



U.S. Navy photo by Javier Chagoya



NAVAL POSTGRADUATE SCHOOL

UPDATE
NPS

Solid-State Laser Efficacy Demonstrated

By Kenneth A. Stewart

NPS student Ensign Chris Fussman recently presented findings, prepared under the tutelage of Department of Physics Distinguished Professor William Colson and Associate Professor Keith Cohn, to Navy leadership that refute misconceptions about ship-borne, high-power lasers.

“[High Energy Lasers] HELs have deep magazines, and their precise, rapid delivery of energy onto targets make them advantageous over kinetic weapons in many instances,” said Cohn.

Deputy Assistant Secretary of the Navy for Research, Development, Test and Evaluation Mary E. Lacey believes that the time is right to explore laser technology.

“Lasers are a game changer for the Navy, but with every game changer, we have to figure out how to best utilize the new technology,” said Lacey.

“Lasers are a game changer for the Navy, but with every game changer, we have to figure out how to best utilize the new technology.” - Deputy Assistant Secretary of the Navy for Research, Test and Evaluation Ms. Mary Lacey

To evaluate solid-state laser performance in all weather conditions, Fussman and Cohn had to evaluate millions of different weather parameters and map out the laser’s performance in those conditions. That task proved difficult using existing models, but Cohn helped Fussman to develop code that was up to the task.

“There are two things new here, the code and the study ... We had to write the code to be able to conduct the study,” said Cohn.

The code was dubbed the Accelerated Naval Code for High Energy Laser Optical Propagation (ANCHOR). Using ANCHOR, Fussman and Cohn were able to demonstrate that concerns about solid-state laser performance in adverse weather conditions were overrated.

Lacey notes that it’s work like Colson, Cohn and Fussman’s that makes NPS so critical to future of naval operations.

“NPS and its faculty are there to ensure that our officers have a technical understanding of the military problems of the future,” said Lacey. “When we send officers to NPS, we prepare them for what war is going to be like in 10-20 years.”

- p2** NPS Researchers Challenge Public to “Change the Game”
- p4** Military Leaders Explore Defense Budgeting at DRMI
- p6** Marine Air Control Group Squadron COs Share NPS Legacy

SEPTEMBER 2014

NPS Researchers Challenge Public to “Change the Game”

By Kenneth A. Stewart

The Massive Multiplayer Online Wargame Leveraging the Internet (MMOWGLI) has garnered increased attention in recent days as policy makers have leveraged its ability to encourage discussion and crowdsource solutions to complex problems.

NPS Associate Professor Don Brutzman, principal investigator on the project, explains MMOWGLI’s appeal.

“The platform is designed to support large numbers of distributed global players working together on idea generation and action planning, with an eye toward surfacing innovative outlier strategies.

“I considered how we generally wargame with just a few people in the room, and extrapolated that model to a massive group of players. What it eventually turned into was a platform ... where people could ‘democratize innovation,’” said Jensen.

Jensen’s intuition led to the creation of the original MMOWGLI, but NPS researchers have expanded upon the game’s earlier goals.

“We get a lot of ideas out and then we bring them back together,” said Brutzman. “We are trying to capture human dynamics in ways that work on the web.”



NPS students and researchers involved in current MMOWGLI games gather to review the latest ideas generated through game play. MMOWGLI game masters can affect the direction of the game, earmarking specific ideas that have exceptional merit to encourage further thought and development. (U.S. Navy photo by Javier Chagoya)

“It uses a web-based architecture, building on an open-source platform that can test the limits of its new online environment,” said Brutzman.

MMOWGLI program manager Garth Jensen was the visionary behind the original MMOWGLI wargame.

“I noticed that when people thought they had a game-changing idea, they would bring it to the Pentagon in a notebook or Power Point presentation and that they would lose the end-user before they even got started,” said Jensen. “At that time, I got turned onto the notion of massive multiplayer games and citizen science. While working with the Institute for the Future, a flash bulb went off in my head.

Players participate in MMOWGLI without having to reveal their identity. They generally respond to specific or general calls to action via social media, but they remain anonymous and can speak their minds with impunity.

