined stewards of lives and other precious resources that will be entrusted to them by the people of the United States.

These same ethical standards should be adopted by everyone in the NPS community, for we have all been given the honor of trust by the government of our nation to dutifully execute our important mission to the best of our abilities. We must be unrelenting in pursuit of this excellence through everything we do.

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Our commitment to ethical behavior should be a trademark of all who walk the halls of the Naval Postgraduate School. It should be reflected in every aspect of our work here, and by every individual on campus, from leadership and faculty to students and staff, whether civilian or military. Ethical behavior encompasses fiscal responsibility and accountability, to be sure, but also integrity, honor, compliance with laws and regulations, treating others with fairness and respect and engaging in activities which are consistent with excellent performance of our governmental duties.

The commitment to the highest standards of ethical behavior which I am describing is one that most of us have already pledged to uphold, and I thank you for your good stewardship and dedication. My hope for the New Year is that NPS will reach new levels of excellence in this and every other value we hold true and be recognized as a community of individuals – people who are different in every way possible, yet together form a powerful force for good.

My best wishes to all of you for a personally and professionally successful New Year.

Crushing CubeSats for DARPA

By Amanda D. Stein

The Space Systems Academic Group (SSAG) at NPS is known for being active in developing CubeSats – small, square satellites used for space research. The satellites have become widely popular in academia as they are relatively cheap to build and give students a chance to see their final product actually launched into space.

The trip into space can be hard on the small structure, however, and the folks at the Defense Advanced Research Projects Agency, DARPA, hope to determine just how much of a beating the CubeSat can withstand. They recruited SSAG Chair Rudy Panholzer and Distinguished Professor Young Kwon to develop and destroy a plastic CubeSat structure, part of the 2010 DARPA Digital Manufacturing Analysis, Correlation and Estimation (DMACE) Challenge.



NPS Professor Young Kwon (second from right) holds the crushed CubeSat structure while speaking with (from left) DARPA Fellows Lt. Luke Brewer, Lt. Col. Timothy Sands and Maj. David Weinstein. NPS joined up with Oak Ridge Lab to build and destroy CubeSat and titanium sphere structures in support of the DARPA DMACE Challenge. (U.S. Navy photo by Javier Chagoya.)

“NPS was selected to execute the DARPA Challenge based on the combined expertise of Rudy Panholzer and his Space Systems Academic Group, and Young Kwon of the MAE department,” said DARPA Fellow Tim Sands. “Professor Kwon literally wrote the book on Finite Element Methods. Professor Panholzer’s leadership in CubeSat developments and the ‘Annual Technology Review and Update’ together made the combined NPS team the clear choice to host the CubeSat-Crush portion of the DARPA Challenge.”

Supplied with complete data sets on the structures, 21 teams from around the country participated with each submitting predictions on how much force would be required to crush a CubeSat and a sphere.

On December 8, Kwon, Associate Professor Luke Brewer, Research Associate Dan Sakoda, Materials Engineer Chanman Park, and DARPA Fellows Sands and Marine Corps Maj. David Weinstein gathered around the Mechanical Testing Machine to test the strength of a 10 cm by 10 cm CubeSat structure.

The team with the closest prediction to the actual figures was then announced on December 10, with the University of California, Santa Barbara team, led by Professor Frank Zok, earning the \$50,000 prize.

Global Challenges Seminar Series Kicks Off with Econ Guru Giovanni Dosi

By MC1 Rob Rubio

Initiated by Executive Vice President and Provost Leonard Ferrari, the Global Challenges Seminar Series got underway with speaker Giovanni Dosi, Professor of Economics at Italy’s Scuola Superiore Sant’Anna, at the Monterey Conference Center, Dec. 9.

Dosi presented a moving talk entitled, “Exploring Problems and Solutions in the 21st Century,” delving into industry and technologies in foreign countries, trade agreements between nations, and terrorism and rogue nations. Following his speech, he re-

sponded with insight and feasible solutions to questions presented before him from the audience about problems facing the nations of the world today.

