Secretary of Defense Leon Panetta Returns Home to Address NPS Community

By Amanda D. Stein

U.S. Secretary of Defense Leon Panetta returned, Aug. 23, to his hometown to deliver a Secretary of the Navy Guest Lecture to NPS students, faculty and staff packed into King Auditorium. Longtime local Congressman Sam Farr, who took the stage to welcome the secretary, introduced him as “our friend, our neighbor, our Secretary of Defense.”

“This is a special place for me. And in many ways, it’s coming home,” said Panetta. “I am very proud of the Naval Postgraduate School … proud of its mission and proud of its dedication to protecting this country.”

In his address, Panetta touched on the current budget challenges facing the Department of Defense, the value of NPS to national security, and the invaluable roles of the men and women in uniform to DoD’s mission. He spoke about the realization of the American dream and the path the U.S. needs to maintain in order for that dream to be possible for future generations.

“As Secretary of Defense, obviously I look at the myriad challenges that face this country — a range of security challenges that come from a lot of different directions,” he continued. “As a result, [we] require the kind of leaders who … understand the steps that have to be taken if we are to protect this country.”

Panetta, the son of Italian immigrants, was sworn in as the 23rd Secretary of Defense on July 1, after serving as the Director of the Central Intelligence Agency, and before that, Chief of Staff for President Bill Clinton. He understands the challenges facing the country and the defense department.

“You, by your presence here, makes very clear that you are willing to fight for that American dream that brought my parents to this country, for the dream of making sure that our children have a safer, better life in the future, for the dream of making sure that we always keep in our hearts, the sacrifices of those who gave their lives for this country. But most of all, that we always fight to ensure a strong government of, by, and for, all people.”
Over the past five months as interim Dean of the Graduate School of Engineering and Applied Sciences (GSEAS), I have been absolutely astounded by the tremendous talent in the departments and academic groups of the school. You have heard recently in “Update NPS” of the “magic” happening in the Center for Materials Research in the Physics and Mechanical and Aerospace Engineering Departments, and the opening of the Adaptive Optics Center of Excellence for National Security.

The group led by Prof. Frank Giraldo of the Department of Applied Mathematics has recently developed a three-dimensional compressible Navier-Stokes model for use in atmospheric modeling (both limited-area, and global weather prediction, as well as urban-scale modeling). This model NUMA (Nonhydrostatic Atmospheric Model of the Atmosphere, see http://faculty.nps.edu/fxgirald/projects/NUMA) has been designed and constructed from scratch here at the Naval Postgraduate School to fully exploit current and emerging high-performance computers (e.g., petascale and exascale range computers). NUMA has been slated to become the next-generation mesoscale — and possibly also the next global scale — weather prediction model of the U.S. Navy in partnership with the Marine Meteorology Division of the Naval Research Laboratory in Monterey. Furthermore, NUMA is the Navy representative to the Earth Systems Prediction Capability (ESPC) panel.

ESPC is a national consortium that is striving to develop one global weather prediction model for all U.S. government agencies, including the National Weather Service, U.S. Navy, and the Department of Energy (DoE). The Mathematics and Computational Science Division at Argonne National Laboratory — the DoE lab that develops tools for highly scalable architectures — has selected NUMA as its flagship application for coupling their Portable Extensive Toolkit for Scientific Computing (PETSc) software. PETSc is a standard toolkit that includes time-integrators, matrix algebra solvers, preconditioners, etc., that is installed on every major high-performance computer. NUMA was selected on the basis of its high-accuracy capability as well as its potential for massively parallel scalability.

“Remote control capability gives distance-learning students access to the hardware located on campus, thus enabling them to complete electrical engineering courses otherwise restricted to resident students.”

