



NAVAL POSTGRADUATE SCHOOL

IN REVIEW

MAGAZINE

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OPERATION H•A•D•R

NPS STUDENTS AND FACULTY DEPLOY TO THE CENTRAL PHILIPPINES TO PROVIDE RELIEF FOLLOWING TYHPOON HAIYAN, BUT IT'S ON CAMPUS WHERE THE BULK OF UNIVERSITY EFFORTS TO IMPROVE HADR OPERATIONS HAPPENS EVERY DAY.

INSIDE:

NPS Helps Plan Multinational Counterterrorism Exercise
Evaluating CubeSats for Communications Support
Student Honored with Prestigious Supply Corps Award



Ronald A. Route
Vice Adm., U.S. Navy (Ret.)
President, Naval Postgraduate School

“Our students are consummate professionals at every level, our faculty are world-class, and our educational programs are relevant, adaptable and of immediate value to the Navy and DOD.”

As a graduate returning to campus to serve in my current capacity, I continue to be impressed by the synergistic relationship between our students, faculty and curricula. Our students are consummate professionals at every level, our faculty are world-class, and our educational programs are relevant, adaptable and of immediate value to the Navy and DOD. This is, without question, one of the most powerful statements of value this institution can make. But it is certainly not the only one.

At NPS, along with the advanced education afforded our students comes several related benefits ... broadening the leadership skills and network of professional relationships of our students; and student and faculty research that is directly responsive to the needs of the Fleet and the Combatant Commander. While these rigorous efforts are a necessary part of graduate education, it is the positive impact on the mission and readiness of the Navy, our sister services, and other agencies that delivers great value to a multitude of sponsors.

This edition of “In Review” magazine contains several examples of the impact of work done by NPS. Late last year, an Atlas V rocket launched in Southern California carried with it a small, cube-shaped nanosatellite that SOUTHCOM hopes can support tactical communications in some of the dense jungles within its region. To evaluate the capability, SOUTHCOM turned to NPS students and researchers in our Distributed Information Systems Experimentation, or DISE, group.

In the information dominance corps, the demand for highly technical junior cyber warriors is high, but current gaps in training present a challenge to fulfilling this demand. Educational programs for senior Sailors and officers, including those here at NPS, are working, but in the technically-demanding world of cyberspace, how could the Navy get young Sailors ready for cyberspace, as quickly as possible? An NPS student, Lieutenant Jerry Wyrick, is developing a solution ... a short but intensive training program to help provide cyber Sailors with enough technical savvy to operate in critical Fleet cyber positions.

Efforts like these, and others by our students and faculty, demonstrate leadership and excellence in their communities, and it's getting noticed. The Vice Admiral Robert F. Batchelder Award is presented annually to the Supply Corps officer with exemplary contributions to the supply readiness of the operating forces. Lieutenant John Sprague was recognized as a leader in his field when he received the award this past quarter for providing logistics support to SEAL Team Three at his previous command. And he will now have the opportunity to continue to improve his skills as a student in the NPS operations analysis program.

In a nod to one of our expert faculty, Associate Professor Nita Shattuck earned the Surface Navy Association's Literary Award for her work with sleep and performance optimization through the application of non-standard, watch-standing schedules. Also, our Operations Research (OR) department was officially presented with an impressive trophy for their INFORMS Smith Prize for best OR Department in the nation, an award that had been announced last Spring.

All of these outstanding student and faculty achievements offer testament to the value an NPS education provides to Navy mission effectiveness, but perhaps none more so than our cover story on HADR mission support. This past November, a team of students and faculty at NPS deployed to the Philippines to provide communications assessments and support following the devastation left by Typhoon Haiyan, as part of an ongoing research project for rapidly deployable networks.

Their efforts are impressive ... and when combined with several student-driven research projects into every aspect of HADR operations, and an astounding 45 individual master's theses in just three years, the Naval Postgraduate School's collective potential impact on Navy HADR operations is striking.

On the one hand, we've executed our mission of quality, unique graduate education for the 60 students who completed those HADR studies. But on the other hand, and equally important, these detailed analyses on nearly every aspect of recent HADR events provide a resource for Navy/DOD leadership that is a model of what the special blend of NPS students with recent operational experience, dedicated expert faculty and responsive research can achieve.

