INSIDE:
A Warrior’s Legacy – McChrystal Shares His Story During Unique SGL
Deputy Secretary of Defense Visits NPS, Honors Spring Graduates
Intern Develops Small, Inexpensive Star Tracker

SUCCESS
NPS’ TEAM ARSENAL FLIES ITS 50 UAV SWARM!
Welcome to our return to “In Review,” the Naval Postgraduate School’s flagship magazine. Following a brief hiatus in production, we are excited to present our most recent work in our mission to provide truly exceptional graduate education experiences, and place a spotlight on the outstanding work our students, faculty and staff do every day.

This mission sets us apart, for there is no other institution in the world that mirrors NPS’ dedication to relevant student research. While we boast academic programs with a rigor and quality that rival the nation’s most prestigious institutions, NPS studies are firmly grounded in the operational forces. Even among top defense research establishments, NPS is unique in its broad portfolio of academic programs, from national security studies to business, applied sciences to information science.

This issue of “In Review” features several examples of just what makes NPS the one-of-a-kind institution that it is. Our Defense Resources Management Institute (DRMI), part of the Graduate School of Business and Public Policy, celebrates 50 years of advanced education this year. DRMI provides U.S. and international officers with highly esteemed, unique instruction in defense resource management and analytical decision-making.

In this edition, we focus on the continuing partnership between the Naval Postgraduate School and the U.S. Marine Corps Expeditionary Energy Office (E2O). The Marine Corps has been on the front lines of the fight to strengthen our capabilities by diversifying our energy sources. Some time ago, E2O leaders engaged with NPS and we have become a true enabling partner in the success of their mission, providing expert graduates to the E2O team, and an array of the most recent research dedicated to supporting their efforts.

We also highlight the establishment of our new Surface Warfare Chair, an effort spearheaded by Commander, Naval Surface Forces Vice Adm. Thomas S. Rowden. The SWO Chair will serve as a direct link between NPS research and the Surface Warfare Development Center. He will also be an on-campus mentor to our many SWO students, and will be representing NPS to the SWO community in the fleet. Our SWO Chair will serve as an outstanding resource in ensuring our programs remain grounded in the needs of our warfighters.

Like many universities, the value of NPS is reflected in the accomplishments of our graduates, and our alumni are making a difference at all levels of the defense spectrum. Deputy Defense Secretary Bob Work is one such alum, and he returned to campus this past summer to engage with NPS on a number of initiatives. Retired Vice Adm. Michael Vitaile, a respected leader in innovation, also revisited Monterey to share his views on this critical subject with our students. We also share the story of an NPS graduate from the Republic of Georgia, Col. Georgi Jachvadze, who applied his NPS master’s degree in personnel management to implement a number of critical reforms to the Georgian Ministry of Defense.

Finally, a team of faculty, students and research staff in the university’s Advanced Robotic Systems Engineering Laboratory (ARSENAL) recently set a world record – launching and flying autonomously a swarm of 50 unmanned aerial vehicles all at the same time. The effort opens the doors to a broad spectrum of research into the advanced studies of large swarms of small, capable UAVs.

Like countless other programs at NPS, this impressive research will provide a foundation for many students in the quarters to come, while providing senior Navy/DOD leaders with an innovative approach to one of national security’s current challenges.

Ronald A. Route
Vice Adm., U.S. Navy (Ret.)
President, Naval Postgraduate School
completed several deployments to the Mediterranean, Black, Adriatic Mass., Parisi grew up in and around the

“I had just come off four and a half years

versity’s Department of National Security

the university, July 17. And while Parisi

I decided to go into the defense atta-

flight business, which brought me to Rome,

was the center defense offi-

nautical and naval attaché for three years.

It was an incredibly eye-opening job where

Hughes served as a judge on the

MORS Tisdale awardee, Sept. 15.

Glasgow Hall, Aug. 27, recogniz-

The son of a first-generation Sicilian

“Tisdale’s character” that inspired him to pursue an

Hughes credits the “outstanding” experi-

I can say that I directly used my NPS education and put it to practical use

and North Red Seas. He also participated in several shorter deployments

and student participation in operations research...[**]** said Tisdale. “This year’s completing

to” in Ingersoll Hall.

U.S. Army Capt. John Baker, a student in NPS’ defense analysis

and 2000s were a product of Iraqi

and the USS Zephyr (PC 8).

Mayport, the USS The Sullivans (DDG 68)

ting counter terrorism program hosted

and threats then the actual oper-

Baker contributed with a dis-

the current air campaign noting that

Baker explained.

logbook records from Apache us-

Improvement." Logan recommends the MSMO to

were a very talented group.

They were the hardest group we

Lt. Cmdr. John Sprague

School of Business and Public

Policy. The Office of the Army

Director for Acquisition Career

Management, or Army DACM

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Logan, who works with the Apache, the backbone of the

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“Analysis of the Army’s Apache

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U.S. Border Patrol Chief Michael Fisher spoke at NPS CHDS in Goose Creek, S.C., for further training and early acceleration program here at NPS. Following graduation, Arceneaux and Bermudez will attend Nuclear Power School in Goose Creek, S.C., for further training and early acceleration program here at NPS.

After completing 46 theses, eight of which were directed by the Secretary of the Navy, CRUSER supports the Navy’s mission through education and research in the fields of unmanned systems and robotics and is funded through the Office of Naval Research.