GSEAS is also developing new distance learning capabilities, but how to do laboratory exercises that require hands-on interaction with lab apparatus has long been a problem. Remotely-controlled hardware laboratories have been recently developed in the Electrical and Computer Engineering Department by a group led by Giovanna Oriti. The enabling technology is a laboratory platform that is remotely controllable via a standard web browser. The remote user does not need to install any software or modify security setting on his or her computer. Remote control capability gives distance-learning students access to the hardware located on campus, thus enabling them to complete electrical engineering courses otherwise restricted to resident students. The first two laboratories were set up to support graduate level courses in the Power Track of the curriculum, but the platform can be easily modified for labs such as electric circuits and controls.

Looking forward, the annual Technology for Information Operations (TIO) International Workshop, sponsored by the Center for Joint Services Electronic Warfare, will be held Oct. 11–Nov. 18 at NPS. The workshop is just one of many examples of how NPS faculty support the Navy’s maritime strategy beyond teaching and research. The interdisciplinary workshop has guest faculty from the different schools at NPS, and represents the efforts of NPS’ GSEAS experts as they work to support the Navy’s goals and missions through international military affairs and coalition building. Past country participants include Sweden, Norway, India, Tunisia, Greece, Turkey, Taiwan, Germany, Chile and Thailand.

“Update NPS” is a monthly publication for students, faculty and staff of the Naval Postgraduate School produced by the Office of Institutional Advancement. For additional copies, comments, or to suggest story ideas, contact the editorial staff at update@nps.edu.
NPS Explores New Ways to Deliver Laser Defense Systems to the Fleet

By Amanda D. Stein

For the United States Navy, the Free Electron Laser (FEL) is a potential game changer—a weapon that delivers a high-intensity laser beam capable of stopping incoming missiles in seconds. Since 1989, the Naval Postgraduate School has been actively involved in developing the FEL, with the support of the Office of Naval Research, capitalizing on the expertise of NPS students and faculty through active discovery in FEL theory and simulation.

In 2007, an experimental effort was added, and now the team looks to develop new ways to optimize the capabilities of FELs for the fleet, improving the performance to more quickly and accurately counter attacks at sea.

"Right now, ships basically have to stay away from missiles and have to stay out at sea so they can't be attacked by missiles," explained Distinguished Professor of Physics Bill Colson. "This would give, if successful—and we think it will be successful—the ship the ability to stay near shore, stay in harm's way, and basically shoot down the missiles as they approach the ship. We think we could defend a ship with high reliability."

With a team of researchers and students, the FEL program at NPS is moving full steam ahead, and now can give students a chance to see their research through to fruition with a unique piece of equipment joining the FEL lab—an accelerator structure known as the Mark I.

“What we are doing here initially is developing a new source of electron beams—a new way of making the beams, of accelerating the beams, controlling them and focusing them,” said NPS Associate Professor of Physics, John Lewellen.

Lewellen carried out the design process for the Mark I RF (radio frequency) cavity and electron beam simulations, with the help of an NPS Ph.D. student who has since graduated. Their contributions were combined with the engineering development of Niowave to create a chamber capable of containing temperatures four degrees above absolute zero, colder than the back side of Pluto.

“The systems that we work with really truly are extreme,” explained Lewellen. “And if you think about the scale of the Mark 1, you’ve got one of the coldest places in the solar system, inches from the room outside. Within the space of one hand, if you could reach in, you’d be touching places you just cannot get to any place else.”

Physics student Lt. Amanda Baxter is working on the design for a cooling system for the cathode stock of the Mark I. Within the next year, she hopes to see her design utilized in simulations, and then operationally on the Mark I and Mark II. She noted that it is rewarding to help develop something that will ultimately protect the fleet.

“To me, the best part is just knowing that this is a system that’s going to be able to protect our ships better,” explained Baxter. “It’s pretty amazing that you have something that’s at the speed of light to protect you from missiles that are coming inbound.”