Ronald A. Route



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U.S. Southern Command has embarked on an ambitious international CubeSat program, and turned to NPS to help assess the communications capabilities.



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NPS students, faculty deploy to the Philippines in support of Operation Damayan, but the university's efforts to improve DOD's execution of HADR missions is underway all across campus, every day.



18 NPS Students Join Community Effort to Build Home for Wounded Warrior

Homes for Troops, a national, non-profit organization, brings together a cadre of volunteers from NPS, DLIFLC and the local community to help build homes for wounded service members.



20 OR Professor Honored With Surface Navy Association's Literary Award

Dr. Nita Shattuck has been working for 12 years to change the status quo when it comes to sleep and fatigue in an operational environment. In the most recent nod to her ground-breaking research, the Surface Navy Association presents her their coveted Literary Award for top journal article of the year.



22 Center for Civil-Military Relations Supports Multinational Counterterrorism Exercise

NPS' CCMR recently completed a three-year effort to lead an unprecedented 18-nation, 800-personnel exercise to improve regional capability in transnational counterterrorism.



24 Naval Studies Program Pits NPS Student Expertise Against Navy's Challenges

Lt. Jerry Wyrick is one of several students taking advantage of Naval Studies Program funding to perform detailed analyses on behalf of Navy leaders. Wyrick's initiative seeks to fill a critical need in cyber operations training programs.

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On The Cover Two Aviation Warfare Specialists assigned to Task Force 505 are a welcomed sight as they search the outlying areas of Tacloban, Philippines for optimal supply drop points, Nov. 20, 2013. NPS faculty and students deployed to the island nation following a devastating hurricane to provide immediate assistance in communications assessments and support, but its back on the university campus in Monterey where countless student/faculty research efforts will have a profound impact on the future of Operation Humanitarian Assistance and Disaster Relief.

For more information about NPS, visit the new NPS NewsCenter at www.nps.edu/news. For free subscription information or to submit your comments or suggestions on In Review magazine, contact dmkuska@nps.edu.

Student's National Cyber Association Garners High-Level Attention

In the critical field of cyber operations, the work of an Army officer with little background in computer science has garnered considerable attention from several of the nation's most respected cyberwarriors.

While completing his graduate studies in NPS' cyber systems and operations master's program, U.S. Army strategist Capt. Joseph Billingsley of Stamford, Conn. recognized the strategic value of creating a professional association that catered to the needs of the cyber community. And that drove Billingsley to pull double-duty while completing his thesis, pounding the pavement to get his Military Cyber Professionals Association (MCPA) up and running.

"My motivation for focusing on cyber as opposed to more traditional areas of strategic thought was the growing concern about this field on Wall Street, K Street and Main Street. The need has been clearly articulated in numerous strategic planning documents and policies," said Billingsley.

"I wanted to make a meaningful contribution to the cyber fight and I knew that I wasn't going to be able to do that in a technical manner. I am a strategist not a computer scientist, but I believe that in an environment as dynamic as cyberspace, the most enduring piece of key terrain is the people," he continued. "As a strategist, I am tasked with thinking long term. The establishment of a cyber association is a long-term approach to meeting our nation's top cyber requirements," he continued.

Former commander of U.S. Army Cyber Command, retired Lt. Gen. Rhett Hernandez, has taken an active interest in Billingsley's work. He congratulated Billingsley and expressed his hopes for the new organization.

"I applaud the work being done by Joe on the MCPA. Cyber is the number-one threat to national security, and people, not technology, will

out think and out maneuver these cyber threats," said Hernandez.

"Our military is a profession and the cyberspace domain, no different than other domains, requires competent, committed professionals of character. The MCPA will bond cyber warriors worldwide and increase the strength of our profession," he continued.

In addition to the kudos Billingsley received from the Army's top cyber officer, Senior Military Advisor for Cyber to the Under Secretary of Defense for Policy, Maj. Gen. John A. Davis, also became interested in the proposed association after reading about Billingsley's efforts at NPS. He was so intrigued that he contacted Billingsley and offered to serve as one of his thesis readers.