Capt. Jeff Hyink presents at the 2015 Warfare Innovation Workshop.

Ensign Eric Bermudez echoed this sentiment, noting he looks forward to expanding his knowledge in cutting-edge fields, especially unmanned systems design and controls.

“Tackling challenges is a consistent theme in my professional life. Whether in my role as a CBP officer or recent past command in the Hellenic Coast Guard, I have always been surrounded by a group of mission-oriented and driven individuals. We are really dependent on our partners, the European allies and regional partners. It’s not taking a back seat and saying ‘when are you guys going to fix this?’ The environment is too complex for one component within one agency within one de-

challenges to learning the science behind nuclear power training pipeline through the prestigious Adm. Frank Bowman Scholars Program.

“When I was appointed a Bowman Scholar, I was most excited about the expanded opportunities to further the Navy’s goals through research and continued education,” said Ensign Stephen Arceneaux.

Ensign Eric Bermudez echoed this sentiment, noting he looks forward to expanding his knowledge in cutting-edge fields, especially unmanned systems design and controls.

“The study of robotics and control systems has always fascinated me, and I’m looking forward to learning the science behind the technology and working with the vast amount of tools here at NPS to grow my knowledge and degree and thesis,” said Bermudez.

Selected during their junior year at the Naval Academy, Bowman Scholars advise their classmates and mentors with a “Whole of Society” approach to illegal migration and other issues.

“This conference was another important step in our efforts to build interagency consensus among allies and partners for a collaborative approach to addressing maritime transnational challenges in the Mediterranean Sea,” said J9 Liaison to NATO and the EU, Ret. U.S. Army Lt. Col. Chris Kremidas.

Ensigns Continue Advanced Education at NPS Through Bowman Scholar Program

The summer quarter brought a crop of fresh-faced Ensigns directly from the U.S. Naval Academy, all participating in an ac-

University Provost Dr. Douglas A. Henr"ts receives the Navy Distinguished Civilian Service Award during a brief ceremony in Hermann Hall, Sept. 28. Henruts retired from the institution to spend more time with his wife Janie and the rest of his family in their home state of Oregon.

“As many of you have noticed I have moved around quite a bit in my career and I wouldn’t be standing here without all the support from my wife, Janie. She has been my rock. This award really is a tribute to her,” said Henruts, with NPS President retired Vice Adm. Ronald A. Rate also recognizing Janie Henruts with a Certificate of Appreciation.

“Our product at NPS is intellectual capital knowledge. We create a special product for our customers, and many people want to understand the nature of that product,” continued Henruts. “We need to educate those that don’t understand this, and how valuable our product truly is.” 

Henruts’ academic achievements include a postgraduate school provost in June 2013. The Hamming Award recognizes NPS faculty members for outstanding teaching, excellence in thesis supervision, and for the strength of their contributions to NPS students beyond the classroom. 

“Dr. Apte is by far one of the best professors I have had,” said U.S. Marine Corps Maj. Joshua Gregory. “On multiple occasions, she has taken time out of her own schedule to get to know her stu-

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Apte’s research interests in HADR operations led her to de-

The Navys Distinguished Civilian Service Award

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**FACULTY SHOWCASE**

**Space Systems Professor Assumes Position of Acting Provost**

Space Systems Academic Group (SSAG) Professor James H. Newman officially assumed the position of Acting Provost, Oct. 5. As he steps into his new role on campus, he noted his first order of business is to continue the efforts of former University Provost Douglas A. Hensler, who retired, who retired, from his position.

“[My first responsibility is] to continue Dr. Hensler’s work on Provost and Academic Dean, in particular, to maintain the University’s programs and accreditation at NPS,” Newman said. “There is much the Provost is expected to do, but at the core of this responsibility is supporting the education of our Navy and Marine Corps officers, and their joint service and international colleagues, especially in our state-of-the-art with the Aegis combat system,” said Zhao. “We were particularly interested in the process.”

“I think researchers need to be more out in the first as a scrutiny check,” added Kendall. “We were not uninvolved visitors, rather we were part of the Plan of the Day and we could see anyone and anywhere we wanted. The captain made himself available for questions and later even came by and discussed our follow-up questions.”

The scientists’ host on the ship was very familiar with NPS, USC Howard Commanding Officer Cap. John Fay graduated from the Department of Information Sciences in 2004, and shared great memories of his time on campus with the visiting professors.

“[Capt. Fay] is a proud alumnus of NPS, and he represents the best of our school and community,” said Zhao. “He has many fond memories of NPS, and his advisor, Dr. Bob Bertelsky. He is very professional, and very knowledgeable about the ship and its combat systems aboard.”

SSAG Gets Lift in Small Satellite Mission of the Year Competition

Space Systems Academic Group Research Assistant Wen Lu was part of a team of researchers in the LightSail Spacecraft Test Mission recently named Mission of the Year by the American Institute of Aeronautics and Astronautics (AIAA).

“We redesigned the [satellite’s] splinter auxiliary device for this mission,” said Lu. “NPS plays an integral part in pushing the limits of existing [small satellite] technology and the knowledge base in the aerospace industry.”