Global Challenges is a free seminar series sponsored by NPS, CSU Monterey Bay, Monterey Institute of International Studies, and the City of Monterey. Featuring speakers that highlight diverse opinions, the series creates a platform for the community to engage with scholars, scientists, authors and leaders on issues of global importance.

from the
MEZZ

The Provost Review Committee completed its work on December 13, 2010 with their final briefing to President Oliver. Professor Bill Colson chaired the Review Committee and President Oliver commended him and his team for their excellent efforts at outreach and consultation. The other Committee members included: Professor Doug Brook (GSBPP), Professor Peter Denning (GSOIS), Dr. Christine Haska (Vice President, Information Resources and CIO), Dr. Elisabeth Pate-Cornell (Board of Advisors), Dean Jim Wirtz (SIGS), and Capt. Janice Wynn (Dean of Students).

The Committee met with every academic department, reached out to students, support areas, the staff union, as well as the Board of Advisors and other external references.

Nearly 200 individuals were heard and over 20 meetings were held. The entire campus had an opportunity to participate in the review. The internal feedback and consultation part of the process has been completed.

A final recommendation by President Oliver will be reviewed and considered by the Board of Advisors at its April 2011 meeting.

Once finalized, President Oliver will present the recommendation to the CNO and Secretary of the Navy for their decision. As soon as that result is learned, President Oliver will communicate the outcome to the campus.

From the Mezz provides a brief report on the activities of NPS’ senior administration. For more details on any of these reports, please contact the Office of Institutional Advancement at pao@nps.edu.

Have a story to share? Institutional Advancement is constantly seeking interesting news and stories for Update NPS. Send your tips to update@nps.edu.



NPS students line up in preparation to enter King Auditorium for Fall 2010 graduation ceremonies. (U.S. Navy photo by Javier Chagoya.)

Commander Third Fleet, Bronze Stars Shine at Fall Grad

By Barbara Honegger

Three hundred fifty-three U.S. and international students tossed their caps during Fall 2010 graduation ceremonies at the Naval Postgraduate School, Dec. 17.

Officiating at her last commencement, Dean of Students Capt. Janice Wynn kicked off the celebration with the presentation of two prestigious Bronze Star awards, to Lts. Frank Morales and James McRandle, both for efforts in relation to Operation Iraqi Freedom.

NPS President Dan Oliver then took the podium for a ringing introduction of the morning's keynote speaker, Commander 3rd Fleet and NPS alumnus (Telecommunications Systems Management, 1988) Vice Adm. Richard W. Hunt.

"Admiral Hunt is a consummate seaman, an educated and proven Naval leader, a man of integrity and a gentleman in the finest sense of the word, and we should all be proud that he is an NPS alumnus," Oliver stressed, noting that the speaker would soon be joining the ranks of NPS Distinguished Alumni at the reception following the ceremony.

"In the 20 plus years that have passed since I was a student here, I truly believe I've used some aspect of my NPS education every day in every assignment I have had – in my operational jobs at sea, in

my Pentagon tours on both Navy Staff and Joint Staff, and on the ground," Hunt said. "In that same period, our world, our nation and our military have changed dramatically, and a common thread to addressing the new and complex challenges we now face is the necessity to understand how our adversaries think. That information must come from study and interaction, which is what you've had the chance to do here at NPS."

Not only did Hunt stress the value of education on national security to the packed King Auditorium audience, he also stressed its impact on the graduates' future career paths.

"From my Telecommunications class of about 17 students, three are currently still on active duty as Flag officers, and most of the others are captains or retired captains," he recalled. "So you're on a good course. Take advantage of it for your future careers. The Naval Postgraduate School is a world-class institution, with a world-class faculty and the top officers from nations throughout the world. You've just received the most advanced, up-to-date education and you have become as current as one can get in many demanding technical areas. Use that knowledge and the doors that NPS opens for you. Seize these opportunities, and act upon them, and I'm certain you will also use what you've learned here in your careers every day, sometimes in ways you'd least expect."