The MMOWGLI game is message-based. Players, like Twitter users, present their ideas in 140 characters or less on a series of “cards.” Players then collect “card decks” which are the basis for larger idea sets. MMOWGLI’s point-scoring algorithm awards “exploration points” based upon the reactions of other players to idea cards. Points are also awarded based on fellow player ratings of published idea cards.

Brutzman believes that this approach will encourage innovation as it leverages group expertise against complex problems.

Deputy Assistant Secretary of the Navy for Research, Development, Test and Evaluation Mary Lacey is a MMOWGLI sponsor.

“One of the things we really like a lot about MMOWGLI is that it leads to ideas, that people would not have otherwise come to, in a very quick manner.

“It gives us an opportunity to collaborate with the business side of the house, we are no longer just engineers speaking to engineers,” said Lacey

Jensen and Brutzman are now working to guide MMOWGLI toward a community-based, self-sustaining business model.

But first, the MMOWGLI team will be challenged by prescheduled forays into the world of naval air power and perhaps their most challenging game to date, a Black Swan Event, a game that addresses a catastrophe, whose inevitability is predictable, but only if the world is able to read the tea leaves pointing to disaster.

NPS Dives into Electromagnetic Waves

By Kenneth A. Stewart

NPS Department of Meteorology Professor Qing Wang recently welcomed a multidisciplinary group of scientists to NPS' Root Hall to kick off a multiyear, multidisciplinary study dubbed the Coupled Air-Sea Processes and EM-Ducting Research (CASPER), which explores atmospheric impact on electromagnetic wave propagation.

Wang is lead principle investigator of the CASPER team consisting of researchers from six universities.

"The need for precise prediction of the EM environment becomes more of an issue as Electromagnetic Maneuver Warfare (EMW) grows as a major warfighting component in the current and future Navy," said Wang. "This is the main reason that the Department of Defense [DOD], particularly the Office of Naval Research [ONR], supports extensive research efforts such as CASPER.

"NPS Department of Meteorology faculty and students have been actively involved in this research area for years and will continue to be leaders in this field of important Navy applications," continued Wang. "CASPER

and similar research projects give our students the opportunity to explore highly Navy-relevant research topics, which I think is important to their educational experience at NPS."

EM wave propagation is not for the faint of heart. The term refers to how radar signals and other wave frequencies travel in the atmosphere, and can result in very complex interference and bending patterns. For example, when conditions are right, the radar signals may be trapped in a wave-guide and focused along a path well beyond its normal range, a propagation phenomenon usually referred to as "ducting".

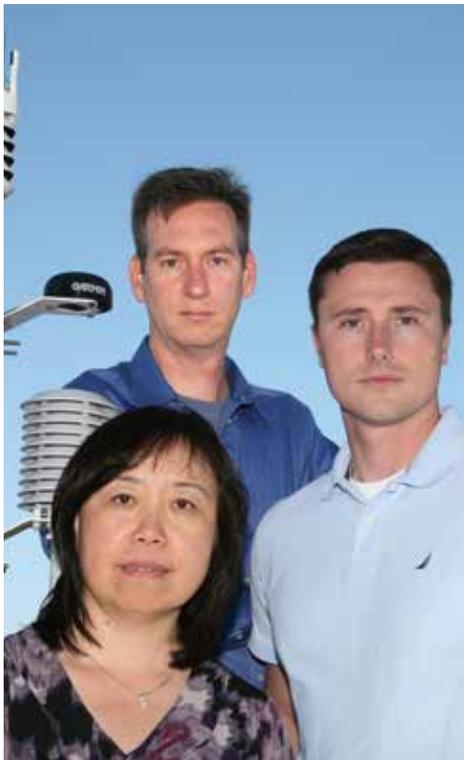
The DOD is spending nearly \$7.5 million on the CASPER study – a number indicative of its relevance to current naval operations. Wang notes that recent technological developments in the field of meteorology have also created greater opportunities to study EM propagation in the maritime atmosphere.

Lt. Cmdr. Corey Cherrett is a doctoral student at NPS. His research into surface layer EM propagation supports the CASPER initiative.

"In addition to just being good science, I think the Navy needs work like this to help clear the fog of war. Understanding the environment can enable you to negotiate a tactical high ground or at least react to the conditions by understanding how they will impact your people, platforms, and systems," said Cherrett. "Inversely, being unaware of the environmental impacts of weather on EM propagation can jeopardize missions and lives as good planning can default to the luck of the weather."