The Planetary Society’s citizen-funded LightSail Spacecraft Test Mission was one of 11 small satellite projects nominated for recognition during the 29th Annual AIAA SmallSat Conference in Logan, Utah, Aug. 13. NPS collaborated with California Poly-
NPS’ Defense Resources Management Institute Turns 50

By Kenneth A. Stewart

After 50 years, and more than 50,000 students, DRMI continues providing U.S. and international partners with a one-of-a-kind professional education program in analytical decision making and resources management.

The Defense Resources Management Institute (DRMI) at the Naval Postgraduate School (NPS) in Monterey, Calif., is celebrating 50 years of educating defense leaders with an eye toward creating sound fiscal policy and the efficient allocation of scarce defense resources.

DRMI’s mission can perhaps be best summed up in the words of former British Prime Minister Winston Churchill who said, “Gentlemen, we have run out of money. Now we have to think.”

Since its first course in 1965, DRMI has educated 34,841 U.S. students and 20,258 international students from 171 different nations.

“DRMI is to stay relevant over this period of incredible change is a remarkable testament,” he said.

The Navy Management Systems Center, which eventually became DRMI, was established in 1963 by then Secretary of Defense Robert McNamara. Before he became the leader of DOD, McNamara was the CEO of the Ford Motor Company, and he attempted to apply some of the private sector economic principles that led to his successes at Ford to the DOD.

“McNamara installed the Planning, Programming and Budgeting System (PPBS), which is still in use today. It requires good economic analysis, because the main problem in defense economics is the allocation of scarce resources among many competing interests under conditions of uncertainty,” explained NPS Professor Emeritus Dr. James Blandin.

Blandin, whose father was one of DRMI’s founders, taught at NPS for 34 years. He notes that McNamara’s push to implement the PPBS system was frustrated by a lack of people qualified to use it. As a result, McNamara directed the founding of a center that could be used to develop people with the skills necessary to realize his vision. The decision to stand-up that center at NPS was driven by recognition of the NPS faculty’s experience in defense-focused graduate education.

Later, during President Lyndon Johnson’s administration, a PPBS system similar to the one used by the DOD was enacted throughout the federal government, and civilians began to join DOD professionals at NPS to receive the education necessary to ensure its success. DRMI rose to McNamara’s challenge and remains true to its core mission.

Like the university itself, however, DRMI has also extended its faculty expertise to our international partners by providing resources management courses to allied defense professionals from around the world. [DRMI’s] international participation has been invaluable to the U.S. It creates a linkage between the U.S. and other nations, and we have had some illustrious people come through and go on to do some pretty amazing things ... Over the years, we have received a tremendous value for the dollar that we spend [at DRMI],” said McCord.

In 1970, NPS offered its first Senior International Defense Management Course, or SIDMC. SIDMCs are comprised of senior defense leaders from around the world who gather to listen to a variety of subject matter experts, NPS faculty, and each other for four weeks at NPS. SIDMC students also participate in an exercise designed to test their ability to allocate resources to competing interests.

“If we’re successful, the participants will think about their national security at a strategic level, and gain a new perspective and additional tools for managing their organization’s resources to respond to contemporary security challenges,” said Associate Professor Eva Regnier.

Assistant Minister for Plans, Policy and Operations Victoria K. Sawyer with the Liberian Ministry of Defense is a SIDMC graduate. “The exchange of international cooperation helps to change minds and creates greater understanding,” said Sawyer. “Strategic planning, value for cost thinking, decision making, and most importantly, accountability and transparency ... That is what my country needs most.”

SIDMCs succeed at DRMI to the creation of the International Defense Management Course (IDMC) in 1971. Like the SIDMC, the IDMC aims to arm students from allied nations with resource management and other fiscal planning tools, but it is geared toward mid-level officers and defense civilians.

When the Soviet Union fell in 1991, demand for DRMI expertise increased further. Former Soviet republics began to turn to the U.S. for assistance as they developed new economic policies within their respective defense ministries and departments.

“Countries that had previously been in the orbit of the Soviet Union became new democratic states. When countries in the Balkans, Poland, Hungary and Slovakia gained independence they looked to the U.S. to help them with their educational programs, and DRMI was called upon,” said Blandin.

And while DRMI has been offering courses to international students for nearly day one, on the heels of its successes among the former Soviet Republics, it increased its mobile course offerings, bringing DRMI and NPS expertise to more than 70 different nations worldwide. DRMI International Programs Coordinator Al Polley believes there are several benefits to bringing DRMI courses to allied nations.

“Teaching abroad is efficient. We can teach 30-40 people for what it would cost to teach only three people attending a resident course at NPS. When teaching overseas, we also benefit from our ability to use local interpreters to overcome language barriers and are able to tailor our courses to issues relevant to our host nation,” said Polley.

As McCord, and other defense leaders spanning five decades, can attest, DRMI has made a lasting contribution to the DOD’s ability to allocate and manage defense resources and has helped to shape the defense departments and ministries of allied nations around the world.
By Kenneth A. Stewart

A Warrior’s Legacy – McChrystal Shares His Story

Formal Secretary of Defense Robert Gates referred to him as “perhaps the finest leader of men in combat I have ever met.”

Retired U.S. Army Gen. Stanley McChrystal’s military resume speaks for itself. He led a coalition of 45 nations as the commander of U.S. and International Security Assistance Forces (ISAF) in Afghanistan, ran the Joint Special Operations Command, and chased SCUD launchers during the Gulf War, just to name a few highlights.