Research Associate Professor Richard Swent stands with the Mark I as the team prepares to test the structure. Mark I is part of the free electron laser laboratory’s new additions, and one that faculty and students are hoping will help optimize the FEL’s capabilities. (U.S. Navy photo by MC1 Leonardo Carrillo)
SecNav Ray Mabus Announces NPS Energy Degree Programs

By Amanda D. Stein

U.S. Secretary of the Navy Ray Mabus took the stage in King Auditorium, Aug. 29, to discuss the Navy’s energy initiatives, and to announce NPS’ contributions to those efforts through the establishment of new, groundbreaking educational programs dedicated to energy technology and policy. Mabus, the 75th Secretary of the Navy, is known for being a strong supporter of education — both military and civilian — and tapped the expertise at NPS to assist in creating the necessary leaders to achieve his goals for an energy independent Navy and Marine Corps.

As Mabus noted, the energy programs will begin in the fall, with an initial offering of energy-focused existing degree programs, to be followed next year by two degree programs with concentrations in energy technology and policy.

“Let me give you the headline of why I’m here today,” Mabus said. “Starting this fall, the Naval Postgraduate School will offer … energy graduate degree program[s], the first military educational institution to do so. And beginning early next year, NPS will launch the SECNAV Executive Energy Series — catchy title — a two-week program designed to tackle specific energy challenges.

“This energy-focused master’s degree program, and the Executive Energy series, will target both the current and future leadership of the Navy and Marine Corps,” he continued. “Energy is not just an issue for the future — and not just for the present either — nor just the young officers and policy experts that make up NPS’ student population. It is an issue for all the levels, every level of the Navy and Marine Corps, uniform and civilian.”

In welcoming the Secretary to campus, NPS Executive Vice President and Provost Dr. Leonard Ferrari noted the importance of having Mabus not only spearheading defense energy initiatives, but also in looking to NPS to help accomplish his objectives.

“Throughout his career, Secretary Mabus has demonstrated a keen ability to lead in times of change, to take on incredibly challenging tasks in the face of great adversity,” said Ferrari. “He has now been asked to lead in another era of great change. He has stepped to the forefront of our Department of Defense, and committed the U.S. Navy to achieve great things in times when energy dependence is a vulnerability, when environmental stewardship is a priority, and when defense budgets are restricted.”

Upon taking over his current role in 2009, Mabus announced his top priority — five aggressive energy initiatives that would change the way the Navy and Marine Corps get and use energy. In order to achieve these goals, he explained that the Navy and Marine Corps would have to set a new standard for both current and future ways of operating.

“Through the master’s program and the executive energy series,” said Mabus, “NPS will ensure that energy is a fully-integrated awareness into strategy, tactics and operations. As a result, NPS students will guide the Navy and the nation toward a better, more secure energy future.”

NPS Community Remembers OR Professor, Navy Veteran

The NPS community mourned the loss of retired Capt. Gordon Ross Nakagawa, a friend and beloved retired professor who passed away on Aug. 23 at the age of 76. A longtime resident of Marina, Calif., Nakagawa had a distinguished Navy career where he flew 185 combat missions in the A-6 intruder during four combat deployments to Vietnam. He was detained as a Prisoner of War in Hanoi after his aircraft was struck by enemy fire.

He received his Bachelor of Science degree from the University of California at Berkeley, and his Master of Science degree in Electrical Engineering from NPS. He later returned to NPS to teach weapons systems in the Operations Research department.

In the final active duty assignment of his 32-year Naval career, Nakagawa served as Chair for Tactical Analysis at NPS. During his service, he was awarded two Legions of Merit, two Bronze Stars, two Purple Hearts, two Meritorious Service Medals, Distinguished Marksmen (Rifle) Medal, Distinguished Pistol Medal, POW Medal and various other awards.
Renowned COIN Expert Delivers SGL

By MC1 Leonardo Carrillo

The Naval Postgraduate School hosted Dr. David Kilcullen, Senior Counterinsurgency Adviser to General David Petraeus in Iraq, for a Secretary of the Navy Guest Lecture (SGL) to students, faculty and staff, Aug. 16 in King Auditorium. Kilcullen, a prominent author and founding President/CEO of Caerus Associates, played a significant role in planning and executing the 2007 troop surge that was a key turning point for the coalition forces.

The SGL, titled “Counterinsurgency in Global Context,” gave the audience an opportunity to listen to, and ask questions of, the renowned theorist.