"A national cyber association allows the varied facets of the cyber domain to come together, share personal experiences, and bridge the various professional cultures within the cyber domain, bringing them together to create a community that will meet the needs of cyber professionals today and in the future," said Davis.

Davis also offered insight into the importance of the emerging cyber operations field and its relevance today.

"There are at least two dynamics at play that are changing at an alarming rate. The first is our growing dependence upon networked technologies globally. In the areas of public health, safety, finance and personal empowerment, there is an increasing reliance on the cyber domain," said Davis.

"While the first dynamic offers us both opportunity as well as risk, the second dynamic involves evolving threats — threats from criminal and espionage activities to more overtly destructive efforts that are underway. When we look at these two dynamics, we have to keep them in balance. It is because of these dynamics that cyber operations are so important today," he continued.

First Defense Energy Seminar of the Year Focuses on Human Behavior

NPS Department of Systems Engineering Associate Professor retired Army Col. Andy Hernandez addressed NPS engineering students, along with select faculty and staff, on the complexities of energy conservation in the military during the first Defense Energy Seminar series lecture for 2014 held in the Mechanical and Aerospace Engineering Auditorium, Jan. 10.

Hernandez's aim is to continue expanding the operational relationship between NPS and the Marine Corps Expeditionary Energy Office (see full story, page 25) in hopes of forging new ideas and expanding research capabilities.

"Conservation of energy for the USMC is a means to extend operational reach," said Hernandez. "This is the continued sustainment of operations in both time and space without increasing the amount of energy required. The ability to extend operations affects all military

activities, including communications, command and control, com-



NPS Associate Professor retired Army Col. Andy Hernandez discusses the complexities of military energy conservation with NPS students, faculty and staff in the Mechanical and Aerospace Engineering Auditorium, Jan. 10.

puters and intelligence."

Hernandez discussed current research to identify and quantify factors of human behavior that have the ability to extend operational reach when changed. He also welcomed NPS colleagues Research Professor Dr. Michael E. McCauley and Research Associate Anita Salem to the conversation, bringing their expert analyses to the presentation.

Understanding energy dependence is a critical weakness of U.S. combat forces led Commandant

of the Marine Corps Gen. James F. Amos to declare energy a top priority, prompting him to challenge all Marines to conserve energy use on and off the battlefield. Amos also developed the Expeditionary Energy Strategy and Implementation Plan aimed at increasing combat effectiveness through efficiency and renewable expeditionary energy.

NPS Holds Two-Week Course in Human Capital Management

NPS' Defense Resources Management Institute (DRMI) welcomed the latest cohort of students to campus in mid-January for the



Students participating in the Human Capital Resources Management (HCRM) course outside Spanagel Hall, Jan. 13. The HCRM course offers relevant concepts emphasizing human resources and total force management.

Human Capital Resources Management (HCRM) course. The HCRM program offers relevant economic concepts and strategic planning resources emphasizing human resources integration and total force management.

"Ultimately the course is about learning analytical tools and perspectives to improve programs and policies pertaining to human capital," said DRMI Assistant Professor Dr. Laura Army.

"We learn from each other's experiences, knowledge and backgrounds," said Saudi Arabian National Guard Brig. Gen. Dr. Khalid AlShohaib. "It's a mix of knowledge that one could never get anywhere else."

The HCRM course is a two-week program of classroom lectures, small group discussions and

real-world case studies intended to develop the decision-making skills necessary in today's challenging defense environment.

"I hope our students take a step back from their day-to-day manpower and human resource problems and look at the overall process of managing people from a fresh and strategic perspective," added Army.

AFIT Chancellor Visits NPS, Addresses Air Force Students

Air Force Institute of Technology (AFIT) Director and Chancellor Dr. Todd I. Stewart, a retired Air Force Maj. Gen., met with several faculty and students during a tour of campus, Nov. 8.



Air Force Institute of Technology Director and Chancellor, retired U.S. Air Force Maj. Gen. Todd I. Stewart, is briefed by NPS Distinguished Professor Brij Agrawal in the Segmented Mirror Space Telescope (SMT) lab during a campus visit, Nov. 8.

Stewart visited NPS with members of the National Research Council (NRC) but also found time to tour the campus, speak with Air Force students and meet several NPS faculty.