Since retiring from the Army, McChrystal has been writing books, teaching leadership at Yale University and calling for greater citizen engagement through the Franklin Project. He sat down with Naval Postgraduate School (NPS) Department of Defense Analysis (DA) Professor Dr. John Arquilla, July 15. Arquilla likened the occasion to a meeting with Gens. Patton, Bradley or Eisenhower 70 years ago.

"This is a really special occasion," said Arquilla. "If this were 70 years ago, it would be like being able to get together with Omar Bradley, George Patton or Dwight Eisenhower." In these last nearly 14 years of conflict, Arquilla continued, Gen. McChrystal has been at the heart of U.S. campaigns and his presence on campus offers an incredible opportunity to NPS students. During the candid, and at times humorous discussion, McChrystal presented a series of snapshots from his past, sharing what Arquilla called his "origin story." The son and grandson of career military men and the oldest of six brothers, who all served in the military, and a sister who married a Soldier, McChrystal’s was the poster family of military families. "I [even] married a girl whose father was a Soldier and her brother were Soldiers. You get the picture," he quipped.

"You cannot just empower people to go down and execute unless you empower them with an unprecedented level of information, what we call 'shared consciousness.' It’s transparency at a level that gives you empower them with an unprecedented level of information, what we call ‘shared consciousness.’ It’s transparency at a level that gives people a contextual understanding," explained McChrystal.

"Change would come … He and members of his leadership team were able to get units, operating largely independently due to technological shortcomings and isolation, to come together forming a single network that could face an enemy as a unified force.

"McChrystal eventually came to the conclusion that he was not fighting a hierarchical, but rather a large-flat network that shared information, propaganda and other sources of information immediately over commercial networks. He witnessed this agile enemy react to what their peers were doing on an immediate scale, leveraging the expertise of others outside Iraq.

Once that realization was made, McChrystal said, he and his forces were able to counter it. As he later wrote down upon those lessons learned while leading a 45-nation coalition in Afghanistan.

In Afghanistan, as in Iraq, McChrystal faced a local population that was frustrated and had lost confidence in both the coalition and in its own government. To complicate an already complex matter, coalition forces became restless upon realizing that they had committed to something that would surface again at later dates in both Afghanistan and Iraq.

"Teams: New Rules of Engagement for a Complex World” in which he calls for a radical redesign of organizations.

"Firmly believe the development and maturity of an officer won’t work unless you understand the challenges they face, with thinking of far-reaching operational and tactical matters," Hughes said.

Leyk, a seasoned researcher who came to NPS from the National Archives, is working with NPS Special Collections Manager John Sanders on the Hughes collection and the “NPS Legacies” exhibit. They hope to open the exhibit by early 2016.
UR):

CONTROLS

next summer.

To advance control algorithms for his swarming

Up next, ARSENL Director Dr. Timothy Chung hopes

changed information amongst themselves via wire -

basic leader-follower cooperative behaviors and ex-

developed operator interfaces. The UAVs performed

two 25-unit sub-swarms, and guided using ARSENL-

50 UAVs were launched and flown autonomously in

Aug. 27, setting what is believed to be a world re-

unmanned aerial vehicles (UAV) simultaneously,

NPS' Advanced Robotic Systems Engineering Labo-

ratory (ARSENL) successfully flew 50 autonomous

A

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45-50 minutes

nance launched, aircraft will perform two

limited battery life constrains flight time to

of any plane if it experiences a problem in flight

between ground and individual planes

Backup link allows communication directly

the face of lost messages

Communications are designed to function in

WiFi-based communications allows planes to

Each plane broadcasts its position to other planes to coordinate maneuvers

Planes are equipped with sensors for position, altitude, speed, and orientation

moving toward computer vision for tracking

- Planes are equipped with cameras for position, attitude, speed, and orientation

Each plane broadcasts its position to other planes to coordinate maneuvers

wireless links.

Up next, ARSENL Director Dr. Timothy Chung hopes to advance control algorithms for his swarming UAVs. Ultimately, the ARSENL team is leading toward a swarm vs. swarm, 50 vs. 50 UAV challenge next summer.
By Kenneth A. Stewart

In 2009, then Commandant of the Marine Corps Gen. James Conway declared energy a top priority. Mere weeks later, the U.S. Marine Corps’ Expeditionary Energy Office (E2O) was born and tasked with analyzing, developing and directing the Marine Corps’ energy strategy.

In 2014, as the Marine Corps is currently operating.

When you look at where the Marine Corps has conducted operations in recent years, it has tended to be in areas where there is a ready supply of solar energy that, if harvested, could be used to provide power for Marine operations,” said Katzman.

Katzman also believes that CIGS are well suited to the Marine Corps because they are relatively easy to make—they are sprayed on in a process known as chemical vapor deposition—and because of their width and flexibility. CIGS can be sprayed on everything from uniforms, to camouflage netting or the exteriors of tents. Katzman is using a Technical Computer Aided Design (TCAD) program to improve CIGS efficiency and to determine their optimal usage during Marine Corps operations.

“The program solves all of the underlying, physics-based equations allowing us to adjust parameters to give us an idea of why a cell is operating in a particular way,” explained Katzman.