In a sign of the Navy's growing interest in EM research, Lt. Travis Wendt recently began study of EM propagation at NPS after years of research on tropical cyclones. He is changing gears in response to increased demand for expertise in the EM spectrum.

"Electromagnetic propagation will play a vital role in the future of maritime security. To this end, the Navy would like to better understand the atmospheric boundary layer and how it affects the propagation of electromagnetic energy," said Wendt. "EM research offers Ph.D. students like myself the opportunity to make a real scientific contribution in an exciting and operationally-relevant field."



NPS Department of Meteorology Professor Qing Wang, front, is pictured with Doctoral students Lt. Cmdr. Corey Cherrett, left, and Lt. Travis Wendt, right. Wang and her students are part of a multi-university team exploring electromagnetic propagation. (U.S. Navy photo by Javier Chagoya)

FACULTY news & notes

NPS Provost Dr. Douglas Hensler recently announced that Associate Professor Michael Freeman, of the Department of Defense Analysis, Graduate School of Operational & Information Sciences, is the NPS Academic Year 2014 Richard W. Hamming Teaching Award winner in recognition of his exceptional teaching.

Hensler also congratulated now Distinguished Professors Cynthia Irvine with the Department of Computer Science and Uday Apte with the Graduate School of Business and Public Policy for being named distinguished professors.

The title of Distinguished Professor is an honorary title conferred upon a small number of NPS faculty in recognition of exceptional and sustained scholarly accomplishments that contribute to the NPS mission.

Professor Phillip A. Durkee was recently awarded his 30-years of federal service pin. Durkee currently serves as the Dean of the Graduate School of Engineering and Applied Sciences.

Associate Professor James Scrofani, Director of NPS' Center for Multi-INT Studies (CMIS), recently traveled to NPS from his Washington, D.C. base of operations to promote discussion of multi-intelligence and "Big Data."

Scrofani pointed to an article recently published by IBM that illustrates the need for academic work in the Big Data domain. IBM predicts that 40 zetabytes, or 43 trillion gigabytes, of data will be created by 2020, an increase of 300 times the figure from 2005. For Scrofani those numbers present both challenges and opportunities for NPS students and faculty.

Have a story to share? Public Affairs is constantly seeking interesting news and stories for Update NPS. Send your tips to pao@nps.edu.



Pictured outside Halligan Hall are Senior International Defense Management Course (SIDMC) participants, from left, Director, Operational Planning U.S. Air Force Brig. Gen. Tim Fay, DRMI Executive Director Natalie Webb, Director of Policy and Plans, Mr. Faruk Geci with Kosovo's Ministry for Kosovo Security Forces (MKSF) and Rebecca Ingmarsdotter, the civilian head of the Swedish Armed Forces Defense Staff's PRIO Department. (U.S. Navy photo by MC2 Shawn J. Stewart)

Military Leaders Explore Defense Budgeting at DRMI

By Kenneth A. Stewart

NPS recently welcomed an international cohort of defense leaders to its Defense Resources Management Institute (DRMI) for the 45th iteration of its flagship program, the Senior International Defense Management Course (SIDMC). The group included 35 senior civilian and military leaders from 25 allied and partnered nations.

NPS Professor Natalie J. Webb serves as DRMI's Executive Director. "SIDMC is a class that helps people to think about connections from strategic planning all the way through to the budgeting process," said Webb.

Director, Operational Planning U.S. Air Force Brig. Gen. Tim Fay and his classmates applied DRMI-developed resources management tools to their roles as ministers of a fictional nation during the four-week course.

"The course offered a practical application of risk management decision making in an uncertain security and challenging fiscal environment," said Fay. "The international perspectives and the wide range of experiences that the participants bring to the class really allow us to learn from each other."

Fay also acknowledged the role DRMI faculty play as both instructors and facilitators throughout the course.

"The faculty are extremely effective and impressive. They balance the most cutting-edge modeling with practical knowledge," said Fay.

Director of Policy and Plans, Mr. Faruk Geci with Kosovo's Ministry for Kosovo Security Forces (MKSF) is attending DRMI for the second time.