"[Dr. Stewart] is interested in expanding opportunities for collaboration between NPS and AFIT, especially in the areas of cyber and space systems," said Graduate

School of Engineering and Applied Sciences Associate Dean Air Force Col. Christopher Smithtro.

"The students Dr. Stewart met with were exceptionally engaged during his presentation," continued Smithtro. "They peppered him with questions related to their programs and future Air Force careers."

Mechanical Engineering Student Earns Multiple Honors for Advanced Research

Mechanical engineering student Lt. Cmdr. Jamie Cook's research into advanced carbon nanomaterials captured quite a bit of attention during the Center for Materials Research (CMR) student research showcase and holiday celebration, Dec. 11. Cook's research was met with high praise on campus, earning a CMR Outstanding Research Award, and off campus as well with his receipt of the Naval Sea Systems Command's Excellence in Naval/Mechanical Engineering award.

"I feel honored to be recognized by the faculty, especially considering the excellent quality of all of the projects and research presented at the CMR gathering," said Cook. "My time spent here has been intense but extremely rewarding. I did my best to make the most of this experience and I tried to push myself academically whenever possible. I know I will apply the numerous skills I gained here in my future positions as an Engineering Duty Officer."

Associate Professor Claudia Luhrs lauded Cook for his hard work, leadership and enthusiasm.

"Jamie is a very bright student that shows leadership and creativity, always enthusiastic about the task at hand. He is methodic, a very good communicator and has a great sense of humor. It was a pleasure to have him as part of our group," said Luhrs.

Upon his graduation in late December, Cook reported to the Strategic Systems Programs Head-



Mechanical and Aerospace Engineering Associate Professor Claudia Luhrs, left, congratulates Lt. Cmdr. Jamie Cook, right, on his receipt of the Center for Materials Research (CMR) Outstanding Research Award, Dec. 11.

quarters at the Washington Navy Yard in Washington, D.C.

Marine Corps Student Receives Fall Quarter's Top Honor

A select group of the Fall Quarter's top U.S. and international NPS students were honored during the quarterly awards ceremony in the Barbara McNitt Ballroom, Dec. 10. The students were recognized for excellence in their respective fields of study as well as other scholarly achievements.

"The students being recognized today are indebted to NPS' superlative faculty ... [who've] spent



Marine Corps Maj. Jacob C. Urban, right, is presented with the Monterey Peninsula Council Navy League Award for Highest Academic Achievement by council President, retired Marine Corps Lt. Col. David Overton, Dec. 10.

countless hours educating and training them to conduct scholarly research, and inspiring them in countless ways," said NPS Dean of Students Capt. Tom MacRae.

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U.S. Marine Corps Maj. Jacob C. Urban, a student in the national security studies program, was honored with the Navy League Award for Highest Academic Achievement.

“I am grateful for the opportunity to attend graduate school here at NPS, and to be able to interact with so many intelligent, knowledgeable and talented people — both students and instructors,” said Urban.

“Being surrounded by people of this caliber has really motivated me to dig into my studies and learn as much as I possibly can,” he continued. “I hope that my efforts are worthy of this great institution, and of the money that taxpayers have contributed to give me this opportunity.”

Fleet Master Chief Addresses NPS Enlisted Staff

Fleet Master Chief for Manpower, Personnel, Training and Education (MPT&E) April Beldo spoke with NPS enlisted staff members during a scheduled visit to the campus, Nov. 20. Beldo offered a behind the scenes view of Navy career planning and advancement, while sharing some of the lessons she has learned over her decades-long naval career.

“I have served for over 30 years, and my best tool has always been staying positive and daily self discipline,” said Beldo.

“I encourage you all to continue preparing yourselves for the next level,” she continued. “Many



Fleet Master Chief for Manpower, Personnel, Training and Education (MPT&E) April Beldo speaks with NPS enlisted staff members during a scheduled visit to the campus, Nov. 20.

of you will become the Navy’s future leaders, and when you get

there, your junior Sailors will be seeking your advice.”

As one of only four fleet master chiefs in the U.S. Navy, Beldo also discussed the role of senior enlisted staff.