According to Hernandez, it is the combination of student research being conducted by students like Katzman and Herendeen, mixed with engaging classroom discussions and academic development that make NPS such a powerful venue for educating naval officers.

“As a result of this continuing research engagement, NPS is able to develop viable curricula that will serve naval forces while directly harnessing devices based, solar energy. This work is about creating a conversation that may lead to a long-term solution. The academic community here at NPS provides outstanding benefit to the Marine Corps and the job of the Expeditionary Energy Office. Those benefits include things like getting students to study in the energy space, and not specifically in engineering, but in areas like operations analysis and in the business school where students are looking at different practices.”

Marine Corps Col. Jim Caley
Director, USMC Expeditionary Energy Office

The expeditionary energy office works for the Commandant of the Marine Corps. One of those students is Marine Corps Capt. Michael Herendeen.

Herendeen is utilizing the Marine Air-Ground Task Force power and energy model (MAGTF) to conduct his analysis of MEB force composition and deployment options. The MAGTF helps him to analyze fuel outputs down to the gallon per Marine vehicle, and allows him to forecast the demand side of various MEB deployment options.

“Right now we are looking at five different force compositions. What differs between them is when you land certain elements of combat power, specifically different unit types,” noted Herendeen. “For example, do we land as many tanks as we can on day one, or do we phase tank deployments out between day one and day 50?”

“We have spread that methodology throughout the whole spectrum of MEB operations with our left and right lateral limits in mind. It’s the same process when we look at the tempo of our operations,” said Hernandez.

While Herendeen does not believe that his research is a “golden solution to Marine Corps energy problems. “As a result of this continuing research engagement, NPS is able to develop viable curricula that will serve naval forces while directly supporting the Marine Corps’ primary mission. While conservation is a priority, he says, his work is not about creating a ‘green’ Marine Corps. “We don’t go green,” said Caley. “The work that we are doing is about getting our Marine units further down the battlefield. If your energy does not get you far enough on the battlefield to get to the enemy, you can’t kill them.”

SOUNDS straightforward enough, but to do that, the Marine Corps required a pool of operationally-savvy academics with the right mix of officer students and researchers with the time and ability to explore the Marine Corps’ most demanding energy challenges. The Marine Corps found that just combination at the Naval Postgraduate School (NPS).

“The academic community here at NPS provides outstanding benefit to the Marine Corps and the job of the Expeditionary Energy Office,” said Caley. “Those benefits include things like getting students to study in the energy space, and not specifically in engineering, but in areas like operations analysis and in the business school where students are looking at different practices.”

Retired Army Col. and NPS Associate Professor Andy Hernandez noted that NPS efforts to support the E2O Office. Along with his own specific research for E2O, his primary objective is to match NPS faculty and students with Marine Corps’ energy research needs.

“The research that E2O requires is inherently multidisciplinary and ranges from social and political sciences to engineering and math-
By Kenneth A. Stewart

Naval Postgraduate School (NPS) alumnus Georgian Army Col. Giorgi Jachvadze has managed a series of reforms within the Georgian Armed Forces (GAF) that have effectively overhauled the Georgian military personnel system, and directly credits his NPS education for giving him the knowledge to make the aggressive changes.

"The main objective of the military personnel management systems reform was to establish objective, fair and transparent military personnel planning and management systems in accordance with NATO standards and principles," explained Jachvadze.

"My NPS experience created significant preconditions for all of these accomplishments, and my NPS classes and thesis played a significant role in the success of these reforms," he added. "The knowledge and skills that I acquired at NPS introduced me to materials, practices and methods that helped me to decisively elaborate and implement the ideas and projects that led to these successes."

Jachvadze completed NPS’ Manpower Systems Analysis curriculum in the university’s Graduate School of Business and Public Policy (GSBPP). Upon graduation, he returned to Georgia where he was selected to lead the J1 Personnel Department of the General Staff of the Georgian Armed Forces (GAF).

The Georgian J1 Personnel Department is responsible for manpower and personnel issues, including among other things, pay, allowances, and promotions throughout the GAF.

One of the most successful of the reforms led by Jachvadze was a MOD transition to a pay-by-rank compensation system.

"Before transitioning to a pay-by-rank system, a large portion of GAF military personnel’s basic pay, about 95 percent, was defined by the position they held, and only about five percent was related to their actual rank," explained Jachvadze.

According to Jachvadze, transitioning to a pay-by-rank system was important because the prior practice, which offered compensation based upon position, created an improper set of incentives and hampered the ability of the GAF to implement a Western-style military personnel system.

These reforms have been integral to advancing Georgia on its path to NATO membership, said Jachvadze. "My NPS experience created significant preconditions for all of these accomplishments, and my NPS classes and thesis played a significant role in the success of these reforms," he added. "The knowledge and skills that I acquired at NPS introduced me to materials, practices and methods that helped me to decisively elaborate and implement the ideas and projects that led to these successes." 

NPS Senior Lecturer, retired Navy Cmdr. Bill Hatch, a former NPS student Swedish Army Capt. Robert Humeur and German post-doctoral researcher Sascha Pauly are studying the latest advancements in Electronic Warfare (EW) in hopes of improving the ability to counter EW threats.

"It’s highly important to detect and identify these types of threat emitters as they create a barrage of noise jamming certain bandwidths that we use in our ground-based air defenses," said Humeur.