Dean of Students Wynn Retires After 28 Years of Service



Captain Janice M. Wynn (U.S. Navy photo by Javier Chagoya.)

Captain Janice M. Wynn, NPS Dean of Students, ended her active duty Naval Career with a ceremony in Herrmann Hall, December 17.

The daughter of a Master Chief and commissioned in 1982, Wynn is also an alumnus of NPS, earning a master's degree in National Security Affairs/Middle East and North Africa Studies. Capt. Wynn assumed her duties as the Dean of Students and Executive Director of Programs at NPS in February of 2009.

Wynn remarked on her Naval career with fond memories, noting that, "It is a small world, and many of the people that you serve with, you will either serve with again, or serve with their family member who continues the tradition of service."

Following her heartfelt remarks, she requested permission from President Dan Oliver to go ashore. Taking her husband's arm, she was piped ashore for the final time by the Boatswain, amid salutes rendered by the sideboys.

World Renowned UAV Control Expert Lectures at NPS

By Barbara Honegger

Just a week after Chief of Naval Operations Adm. Gary Roughead stressed the importance of Unmanned Aerial Vehicles (UAVs) to the future of the Navy, Dr. Siva Banda, Senior Scientist for Control Theory with the Air Force Research Laboratory (AFRL) Air Vehicles Directorate, presented a lecture on the challenges of achieving UAV autonomy at NPS, Dec. 2.

“The military’s use of UAVs is escalating, predominately due to cost savings over manned systems,” said Banda, who also specializes in guidance and control of access-to-space vehicles. “It took 12 years, from 1995 to 2007, for the Air Force to reach its first quarter million UAV flight hours, and only six months – from May 2007 to November 2007 – to reach the second quarter million.

“The main reason is the increasing cost to train pilots,” Banda explained. “But it also costs more and more to manage the escalating UAV flight hours, so the solution [to reducing UAV management cost] is increased autonomy. We have to become less and less dependent on humans, to decouple UAVs from their human operators – what we call the drive to intelligence. To achieve this, UAVs in the future will need to be endowed with smart sensors and with tactical reason-

ing and decision-making capabilities. Without intelligence, which is the key enabler, we will remain tied to human operators for sensor interpretation and have limited influence.”

Looking into the future, the Air Force, like the Navy, according to Banda, has placed the highest priority on research and development of unmanned aerial vehicles.

“Where are we going?” he asked rhetorically. “The grand vision, the desired capability, is for all platforms including all manned and unmanned vehicles in all four domains – space, air, ground and water – to cooperate and share information in military missions.”

In his position as Senior Scientist for Control Theory at AFRL’s Air Vehicles Directorate, Banda performs and directs research and development activities for the Center of Excellence in Control Science. His primary responsibility is transitioning basic research results in air and space vehicle control theory to the aerospace industry.

Banda’s presentation at NPS was part of the ongoing Graduate School of Engineering and Applied Sciences Distinguished Lecture series.

Upcoming ‘Girls Day In’ Introduces Youth to Science

By Dave Nickles

Introducing science and technology disciplines to children in the local community represents one way NPS can contribute to the Navy’s goal of a broad spectrum of youth engaged in Science, Technology, Engineering, and Mathematics, or STEM related studies. A new K-12 outreach program, “Girls Day In,” to be piloted at NPS this spring, is designed to do just that.

This first event will offer eighth grade girls the opportunity to visit our campus for a day of grade level activities related to the STEM disciplines. Taking advantage of a wealth of faculty and student expertise, the theme for this March 11 event is robotics.