“It is our responsibility to provide an opportunity for junior Sailors to succeed in their careers,” said Beldo. “We signed up for this experience ... This is how we take care of the country, our families and ourselves.”

NPS Celebrates Dr. Martin Luther King Jr. During Annual Breakfast

The Monterey Chapter of the National Naval Officers Association (NNOA) joined regional civic leadership, community officials and university President retired



NPS, community leaders honor the legacy of Dr. Martin Luther King Jr. during annual breakfast.

Vice Adm. Ronald A. Route in celebrating the legacy of Dr. Martin Luther King Jr. during the annual commemorative breakfast, Jan. 25. Village Project Inc. Chair Ann Todd Jealous was invited by the NNOA to serve as the event’s keynote speaker.

“We often hear of Dr. King in the context of the extraordinary, but I think it’s just as important to talk about the ordinary,” said Jealous. “I share the imperfections of his humanness so that you will understand that perfection is not necessary in order to make great and positive change. We just have to care enough to not let our fears and our imperfections stop us.”

Jealous participated in the 1963 March on Washington for Jobs and Freedom where, as a 16-years-old, she heard King’s famous, “I Have a Dream,” speech.

NNOA advisor and NPS Graduate School of Business and Public Policy Associate Dean Cmdr. Simonia Blassingame offered closing remarks at the commemoration.

“I have marched and commemorated Dr. King’s birthday for as long as I can remember, but I have not quite heard the story put together in the way that Mrs. Jealous told it today,” said Blassingame. “You gave me so much to think about, and I enjoyed it tremendously.”

The Jealous family is active in a number of community organizations designed to empower people to improve their lives. Jealous’ hus-

band, Fred Jealous, is founder of the Breakthrough Men’s Community, a men’s organization focused on self-improvement. Her son, Benjamin, recently completed a five-year term as President of the NAACP.

Vice Adm. William F. Moran, Chief of Naval Personnel, Talks Manpower During SGL

Chief of Naval Personnel and Deputy Chief of Naval Operations for Manpower, Personnel, Training and Education Vice Adm. William F. Moran addressed Naval Postgraduate School students in the university’s King Auditorium, Nov. 20. Moran’s visit, part of the Sec-

retary of the Navy Guest Lecture Series, provided the Navy’s personnel chief with an opportunity to update the university’s officer students on key manpower issues facing the sea service.

Moran spoke at length about the Navy’s current budgetary and personnel restraints and offered insight into his staff’s planning processes. He also spoke about the



Chief of Naval Personnel and Deputy Chief of Naval Operations for Manpower, Personnel, Training and Education Vice Adm. William F. Moran addresses NPS students in the university’s King Auditorium, Nov. 20.

importance of two-way communication between Sailors “at the waterfront” and policy makers in Washington.

He also encouraged students to speak about their educational experiences at NPS, and demonstrate how what they’ve learned at NPS can bring value back in the Pentagon.

“It’s how you implement, execute, and communicate that makes the difference on how policy is received in the fleet,” said Moran. “Focus on communication ... focus on how you can communicate what you learn here at NPS.”

Moran assumed duties as the 57th Chief of Naval Personnel on Aug. 2, 2013 and is responsible for the planning and programming of all manpower, personnel, training and education resources for the U.S. Navy. ■

NPS Professors Awarded Grant to Explore Ethics of Cyberwarfare

The National Science Foundation has awarded NPS Department of Defense Analysis Assistant Professor Dr. Bradley “BJ” Strawser and Department of Computer Science Professor Dr. Neil C. Rowe with a three-year, \$500,000 grant to explore the ethics of cyberwarfare.

Strawser and Rowe will serve as co-principal investigators, along with Western Michigan University Professor Fritz Allhoff and California Polytechnical Institute Professor Patrick Lin. The ethics and philosophy experts received the funds to explore, “Safeguarding Cyberspace with Ethical Rules for Cyberwarfare.”

Strawser is NPS’ resident philosopher, and is best known for his work on the ethics of unmanned systems. His book, “Killing by Remote Control: the Ethics of an Unmanned Military” explores the potential ethical gains and pitfalls of drones. The NSF grant will now allow him to turn his inquisitive eye to the field of cyber warfare.