"This is a great opportunity for me and my country. I will take all of this back to Kosovo. It will help us to conduct strategic planning in a resource scarce environment," said Geci. "We are a new country and we are looking to develop our defense forces and the Ministry of Defense ... this really helps that. It's huge, [and] it will help me to make decisions on a daily basis that will benefit my country," said Geci.

Rebecca Ingmarsdotter is the civilian head of the Swedish Armed Forces Defense Staff's PRIO Department, a department that is integrating a system of financial and resource management tools. She was uncertain of what to expect at NPS.

"Sweden has been attending since the 1960s, 90 percent of our flag officers and at least two supreme commanders have attended the course, but I didn't know what to expect," said Ingmarsdotter. "I am very impressed ... You are given general tools that are narrowed to a defense focus and are then able to apply them through discussions with leaders from the U.S. and other countries."

Ingmarsdotter notes that she found the course's risk and resource management tools particularly effective. But like Geci, she also found value in the meeting of minds and exchange of ideas that DRMI facilitates.

Senior Indonesian Alumnus Honored With Award

NPS President retired Vice Adm. Ronald A. Route recently honored Republic of Indonesia Vice Adm. Dr. D. A. Mamahit, President of the Indonesian Defense University, with NPS' Distinguished Alumni Award during a scheduled visit to campus.

"The reason we are here today is to recognize a great NPS graduate and to present an award to an extraordinary leader," said Route.

The Distinguished Alumni Award is presented to an NPS alumnus who demonstrates extraordinary leadership, has achieved an ac-

complished career in military service, and for continued support of graduate education.

Mamahit graduated in 1998 with a Master of Science in Management.

"I would like to say thank you to NPS' president, provost and leadership for gifting me with this award and such a beautiful picture of Herrmann Hall," said Mamahit. "I am very proud to be a graduate from this institution."

Security Office Reaches Out to Campus

NPS Public Affairs

Command Security Manager Andy Andersen manages the security needs of over 3,000 NPS students, faculty and staff. His office handles all classified materials at NPS, conducts security checks, and maintains security clearances.

Andersen also oversees foreign travel requirements. "We are currently processing travel requests for some 100 travelers a month," he said.

For many at NPS, a cursory background check is all that is required to be compliant with Navy and federal regulations.

"Every government employee is required to have some sort of security investigation," said Andersen.

NPS students, faculty and staff that deal with Secret and Top Secret material are required to take further steps to ensure the integrity of the important classified work that occurs at different areas throughout campus.

"We notify people each week to update their

security clearances, they have 30 days upon notification to complete their paperwork and get it back to us," said Andersen.

Those who maintain a secret clearance are required to submit to an investigation every 10 years, those that maintain top-secret clearances are required to have an investigation completed every five years.

"Clearances are a federal requirement, if they have access to classified data. We will remove their access to classified data until an investigation is complete.

"It's a little time consuming, but get in and get it done," said Andersen. "Your clearance is a critical part of your job, failure to complete your packet may prevent you from conducting research and block your access to information."

Andersen also notes that a security clearance may be a requirement for future assignments as well and insists that he is willing and able to help NPS students, faculty and staff to remain in compliance.

Space Systems Chair Rudy Panholzer Honored for 50 Years of Service

By MC2 Shawn J. Stewart

Space Systems Academic Group Chair Dr. Rudy Panholzer was recently honored with a 50-years of federal service pin. Panholzer joined NPS in 1964 as a professor in the NPS Department of Electrical and Computer Engineering. He has served as the Space Systems Academic Group (SSAG) Chair for several years, and as the Dean of the Graduate School of Engineering and Applied Sciences from 1996-2002.



Space Systems Academic Group Chair Dr. Rudy Panholzer is pinned by NPS Provost Dr. Douglas Hensler with his 50-years of federal service pin. (U.S. Navy photo by MC2 Shawn J. Stewart)

"When I first arrived here at NPS, Bullard Hall was in existence but many of the other buildings were not," said Panholzer. "We could drive our cars right up to the entrance of Bullard Hall ... imagine that!"

"We've had a lot of fun together over the years," Panholzer continued. "Building experiments and especially the student-built PANSAT, which we launched in 1998."

Led by Panholzer, PANSAT was wholly designed and built by NPS students and researchers. Panholzer says the orbiting satellite has defied even his expectations.