About 40 young women from three area middle schools will be chosen to participate in the pilot program. Their day will include

exposure to female leaders in the STEM fields, hands-on science and robotics activities, tours of labs and lunch. Small groups of the middle school girls will be joined by a female high school student selected for her interest in a STEM related career, with female NPS students acting as chaperones for the groups. With this continuum of role models, the event hopes to encourage middle school girls to be comfortable asking questions and participating in activities.

The Chief of Naval Operations has requested the Navy be an active leader in STEM outreach. By engaging youth in activities like Girls Day In – where female engineers, scientists and peers act as role models that students can relate to and learn from – NPS is responding to this call, expanding the possibilities for younger students.

FACULTY news & notes

The Louis D. Liskin award is selected by Graduate School of Business and Public Policy (GSBPP) graduating students to recognize a faculty member who has made the greatest contributions to the students’ academic experience. In December, Prof. **Keenan Yoho** received his second consecutive Liskin Award, a testament to his instructional excellence.

Two books authored by NPS faculty members recently published – Mechanical and Aerospace Engineering Distinguished Professor Emeritus **Turgut Sarpkaya** authored, “Wave Forces on Offshore Structures,” published by the Cambridge University Press; and, National Security Affairs Prof. **Christopher P. Twomey** wrote, “The Military Lens: Doctrinal Difference and Deterrence Failure in Sino-American Relations,” published by the Cornell University Press.

On December 6, Congressional staffers on Capitol Hill attended GSBPP Prof. **David R. Henderson’s** talk, “Practical Lessons in Budget Cutting: The WWII and Canadian Experiences,” based on two studies he did for the Mercatus Center at George Mason University.

The **Center for Homeland Defense and Security** will be hosting the conference, “Imagining Homeland Security – 2021 and Beyond,” in King Auditorium on February 1, 2011.

As part of the initial Strategic Defense Review meetings for the Defense Institutional Reform Initiative, Dr. **Robert McNab** (DRMI) and Dr. **Elisabeth Wright** (IDARM), participated in meetings with the Jordanian Armed Forces; representatives from the Office of Secretary of Defense – Policy; Central Command J-2; the Joint Staff; and the Military Assistance Program of the U.S. Embassy.

Send your faculty news and notes to update@nps.edu.

Faculty Recognized at Annual University Celebration

By MC1 Grant P. Ammon

The NPS community gathered in force on the quarterdeck of Hermann Hall, Dec. 7, to award and pay tribute to the newest Distinguished Professors as well as this year's award-winning faculty for their contributions to the university's success in 2010.

"As Provost, I am honored to represent a faculty population as driven, intellectually powerful and energetically entrepreneurial as we have here at NPS," remarked Executive Vice President and Provost Leonard Ferrari. "Today, we honor a small group of our colleagues. Faculty who have risen to the challenge posed by our unique mission, and have performed beyond the calling of simply to teach."



NPS Executive Vice President and Provost Leonard Ferrari congratulates Professor Rene Rendon, Graduate School for Business and Public Policy, after presenting him with the 2010 Richard W. Hamming Annual Faculty Award for Achievement in Teaching. (U.S. Navy photo by MC1 Rob Rubio.)

Ferrari began by honoring Professor Rene Rendon, Associate Professor of Acquisition Management in the Graduate School for Business and Public Policy, presenting him with the 2010 Richard W. Hamming Annual Faculty Award for Achievement in Teaching.

"Dr. Rendon is widely recognized by his students as a man with a passion to teach, to not only ensure his students absorb the core coursework of his classes, but to place it into the global perspective so critical to the kind of learning we undertake here at NPS," Ferrari noted.

Awarded the Hamming Annual Faculty Award for Interdisciplinary Achievement was Associate Professor Clay Moltz of the School for International Graduate Studies. "Professor Moltz is a truly appropriate recipient of this award, and a unique asset to the school – he holds a joint appointment with both the National Security Affairs department as well as the Space Systems Academic Group," said Ferrari.