“We have established international norms on conventional warfare, but we need to come to a consensus on the norms of cyber war,” said Strawser. “What is cyberwarfare, and what actions in the cyber realm constitute an act of war?”

Rowe’s background in artificial intelligence makes him the only non-philosopher among the grant awardees. He will be guiding his co-principal investigators on the more technical aspects of the research.

“I am the technical guy in the project. It is important that we understand what is possible ... There is all sorts of new technology that we must evaluate as we sort out what is reasonable and what is not,” he said. “Ethics is not just abstract, it is useful. It should lead to agreements

between states as we explore this issue ... Ethics should lead to laws, particularly in regard to new technological developments.”

Rowe’s additional work in cyber forensics, intrusion analysis and digital deception will be relied upon as researchers explore hot-button



NPS Assistant Professor of Philosophy Bradley “BJ” Strawser, right, and Professor of Computer Science Neil C. Rowe, left, were recently awarded a National Science Foundation sponsored, three-year, \$500,000 grant to explore the ethics of cyberwarfare.

topics such as adversary detection, cyber counter-attacks and digital deception.

“We need to know what is acceptable and when it is appropriate to retaliate,” said Rowe. “We need to have some analogies to conventional warfare to know what we can accept and what we cannot.”

Key to Rowe’s contribution to the team’s research effort will be his work in cyber forensics. Ethical questions aside, if you cannot determine who attacked you and how, the ethics of a retaliatory response become a mute point.

“I do the same work on digital forensics that police investigators do when collecting physical forensics,” said Rowe. “I also work on intrusion analysis, trying to find attacks and figure out what our adversaries are doing.”

Defense Analysis Helps North African Nations Improve Land, Sea Border Security

A coalition of military officers, law enforcement professionals, and civilian leaders from Algeria and Tunisia, along the north African

coast, traveled to NPS in late January to participate in a tailored three-week International Border Security Workshop. Led by faculty in NPS’ Department of Defense Analysis, the workshop hoped to provide the nations with a foundational knowledge of international maritime and

land-based border security.

Defense analysis Assistant Professor Heather Gregg led the land border security portion of the workshop.

“The idea is that we expose our participants to short classes on a variety of subjects. There is a great

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Physics Professor Honored With Menneken Research Award

Assistant Professor Dr. Joseph P. Hooper of the Department of Physics received the 2013 Menneken Research Award for his work on explosives, explosive detection, lightweight armor and materials under extreme conditions.

Hooper has published nine peer-reviewed articles since joining NPS in 2011 and is working on both computational and experimental research programs.

“We’ve been fortunate to have a large group of students involved in our research,” said Hooper. “We’ve had about 13 student theses out of our group within the last couple of years that have focused on conventional weapons, armor and related topics for the Navy and DOD. The students bring a lot of operational experience and insight to this research, which helps a great deal in thinking clearly about the direction of a project or its possible applications in the fleet.”

Honored for the recognition in the commemoration of an NPS leader in research, Hooper was grateful to the students and to the sponsors that made his team’s research possible.

“We’re very appreciative to the Office of Naval Research (ONR) and the Defense Threat Reduction Agency (DTRA) that have sponsored much of our work,” said Hooper. “This type of research really is not possible without the support from our sponsors and considerable hands-on work from our students.”

Professor Hooper earned his Ph.D. in physics at Tulane University in 2006. Prior to joining NPS, he was a Research Physicist at the Naval Surface Warfare Center, Indian Head Division, studying the basic physics of explosives. He has published more than 30 peer-reviewed journal articles, with much of his research funded by ONR and DTRA, as well as the Department of Homeland Security.



Military, law enforcement and civilian leaders from Algeria and Tunisia attend a three-week International Border Security Workshop on campus.

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deal of emphasis placed on dialogue and interaction, the workshop is a forum for the exchange of ideas,” said Gregg. “Both the participants and the faculty will be able to walk away from this event with valuable information.”

Gregg says NPS was chosen to lead the event because of its unique ability to offer short workshops on issues related to border security. Gregg also noted that the workshop provided a great opportunity for Department of Defense and Department of State professionals to work side-by-side.

The Algeria-Tunisia program is actually the second border security workshop tailored for the unique transnational security challenges of the North African coast. A group of leaders from Egypt concerned with issues related to maritime and land-based border security attended a similar program last year.