Kilcullen gave first-hand insights into the topic of counterinsurgency — ranging from its historical background to its current state — and offered ideas for solving the challenges of the ever-evolving form of warfare.

This role of insurgency and counterinsurgency, said Kilcullen, has probably been more recurrent than what is known as ‘regular’ warfare.

“The majority of conflicts on the planet,” he said, “are, and probably always have been, between states and non-state actors.”

Kilcullen continued, “The exercise of a counterinsurgency function is not only endemic to human society as we know it … it probably actually is the defining feature of government.”

Kilcullen noted that many theorist and experts have debated on what exactly makes a counterinsurgency. In practice, however, he added that governments and militaries should be adaptive to what the realities are on the ground rather than following established doctrines.

NPS Duo Continue Navy-Family Tradition

By Javier Chagoya

Somewhere in the vast South Pacific on July 26, NPS alumnus Cmdr. Brian Mutty took command of the USS Fitzgerald in the company of his Sailors and fellow officers. Someone very important to him, however, could not be there for his assumption of command — his father, John.

With the difficulty in nailing down flights to morphing ship destinations, NPS Senior Lecturer John Mutty, himself a retired Navy captain, made several attempts to meet his son’s ship to witness the ceremony. The date was finally settled when the ship was at sea and at the end of a major joint exercise with the Royal Australian Navy, which unfortunately kept Mutty from witnessing his son’s milestone.

Although Mutty was unable to make the journey, he did keep in touch through sporadic e-mails in the days leading up to his son’s XO/CO Fleet-Up. He was pleasantly surprised to see a photo taken during the ceremony at sea.

“How though I didn’t make it to his ceremony, it’s rather satisfying to see that Brian had outgoing skipper, Cmdr. Dennis Velez, pin on my old Command-at-Sea pin. So, in that way, a part of me was with him,” said Mutty.

NSA Graduate, Brian, follows in a long line of men in his family who have left their marks in naval history. His great-grandfather was a highly-decorated diver, and his grandfather served as commander of the USS Cony.

For faculty member, John Mutty, he couldn’t be prouder of their long Navy tradition.

Send your faculty news and notes to update@nps.edu.
RELIEF Program Brings Collaboration to Camp Roberts
By Amanda D. Stein

NPS researchers are frequently involved in emergency response and homeland security research projects, looking to assist in disaster response and prevention efforts worldwide. One such program looks to give students a testbed for their theses as well as a chance to connect with emergency response personnel, the Research and Experimentation for Local and International Emergency and First Responders (RELIEF) program.

Over 90 participants from 46 organizations and branches of government recently spent three days at the United States Special Operations Command (SOCOM) NPS Tactical Network Testbed (TNT) at Camp Roberts, Calif., to explore humanitarian assistance and disaster response (HA/DR) experiments including Crowdsourcing to Complete HA/DR Requests and Situational Awareness with Inoperable Networks.

“Projects are selected for RELIEF based on the context of the issues they aim to address,” explained Research Assistant Tristan Allen. “RELIEF does not seek to identify any single set of solutions, rather, we accept most applicants who seek to address a broad set of issues that deal with humanitarian assistance and disaster response.”

One of the experiments represented at Camp Roberts for RELIEF 11–4 was a thesis project by students Lt. j.g. Deward Cummings and Lt. Paul Mahoney titled the Explosive Remnants of War Collection Points (ERW-CPs). Their project explored the potential to design small structures of readily available materials, which can serve as a collection box for explosive remnants of war.

“ERW is an issue in any country or region in which an armed conflict has occurred on its soil,” wrote Cummings in his thesis proposal. “In Afghanistan alone, over 2,000 communities or 1,303,553 people remain affected by landmines, ERW, and abandoned Improvised Explosive Devices (IEDs) with an average of 40 Afghans killed or injured every month by unexploded ordnance.”

The students looked at utilizing paper products and indigenous materials in their design. They have future plans to detonate a fragment-producing charge inside the container to test how securely the structure is able to contain the explosion.