"The satellite is still in orbit, we predicted it would operate for [several] years, but we miscalculated because it's still going strong," he said.

Panholzer has now joined a small group of distinguished NPS employees that have reached 50 years of federal service. Much like his satellite, Panholzer has defied expectations as well.

CAMPUS news & notes

Naval War College (NWC) Monterey Academic Coordinator Rose Drake, Dudley Knox Library Special Collections Manager John Sanders and Virginia Caldwell who serves as executive assistant to both President Route and the Chief of Staff, were all recently recognized for completing 30 years of federal service.

Drake's federal career began in 1984 with the U.S. Army in Germany. She later came to California where she worked for the Directorate of Engineering and Housing at Fort Ord. Drake also worked at the Defense Language Institute before joining NPS in 1992. She joined the Naval War College's satellite office in Monterey in 2000.

Before serving as special collections manager, Sanders served in the Public Affairs Office where he continues to write this publication's Historical Highlights section.

Caldwell, like Drake, first went to work for the Army in Europe as a secretary in Heidelberg, Germany. Her career nearly ended before it got started. She was let go due to fiscal restraints. Thankfully, she was brought back to work a month after her release. She came to NPS in 1989 and began work in various capacities before becoming an executive assistant to then NPS Superintendent Rear Adm. David Ellison.

THIS MONTH ON

INSIDE NPS

- Showcase of NPS' Center for Interdisciplinary Remotely-Piloted Aircraft Studies' (CIRPAS) Mobile Weather Radar's work at Big Sur
- Highlights from JIFX and recent Maritime Interdiction Operations (MIO) experimentation
- A look at NPS' vital contribution to Solid-State Laser research

"INSIDE NPS" AIRS WEEKLY ON DOD NEWS

Marine Air Control Group Squadron COs Share NPS Legacy

By MC3 Michael Ehrlich

"I was always told that it was a career killer, and I for one am gratified that we are proving otherwise," said Marine Corps Lt. Col. John Dobrydney, commanding officer of Marine Wing Communications Squadron – 18 at Camp Foster in Okinawa, Japan.

Dobrydney is one of four squadron leaders within Marine Air Control Group (MACG) 18, but he and his fellow COs share more in common than just command. They are also all NPS alumni, and are collectively putting to rest the myth that their peers' command career paths cannot go through Monterey.



The four Marine Air Control Group – 18 squadron commanding officers, Lt. Cols. John Barry, Rob Guice, John Dobrydney and Steven Barriger, from left to right, share both squadron command and an NPS degree in common. (Courtesy Photo)

In only five years since his graduation, Dobrydney has discovered that not only did NPS not hinder his path to command, he has also learned to use higher education as a way to open doors and guide his career.

"NPS awakened a real desire to pursue lifelong learning and to continually ask why," said Dobrydney, who earned his Master of Science in Information Technology Management in the fall of 2009.

Lt. Col. John Barry, commanding officer of MACG-18's Marine Air Control Squadron – 4, has been able to apply the education from his Master of Science in Management degree directly to his later billets.

"All aspects of the managerial curriculum at NPS have helped me in all of my follow on assignments, especially strategic management with Professor Nancy Roberts," says Barry. "I have used that class nearly every day since graduation."

Lt. Col. Rob Guice, commanding officer of Marine Tactical Command Squadron – 18, says he found the technical training equally as valuable as the management training he received while earning his Master of Science in Information Technology Management.

"NPS furthered my problem-solving skills, improved my ability to identify process inefficiencies, and allowed me to better understand when and where to best leverage information technology," said Guice.

Lt. Col. Steven Barriger is the commanding officer of Marine Air Support Squadron – 2. In the decade since his graduation, he has encouraged many junior officers to attend NPS.

"In the past two months I have had three officers PCS to NPS or Monterey, and I have told each of them to take advantage of the opportunity while

you are in an academic environment to complete your PME," said Barriger.

"It feels really good to be an alumnus and to know that the decision to attend NPS did not destroy my career like so many said it would. I know several other NPS alumni slated to command squadrons, and one slated for a Marine Air Control Group, so the NPS kiss of death seems to have died in the Marine Corps."