In a time where more countries in the region are moving toward democratization, Algerian and Tunisian leadership saw the value in participating in the compressed workshop.

NPS Tapped to Help Navy Combat Sexual Assault

NPS Graduate School of Business and Public Policy Associate Professor Gail Thomas helped lead a diverse group of Sailors through several unique exercises and activ-

ities through the U.S. Navy Sexual Assault Prevention and Response (SAPR) Forum held in San Diego, Calif., Jan. 13-15. The forum was the first of several events that seek to radically change the way Sailors think about, prevent and educate others on the damage caused by sexual assault within the Navy.

“This is not just a Navy priority, it’s a national priority,” said Thom-



NPS Associate Professor Gail Thomas, right, and Center for Executive Education Acting Director Winli McAnally.

as. “We asked our participants to envision a future where there is no sexual assault.”

Thomas and NPS Center for Executive Education Acting Director Winli McAnally guided Sailors through a series of exercises designed to encourage innovation in the manner in which SAPR is taught and discussed within the Navy.

“[Participating Sailors] did all the work ... We choreographed it, but it was their thoughts and suggestions that made the event a

success,” said McAnally. “I feel like we inspired people to go out and change things.”

The forum kicked off a 7-month fleet engagement ‘listening tour’ led by the director of the 21st Century Sailor Office, Rear Adm. Sean S. Buck. Buck will be engaging Sailors across the fleet in an effort to address, amongst other things, SAPR, suicide prevention and stress management.

DRMI Helps Senior Panamanian Officials Advance Resource Management

The Defense Resources Management Institute (DRMI) held a three day workshop that sought



DRMI Lecturer Luis A. Morales answers a question from Panamanian National Police Commissioner Elsa Garzon during a workshop for senior Panamanian government officials, Jan. 23.

to identify Panama’s long-term resource management education requirements and to develop an appropriate engagement plan to meet those requirements.

Panama’s Vice Minister of Public Security, the Honorable Manuel Moreno, along with the commissioners of the Panama National Police, National Boarder Service and National Air-Naval Service participated in the resource management assessment. DRMI’s Luis Morales accompanied the group of officials throughout the assessment and workshop.

“The Ministry of Public Security wants to improve the utilization of their scarce resources,” said Mo-

rales. “We’ve started the preparations for a five-year strategic plan for optimization of their resource allocation process.”

DRMI faculty will continue to work with the Panamanian security agencies via Video Conferencing (VTC) to assist them as they develop a long-term engagement plan. (U.S. Navy photo courtesy Charlie Orsburn, DR

Army Deputy Chief of Staff Talks Manpower With Regional Army Officers

U.S. Army Deputy Chief of Staff, G-1, Lt. Gen. Howard B. Bromberg addresses Army officers from NPS and the nearby Defense Language Institute Foreign Language Center in King Auditorium, Nov. 8. Bromberg addressed the critical manpower and personnel issues Army leaders are facing back in the Pentagon, while also fielding questions from the audience.

“We are cutting back,” Bromberg said, presenting a message heard across all the services in the modern era of sequestration and its effects on the budget. Bromberg detailed manpower concerns and considerations while also delivering comment on Army Strategic Priorities across the service.

Bromberg became the U.S. Army’s 46th Deputy Chief of Staff, G-1, on July 21, 2012. He is responsible for developing, managing and executing manpower and person-



U.S. Army Deputy Chief of Staff, G-1, Lt. Gen. Howard B. Bromberg addresses Army officers from NPS and the nearby DLIFLC in King Auditorium, Nov. 8.

nel plans, programs and policies for the total Army.

NPS Royal Australian Navy Rep Appointed Member of the Order of Australia

The Honourable Kim Beazley, AC, Australian Ambassador to the United States, left, presents Royal Australian Navy Capt. Michael Smith with the Medal of the Order of Australia during a short ceremony in Washington, D.C. last month. Smith serves as the Royal Australian Navy’s liaison officer to the Naval Postgraduate School



The Honourable Kim Beazley, AC, Australian Ambassador to the U.S., left, presents Royal Australian Navy Capt. Michael Smith, right, with the Medal of the Order of Australia during a short ceremony in Washington, D.C.