Also honored during the annual ceremony was Associate Professor Tamour Radko of the Graduate School of Engineering and Applied Sciences who was awarded the Rear Adm. John Jay Schieffelin Award for Teaching Excellence. In addition, Assistant Professor Johannes Royset of the Graduate School of Operational and Information Sciences was awarded the Carl E. and Jessie W. Menneken Award for Excellence in Scientific Research.

And finally, a small group of faculty were honored for a career of relevant, productive contributions to their respective academic disciplines, becoming the campus' newest to earn the moniker of Distinguished Professor. Joining the ranks are Electrical and Computer Engineering Professor Jon T. Butler, Oceanography Professor Ching-Sang Chiu, Graduate School of Business and Public Policy Professor Kenneth J. Euske, Operations Research Professor Patricia A. Jacobs, Mechanical and Aerospace Engineering Professor Young W. Kwon, and Electrical and Computer Engineering Professor Herschel H. Loomis, Jr.

Focus On ... What's for Lunch?

A Monthly Look at Names and Faces on Campus

For the past 12 years, Executive Chef Hugh Butler – a French native and graduate of the American Culinary Federation – and his cooking staff of 13 have been preparing meals for hungry NPS students, faculty, staff and countless guests. In addition to food service from 6:45 a.m. – 1:15 p.m., Monday through Friday, in the Del Monte Café and El Prado, and dinner in the Trident Room Monday through Saturday from 4:00 – 9:30 p.m., Butler's cooking staff also cater an average of three special

events daily, and often support a few weddings and other special events on weekends.

The Del Monte Café feeds about 300 customers daily, while the El Prado serves more than 400. Butler says the most popular meal is lunch, the offerings always vary including vegan and vegetarian options, but the most popular dishes are those that contain fresh seafood.

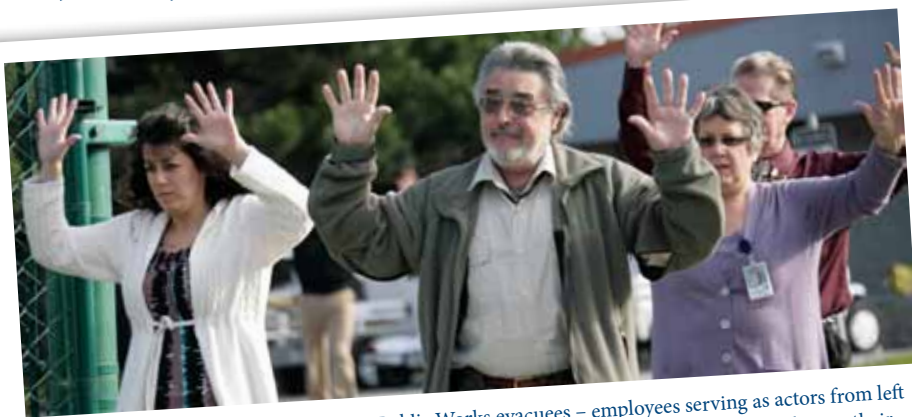
So, regardless of where or when you're looking to eat, Butler and



his staff will always have a hot plate ready. Bon appétit!

Lunch preparation underway in the El Prado kitchen.

Any Day at NPS ...



As part of security protocol, police order Public Works evacuees – employees serving as actors from left to right Joelle Davi, Andy Cardinali, Johanna Turner and Gary Phillips – to put their hands over their heads as the security team sweeps and evacuates the building. The drill, which took place in the Public Works compound, was to test and evaluate response effectiveness of the base's security force to include coordination with Monterey police, fire and medical units. (U.S. Navy photo by Javier Chagoya.)

The Naval Postgraduate School Foundation hosted more than 450 faculty, students and distinguished community guests at Monterey Peninsula's premiere holiday event, the Grand Winter Ball Saturday, Dec. 4, in the university's Barbara McNitt Ballroom. (U.S. Navy photo by Javier Chagoya.)