Humeur’s thesis, “Experimental Testing of a Photonic Direction Finding Electronic Warfare System,” involved the building of a prototype receiver that is capable of detecting the origin of enemy emitters. With Pauly’s help, who is detailed to NPS through the Engineer and Scientist Exchange Program, he’s been testing it in the Anechoic Chamber Lab in the NPS Department of Physics.

Humeur is a seasoned expert in the art of electronic warfare, serving three tours in Afghanistan as an EW officer specializing in air defense systems. He has worked on a wide variety of EW sensor systems, and has been actively involved in the evolving field of signal detection.

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Student’s Prototype May Counter EW Threats

J1, Head of Manpower, Personnel
Georgian Armed Forces

The J1 also works with the Ministry of Defense’s Human Resource Management Professional Development Department to implement personnel policies within the GAF.

"The transition to a pay-by-rank compensation system was a huge success for the MOD and it was recognized and appreciated by NATO partner countries," said Jachvadze.

Yet the transition to a pay-by-rank compensation system was just one of many reforms overseen by Jachvadze and his staff. Under his leadership, the MOD has also implemented key reforms in the areas of promotions, selection board processes, recruitment and retention systems, pre-enlistment psychological screenings, and military pay and compensation.

The plan was followed by a concerted effort to communicate the need for change and to explain the path forward. Jachvadze led informational briefings throughout the MOD in nearly every command and unit within the GAF in an effort to overcome resistance to the transition and to explain its merits.

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Deputy Secretary of Defense NPS Alumnus, Retired Vice Admiral Talks Innovation

By MC1 Lewis Hunsaker

Naval Postgraduate School (NPS) alumnus and retired U.S. Navy Vice Adm. Michael C. Vitale shared a career of lessons learned in innovation with NPS students during a Secretary of the Navy Guest Lecture (SGL) at King Auditorium, Aug. 11. During the SGL, Vitale received the NPS Distinguished Alumni Award from President retired Vice Adm. Ronald A. Route.

Vitale became interested in innovation while serving as the commander of Navy Installations Command. “I was trying to get my organization motivated. I knew where I wanted the organization to go. I had the vision. I had the ideas. I thought I had motivated the organization, but after two years, I realized I had not. “All of you officers are going to be leaders, and at some point in time you will take command. In order to command, you have to build a successful team. In order to build a successful team, you have to have good tools in your toolbox. Today, I would like to add innovation to your toolbox,” continued Vitale.

Advocating a particular brand of innovation that recognizes the need for hard work and testing, Vitale calls it, “Innovating with intent.” Innovating with intent requires innovators to focus on five distinct steps: visualize/imagine, ideate, test/experiment, lead the change, and educate. “First you have to visualize. Once you have an idea, you have to test it, collect data, and analyze it. That’s hard,” said Vitale. “Your idea has to be tested to a problem. That’s why I say innovation with intent. But according to Vitale, no matter how innovative you may be, your ideas will not gain traction unless you are able to sell them to the people that matter.”

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Finaly, Vitale challenged the assembled students, faculty and staff to educate themselves, and to become innovation subject matter experts. “You have to become the expert in innovation. You have to constantly study. This is not something you are going to do tomorrow. When you get back into your commands you are going to try and figure out a better way... don’t be afraid of failing.”

“At your current level, you are not going to become the culture in your organization. The commanding officer or executive officer may not be into innovation, your challenge is to change that mindset,” said Vitale.

Deputy Secretary of Defense Visits NPS, Honors Spring Graduates

By Kenneth A. Stewart

The Naval Postgraduate School (NPS) welcomed Deputy Secretary of Defense and NPS alumnus the honorable Bob Work to its Spring Quarter Graduation ceremony, June 19. Work addressed a graduating class comprised of some 290 graduates from every U.S. branch of service, and 19 countries, earning 296 advanced degrees.

Deputy Secretary of Defense and NPS alumnus the Honorable Bob Work, right, is pictured with the current Acting Provost and Space Systems Academic Group Professor Jim Newman, left, during a campus tour, June 19. Work, a Space Systems Operations graduate, spoke about the importance of space operations during a tour of the campus while visiting to keynote the university’s Spring Quarter graduation.

“I have so much affection for this institution and so much respect for its graduates. There is absolutely nothing more important to the future of our security establishment and the future of our great nation than preparing our future leaders.”

The Honorable Bob Work Deputy Secretary of Defense Space Systems Operations (SSO)

Deputy Secretary of Defense NPS Alumnus the Honorable Bob Work, right, is pictured with the current Acting Provost and Space Systems Academic Group Professor Jim Newman, left, during a campus tour, June 19. Work, a Space Systems Operations graduate, spoke about the importance of space operations during a tour of the campus while visiting to keynote the university’s Spring Quarter graduation.

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Prior to addressing the graduating class, Route and then Provost Dr. Douglas Hensler presented Work with NPS Distinguished Alumni Award, noting Work’s “extraordinary leadership,” his contributions to military service, and his “unsurpassed and continued support of graduate education and the Naval Postgraduate School.”

For Work, returning to NPS was a homecoming of sorts. He is a graduate of the university’s Space Systems Operations program and started a family here while completing his graduate education.

“I have so much affection for this institution and so much respect for its graduates,” he continued. “There is absolutely nothing more important to the future of our security establishment and the future of our great nation than preparing our future leaders.”