Focus On ... A Mission to Change the World

A Monthly Look at Names and Faces on Campus

NPS Educational Analyst Nicole Miller is on a mission to change the world, one child at a time.

Later this month, Miller will travel to a small village in India to share her knowledge and experiences as part of a charity that she founded.

Miller's charity aims to improve access to education for rural children in northern India and to help underprivileged children to achieve their educational goals.

Miller's interest in philanthropy was honed at the early age of 12, when she won the Junior Miss Antelope Valley pageant.

Winning the contest gave Miller her first opportunity to speak about charitable giving and the affects of philanthropy on the community.

It was also an opportunity for her to represent the community of her native California hamlet and to pursue her passion for helping those in need.

"Even as a young person I was aware of disparities between rich and poor and those on the economic fringe," said Miller.

Despite her youth at the time, in her role as the Antelope Valley Community Queen, Miller-raised \$10,000 for a battered women's shelter in Los Angeles, California.

Her charitable project, which began prior to her pageant competition, caught the attention of the pageant's selection board



Educational Analyst Nicole Miller

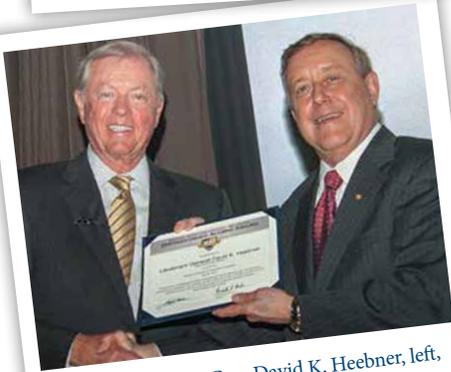
leading to her initial foray into philanthropy.

"There are four basic necessities that I consider the building blocks to success for anyone; clean water, shelter, food and education," said Miller.

Any Day at NPS ...



The latest cohort of graduates through the NPS Center for Homeland Defense and Security's Executive Leaders Program (ELP) stand for a class photo in front of Herrmann Hall. The ELP provides a non-degree, graduate-level education tailored to senior leaders from local, state, federal and tribal agencies to build capacity in identifying and resolving homeland security issues. (U.S. Navy photo by MC3 Michael Ehrlich)



Retired Army Lt. Gen. David K. Heebner, left, is honored with NPS' Distinguished Alumni Award by NPS President retired Vice Adm. Ronald A. Route. Heebner was invited to speak as a Secretary of the Navy guest lecturer prior to receiving the prestigious award. (U.S. Navy photo by MC3 Michael Ehrlich)

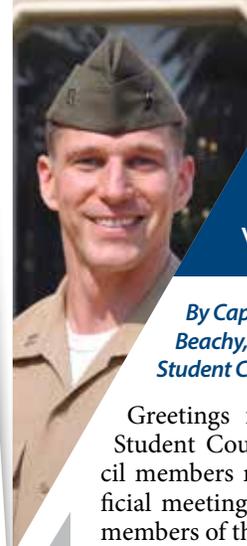


Professor George Lucas, left, is presented with his retirement certificate by Graduate School of Business and Public Policy (GSBPP) Dean Bill Gates. Lucas retired after 23 years of federal service. (Courtesy Photo)

Lt. Cmdr. Benjamin Kalish is covered by his daughter during a promotion ceremony on the steps of Herrmann Hall. Eleven officers in total were promoted to ranks ranging from lieutenant to commander. (U.S. Navy photo by MC3 Michael Ehrlich)



NPS student Lt. Ervin Mercado, left, connects with Navy Personnel Command Junior Officer Detailer Lt. Kailey Snyder, right, during a personal career counseling session held in the Student Services Office. Snyder and First Tour Department Head Detailer Lt. Cmdr. Diane Cua, center, met with students in the Surface Warfare community during their two-day mission at NPS. (U.S. Navy photo by Javier Chagoya)



STUDENT voice

By Capt. Alexander "Kronk" Beachy, Chairman, President's Student Council

Greetings from the President's Student Council. The new council members met for their first official meeting, Sept. 2. The newest members of the team include Coast Guard Lt. Cmdr. Matt Weber, Air Force Maj. Creighton Mullins, and Army Maj. Brett Butler. We are excited to now have representation from each of the services, but we always look for more involvement from the student body, so come on out.