Innovation and collaboration could be seen across RELIEF 11–4 as individual groups and organizations discussed components of their research that could use the expertise of other groups.

“All efforts aim to improve first responders’ and humanitarian workers’ abilities to assist affected populations,” said Research Assistant Rosa Akbari. “Whether bolstering communication capabilities or facilitating social connections with fellow practitioners, RELIEF allows individuals to build cross organizational trust before disaster strikes. These relationships are what facilitate better responses in the field — people know who to call, when to call them, and what to call them for.”

Focus On … Making Vacation Dreams Come True
A Monthly Look at Names and Faces on Campus

If you are one of the 51,978 DoD active duty, reservist, retired, civilians, faculty or family members who visited the Information Tickets and Travel Office (ITT) this past year, then you have met ITT Manager Alecia Pityk, and staff Anna Ramirez-Rodriguez and Katherine Stanley.

The ITT office serves anywhere between 12–100 customers daily, depending on the time of year. Pityk acts as a travel agent, booking cruises and vacations for customers; Stanley gets information out, “whether it be a lunch time event or just ‘hitting the streets’ to let people know what’s going on and where the hottest deals are;” and Ramirez-Rodriguez gives guests “insider information when it comes to places I’ve lived or visited.”

Because NPS is located in one of the most sought after California destinations, prices for travel and entertainment can run high, so the staff in ITT feel that if they can provide information or actual tickets that lower the cost for the military community, then “we’ve done our job.”

Pityk’s goals for ITT are for its continued growth, and to discover new, discounted events and attractions to offer its customers. “After all,” she says, “we want to be able to make all of customers’ vacation dreams come true!”
Any Day at NPS ...


Following Navy tradition, incoming Fleet Numerical Meteorology and Oceanography Center Commanding Officer, Capt. Erika Sauer, with the aid of nephew Matthew and brother Konrad, pins the Shore Command Trident insignia over her right pocket. “I am humbled and honored to take charge of Fleet Numerical,” said Sauer, an NPS graduate and first female CO for the Navy’s worldwide meteorology and oceanography support center. (U.S. Navy photo by Javier Chagoya)

Lt. Yokeley is the Chairman of the President's Student Council. Visit the PSC on the intranet at http://intranet/psc/index.html.

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


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On Campus this Month

**September 2**
September Premier of “Inside NPS”
Pentagon Channel
POC Alan Richmond, Ext. 3649

**September 11**
9/11 Heroes Run on Fort Ord
monterey@911heroesrun.com

**September 12–14**
Center for Stabilization and Reconstruction Studies
POC Kate Oliver, Ext. 1108

**September 13**
Summer Graduation Awards Ceremony
POC Capt. Alan Poindexter, Ext. 2291

**September 22**
NPS Foundation Event with retired Lockheed Martin Corp. Chairman and CEO Norman Augustine
POC NPS Foundation, Ext. 2427

**September 23**
Summer Graduation and Honorary Degree Ceremony
Speaker/honoree, retired Lockheed Martin Corp. Chairman and CEO Norman Augustine
POC Capt. Alan Poindexter, Ext. 2291

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Streaming 24/7 at www.nps.edu/video/portal

**Historical Highlights**
When NPS moved from Annapolis, Md. to Monterey in late 1951, it shipped three-million pounds of heavy machinery, delicate lab test equipment, office furniture, and thousands of books by rail, air, sea and long-haul trucking.

A painting by noted artist, playwright and poet Arthur Fitger — originally in the grand salon of the German luxury liner Kronprinz Wilhelm — was among these items.

Fitger’s painting, which has been exhibited in Herrmann Hall since 1952, is being transferred to The Mariners’ Museum in Newport News, Va., where the U.S. seized the Kronprinz Wilhelm in 1917 and commissioned it as the USS Von Steuben.

The Mariners’ Museum will use the painting to tell the vivid story of the grand-luxury liner that became a highly successful German Navy commerce raider and then a U.S. Navy troop transport ship in WWI.

**Historical Highlights are provided by the Dudley Knox Library.**