We are at a pivotal moment in our history. We are coming out of more than 14 years of hard fighting, including the longest war in our nation’s history,” he said. “We are witnessing a more multipolar world where American leadership is being increasingly challenged, perhaps no more so than in the military realm.

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“All of you officers are going to be leaders, and at some point in time you will take command. In order to command, you have to build a successful team. In order to build a successful team, you have to have good tools in your toolbox. Today, I would like to add innovation to your toolbox,” continued Vitale.

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Vitale shared several possible answers to the above question and recommended that potential innovators read Chip and Dan Heath’s, “Switch,” which promises to help readers to change behavior.

Finally, Vitale challenged the assembled students, faculty and staff to educate themselves, and to become innovation subject matter experts. “You have to become the expert in innovation. You have to constantly study. This is not something you are going to do tomorrow. When you get back into your commands you are going to try and figure out a better way... don’t be afraid of failing.”

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“At your current level, you are not going to become the culture in your organization. The commanding officer or executive officer may not be into innovation, your challenge is to change that mindset,” said Vitale.
The Naval Postgraduate School (NPS) in conjunction with Commander, Naval Surface Forces, Vice Adm. Thomas S. Rowden recently established the university’s first-ever Surface Warfare Officer (SWO) chair. The chair will serve as a mentor and a liaison between the surface Navy community and NPS students, faculty and staff. "It gives me great pleasure to establish a SWO chair here. I have been dreaming about doing this for a very long time," said Rowden.

"NPS brings three powerful assets to the table that no other single institution can match – human capital in the form of a student body composed of mid-career naval, military and defense professionals; intellectual capital in the form of a faculty with deep ties to both academia and the defense establishment; and physical capital in the form of laboratories, centers, facilities and this beautiful and historically significant campus," said Rowden.

In an effort to leverage those assets, Rowden assigned NPS alumnus Capt. Charles Good to NPS. "It’s Capt. Good’s responsibility to take the value of NPS to the fleet so that we can take those young, great intellectual minds that are serving on our ships and get them properly synced up with the career naval, military and defense professionals; intellectual capital in the form of a faculty with deep ties to both academia and the defense establishment; and physical capital in the form of laboratories, centers, facilities and this beautiful and historically significant campus," said Good. "I can serve as a conduit. The fleet can send issues, concerns and initiatives to me and I can tie them to interested students and faculty on campus," said Good. "Having the students do surface warfare related theses is a big step, it ensures that they remain grounded in the community while at the same time getting exposure academically."
Intern Develops Small, Inexpensive Star Tracker

By Kenneth A. Stewart

Naval Postgraduate School (NPS) student intern Julian Brown holds the star tracker system he developed during a summer at the university’s Space Systems Academic Group. The low-cost star tracker is designed to help very small satellites determine their orientation in space.

Naval Postgraduate School’s (NPS) student intern Julian Brown is just 21 years old, but don’t let his young age fool you. He’s a serious scientist, and spent a summer at NPS developing a star tracking system designed to help very small satellites determine their orientation in space.

After graduating from the Massachusetts Institute of Technology (MIT) with a degree in electrical engineering and computer science, and then interning with the Space and Naval Warfare Systems Command (SPAWAR), Brown made his way to NPS, working with Professor and current Acting Provost Jim Newman through the Office of Naval Research’s Naval Research Enterprise Internship Program (NREIP).

“As I was reviewing resumes for the summer of 2014, his stood out. He had shown interest in trying to do some really hard projects,” said Newman. “Professor Mathias Kolch and I had been working part-time with students on developing a low-cost, very small star tracker to challenge the price point that industry currently provides, and I realized this would be a great project for Julian.”

“A star tracker is used to take a picture of the sky and identify the patterns of stars in an image,” explained Brown. “Based on this, a satellite can tell which direction it is facing. Because stars are little specks of light that don’t move, it is very easy to know where you are looking if you know which stars you are looking at.”

“It’s cool stuff,” Brown continued. “I’ve known what I wanted to do since I was 5 years old. When I learned that the Navy was sponsoring this would be a great project for Julian.”

“Because satellites are becoming so popular in research, we would like to develop our own non-private star tracker that we can build ourselves and hopefully pass off to private industry once we have designed the basics,” said Brown.

“We’re very pleased to offer them to these exceptional young men and women,” added Newman. “NPS student interns come from all walks of life, and they continue on to just as many. Here’s an update on just a handful of the hundreds of students that spent time on campus during the summer over the past several years, and a peek at where their efforts have taken them.”

STEM at NPS

In just a few short years, opportunities for STEM internships at the Naval Postgraduate School have blossomed, with nearly 100 high school and college students from across the U.S. on campus this past summer. Interns dot the academic landscape across nearly every department on campus, with a broad range of partnerships at the national and regional levels.

“It’s clear to me that this is a special program,” said university President, retired Vice Adm. Ronald A. Route. “These are exceptional opportunities, and we are very pleased to be able to offer them to these exceptional young men and women.”