At this most recent meeting, we have dedicated our first order of business to student outreach. We are currently in the process of re-vamping our website so that incoming and current students can learn who represents them and how they do so. Cohort and section leaders can also expect closer communications from their PSC school representatives. In doing so, we hope to have more direct contact with the students at each phase of their educational experience, so that we may better address issues as they arise. We are also looking to get representation from the student-led NPS clubs. Our goal is to not only make the educational experience more rewarding, but to also make the way of life off-campus more enjoyable.

The PSC is also looking to extend our outreach to the community. We believe that giving back to the Monterey community will not only give the students a more rewarding experience, but it will also show our neighbors how much we appreciate their support.

As always, it is a pleasure serving you, and I look forward to working with more of you in the future.

Have a story to share? Public Affairs is constantly seeking interesting news and stories for Update NPS. Send your tips to pao@nps.edu.

On Campus this Month

Sept 11

Dr. Karl Van Bibber
Chairman, Nuclear Engineering
Department, UC Berkeley
Executive Director, Nuclear Science
and Security Consortium
POC: Col. Mitchell McCarthy
(831) 656-3386



Sept 22-25

Enrichment Week



Sept 16
Summer Quarter
Graduation Awards

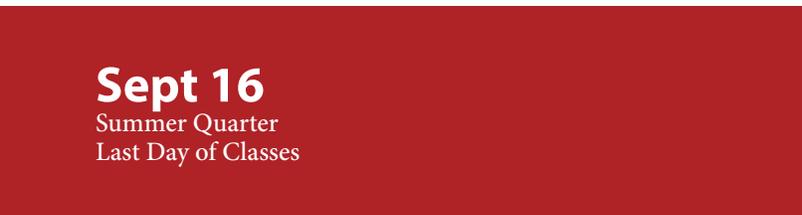


Sept 26
Summer Quarter
Graduation Ceremony



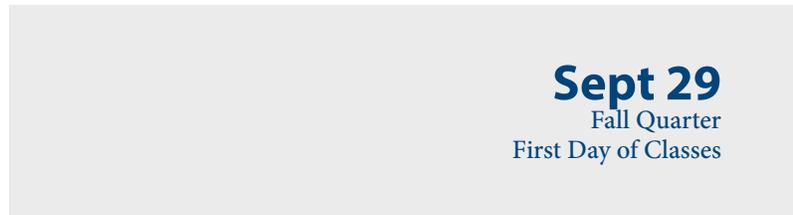
Sept 16

Summer Quarter
Last Day of Classes



Sept 29

Fall Quarter
First Day of Classes



[Facebook.com/NPSmonterey](https://www.facebook.com/NPSmonterey)

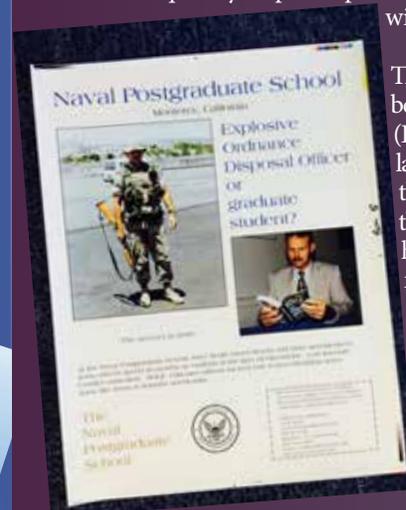
Are you connected?



Historical Highlights

Cmdr. Ken Campbell was among the Navy SEALs who helped to show the relevance of a new program in the 1990s known as the Special Operations – Low Intensity Conflict (SOLIC) curriculum.

Campbell became involved in the SOLIC curriculum while still working to complete his master's thesis, "Weapons of Mass Destruction and Terrorism: Proliferation and the Non-State Actor." He subsequently helped to promote the fledgling SOLIC program within the SF community.



The SOLIC program eventually became an academic department (Defense Analysis) and today is the largest program at NPS. Campbell's thesis advisor, Dr. John Arquilla, is the chairman of the department and his co-advisor, Dr. Gordon McCormick, is the dean of the Graduate School of Operational & Information Sciences.

Historical Highlights are provided by the Dudley Knox Library.