Members of locally-based disaster preparedness organizations including federal, state and local fire and police agencies observe a demonstration of emergency power generation sources during a Defense Information Systems Agency (DISA) technology demonstration and assessment forum held at the Center for Interdisciplinary Remotely-Piloted Aircraft Studies (CIRPAS). (U.S. Navy photo by MC1 Grant P. Ammon.)

NPS Patent Attorney and Counsel Donald Lincoln, foreground, was awarded the Navy Superior Civilian Service Award during his retirement ceremony held on the Quarterdeck, Dec. 15, bringing to a close an astounding 27 years of service to the Department of Defense. He is flanked by the Staff Judge Advocate office personnel. (U.S. Navy photo by Javier Chagoya.)



University President Dan Oliver addresses participants at the Defense Resources Management Institute's (DRMI) graduation ceremony held for the recently completed International Defense Management Course (IDMC). The 11-week course graduated 38 participants from 24 different countries. (U.S. Navy photo by MC1 Grant P. Ammon.)

STUDENT voice

By Maj. Randy Staab

Welcome back returning students, and welcome aboard new students. I hope that everyone had a great Christmas Break ... my three weeks in Australia with family were a real treat after 18 months of academics. Now that the holidays are over, are you one of the estimated 100 million Americans that will make New Year resolutions?

Among the top resolutions are initiatives to save money and reduce stress. If these interest you, and you'd like a bit of help, consider the Monterey-Salinas Transit (MST) bus pass program. I have been using the program during my last year and a half at NPS and have never needed to search for parking or deal with peak hour traffic. I can check e-mail, send text messages, and read while sitting comfortably on the bus – stress reduction accomplished. Moreover, by commuting on the bus I was able to sell my family's second vehicle and have saved hundreds, thousands by the time I graduate, of dollars on petrol, maintenance, registration and insurance – money saving accomplished.

For more information on how to get your free bus passes (three months of passes – valued at \$150 each – are distributed at the beginning of each quarter), please contact Lillian Ramirez at lmramire@nps.edu or (831) 656-1831.

The President's Student Council needs your input; please consider joining Vice-Chairman Capt. Jim Gerber, Recorder Lt. j.g. Kerri Ackman, and me on the student council by contacting rjstaab@nps.edu. The PSC is the venue for your actionable ideas and suggestions to become a reality.

Maj. Staab is the Chairman of the President's Student Council. Visit the PSC on the intranet at <http://intranet/psc/index.html>.

On Campus this Month

January 5

Winter Quarter Instruction Begins



January 10-14

Global Center for Security Cooperation
Consortium Directors' Conference
Casa Munras, Monterey
POC Warren Hoy Ext. 1110

January 13

Ambassador Mary Yates
Distinguished Guest Speaker
POC Sharee Kelso Ext. 2371



NPS Video Portal

www.NPS.edu/video/portal



January 17

Martin Luther King, Jr. Day



January 18

NPS Executive Vice President and
Provost Dr. Leonard Ferrari
Speaker, SGL Series
POC Sharee Kelso Ext. 2371



U.S. Navy photo by Javier Chagoya

January 25-27

NPS Outreach
Armed Forces Command and Electronics Association West
POC Kari Miglaw Ext. 2077

Historical Highlights

In January, 1916, the Society for the Promotion of Engineering Education (SPEE) conducted a review of the Postgraduate Department of the Naval Academy, predecessor to today's NPS. Renowned Massachusetts Institute of Technology Professor George F. Swain, a founder and past president of the SPEE, chaired the committee.

The resulting report proved invaluable, with then Secretary of the Navy Josephus Daniels citing the work in several speeches and professional journal articles, and using the committee's report as a catalyst for expanding the early postgraduate program.

Two of the more notable recommendations in the report – which is on file in the Dudley Knox Library's Special Collections – was a name change to the Naval Postgraduate School and a separate building for the school, an old Marine barrack titled Halligan Hall, shown in the image below.

Historical Highlights are provided by the Dudley Knox Library.