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**Candie Casandra Martin (’13)**

**Program:** Community College Catalytic Program

**Mentor:** Dr. Tim Chung, Systems Engineering

**NOW:** Enrolled in Master of Science in Information Assurance program at NPS through Scholarship for Service program.

**Natalie Ortiz (’11, ’13)**

**Program:** Science and Engineering Apprenticeship Program (’11), Naval Research Enterprise Internship Program (’13)

**Mentor:** Sue Higgins, Cebrowski Institute, and Dr. Jim Newman, Space Systems (’15)

**NOW:** Computer science major at UC San Diego.

**Atay Iain (’14)**

**Program:** Science and Engineering Apprenticeship Program

**Mentor:** Dr. Tony Kendall, Information Sciences

**NOW:** A high school senior, currently applying to MIT, UC Berkeley, Harvard and Stanford to study computer science.

**Brandon Taylor (’14)**

**Program:** Naval Research Enterprise Internship Program (’15)

**Mentor:** Dr. Dan Nusbaum, Energy Academic Group

**NOW:** Employed as a contractor with NPS Energy Academic Group, set to graduate in the fall with a Mecha-nical Engineering and Robotics degree from the Rose Hallman Institute of Technology.

**Stuti Vishwabhan (’15)**

**Program:** Science and Engineering Apprenticeship Program

**Mentor:** Dr. Ying Zhao, Information Sciences

**NOW:** A high school senior, launched and runs non-profit “Teach Seniors Technology” organization.

**Daniel Barra Rooh (’14, ’15)**

**Program:** Community College Catalyst Program

**Mentor:** Dr. Arjit Das, Computer Science

**NOW:** Volunteered to continue his work with Dr. Das while studying computer science at CSU Monterey Bay.

**Jordon Ruff (’15)**

**Program:** Naval Research Enterprise Internship Program (’15)

**Mentor:** Dr. Ned Powley, Graduate School of Business and Public Policy

**NOW:** A senior at Marquette University majoring in psychology and Spanish, with a minor in ethics. Plans to enroll in graduate school programs in mental health counseling, specializing in care for military personnel and their families.
NPS Honors Summer Graduates During Quarterly Ceremony

By Kenneth A. Stewart

The Naval Postgraduate School (NPS), along with a packed house of faculty, family, friends and well-wishers, said farewell to 330 graduating students earning 335 degrees during NPS’ Summer Quarter Commencement ceremony in the university’s King Auditorium, Sept. 25.

“My experience here was humbling,” said Sgt. Robert Brady, a supervisor in the New York Police Department’s (NYPD) counter-terrorism unit. Brady earned a Master of Arts in Security Studies through NPS’ Center for Homeland Defense and Security (CHDS).

“Being put together with such a diverse group of people from so many different disciplines was excellent,” added Brady. “We challenged each other and drew out the best in one another to become better homeland security professionals.”

Military Officers Association of America (MOAA) President retired Vice Adm. Norbert R. Ryan Jr. was the ceremony’s keynote speaker.

“I can’t tell you how inspired I was to watch you all file in this morning. … This nation’s greatest treasure is the young men and women that serve,” he said.

Throughout Ryan’s emotional address to the graduating class, he shared moving stories and anecdotes from his military career, drawing largely upon lessons learned while observing service members overcome incredible odds. He also spoke of leadership, and the commitment to serve that he has witnessed in men and women from all walks of life.

“Leadership is not about words, we all know that,” he said. “Leadership is about example.”

In closing, Ryan called for the assembled students, faculty and staff to always advocate for their fellow service members and their families.

“All of us collectively … have to make sure that the 99 percent of the population that have not served keep their commitments to those that have served and those that will serve in the future,” said Ryan. “Please speak up to your elected officials about the importance of keeping our commitments to the men and women, and their families, that have kept us free for the last 14 years.”

Ryan was recently recognized as one of the 100 most influential and impactful veterans on Capitol Hill. Under his leadership, the MOAA has been named a “Top Lobbyist” by The Hill newspaper for the past eight years.
“NPS Is Everywhere”

During an Iraqi Air Force F-16 dedication ceremony at Balad Air Base earlier this year, three of the U.S. officers in attendance recognized each other. Although they worked for different organizations, some were even members of different services, they knew there was some sort of connection between them. And there was … the Naval Postgraduate School’s Department of National Security Affairs.


The chance meeting and subsequent discussion offered an opportunity for the trio to reflect upon their time at NPS, and the role the education has played in their assignments following graduation. McCullough went on “to be the Turkish political/military advisor at [U.S. European Command] EUCOM where the education I received at NPS was used every day,” he said.

“Before I deployed I was at the Under Secretary of the Air Force for International Affairs (SAF/IA) at the Pentagon. Here I dealt with technology transfer issues for Foreign Military Sales cases. Again, the experience of NPS came in very handy,” McCullough continued.

Sylvester, who has since served as a Director of Theater Security Cooperation, a Senior Naval Advisor, and is slated to be the next Defense Attaché for Saudi Arabia, echoed these sentiments.

“The NPS degree in Security Studies, with a Middle East focus, has given me a great base to fall back on,” he said. “Coupled with language training, I am quite functional interfacing with our foreign partners, and am thankful for the opportunity!”

Given their current assignments, the trio embody the precise value of just one of NPS’ many academic programs in preparing military leaders to be more effective … Perhaps stated best by McCullough.

“All of these experiences, along with the foundation of my NPS education, have been critical to the day to day dealings with the Iraqi government,” he said. “My awareness of the different cultures and norms of this country were shaped by the experiences of the professors at NPS … It is an experience which I cannot undervalue.”