The investiture ceremony was conducted in support of the Queen’s Birthday Honours List, which was announced earlier this year. Smith was given the award for his exceptional performance of duty in Navy workforce design and management.

“The award is very special, however, I don’t regard it as an end point,” Smith said. “The fascinating journey of life goes on with continued questioning, challenging and learning!”

Smith made a point to recognize the many people that he says helped make his recognition possible.

“I was blessed to have a talented team working with me, who shared the passion and commitment for such an important strategic activity. There were numerous senior officers who supported and encouraged the work, including those in the U.S. Navy and NPS staff who readily gave their time and advice,” said Smith.

Smith has been working to improve Australia’s maritime capabilities as the Royal Australian

Navy’s strategic workforce designer since 2005.

OR Faculty Honored for Efforts in Large-Scale Simulation Design

NPS Department of Operations Research faculty members Tom Lucas, Paul Sanchez, Susan Sanchez and Chris Nannini, from left to right, are pictured outside Glasgow Hall with their Koopman Prize, an award for outstanding publication in military operations research presented at the annual meeting of the Institute for Operations Research and the Management Sciences (INFORMS).

The four faculty, along with Purdue University Associate Professor Hong Wong, were recognized for their contributions to a book on experimental design and analysis, authoring a chapter for the text titled “Designs for Large-Scale Simulation Experiments with Applications to Defense and Homeland Security.”

“Our book chapter highlighted a study done for the U.S. Army on unmanned aerial vehicles,” said Lucas. “The recommendations of the study resulted in billions of dollars of savings. Moreover, we introduced recent breakthroughs in our ability to explore large computational models that others can leverage in future studies.”

The Koopman Prize was established in honor of Bernard Osgood Koopman, considered by many to



NPS Department of Operations Research faculty members Tom Lucas, Paul Sanchez, Susan Sanchez and Chris Nannini, from left to right, are pictured outside Glasgow Hall with their Koopman Prize, an award for outstanding publication in military operations research presented at the annual meeting of the Institute for Operations Research and the Management Sciences.

be a founding father of military operations research.

NPS Faculty Lead Information Operations Short Course

Graduate School for Engineering and Applied Sciences Dean Dr. Phil Durkee and NPS Department of Electrical and Computer Engineering Professor Dr. Phil Pace celebrated the completion of the Center for Joint Services Electronic Warfare (CJSEW) Technology for Information Operations (TIO) short course with a brief ceremony and certificate presentation, Nov. 14.

“This year’s program is significant in that it marks the 16th year the course has been conducted, and reflects the most exciting technology program of all,” said Pace. “Courses in information operations and fundamentals of information and decision-making serve to provide an introduction to the special methodologies of information processing.”

A total of 21 students attended this year’s course, with a large contingent of Swedish officers given the TIO short course’s inclusion in Swedish National Defense College curricula. With a diverse group of attendees, Pace also applauded the opportunities for international cooperation and trust between the allied states represented.

“This course is an excellent opportunity for exchanging information and technology between our

countries in a relaxing and stimulating environment,” he said.

Senior Army Intelligence Officials Explores NPS Education, Research Programs

Patricia A. Guitard, Senior Technical Advisor to the U.S. Army Deputy Chief of Staff for Intelligence (G2), spent a day on campus with a keen interest in new intelligence trends, information sharing and analytics with potential support to Army operations. Among the several briefings Guitard received were stops in the Common Operational Research Environment, and program briefs on cyber, information operations and others.

“[Guitard] came to NPS to identify potential areas for collaboration between NPS and Army intelli-



Ms. Patricia A. Guitard, Senior Technical Advisor to the U.S. Army Deputy Chief of Staff for Intelligence (G2), visits with defense analysis faculty in the Common Operational Research Environment Lab to discuss ongoing research initiatives, Nov. 19.

gence,” said Col. Patrick J. Wempe, Army War College Fellow in the NPS Department of Defense Analysis.

In addition to her review in the CORE Lab, Guitard was also briefed on the new Center for Multi-INT Studies as well as an introduction to the university’s cyber operations and national security studies programs. In her duties as Senior Technical Advisor to the Deputy Chief of Staff for Intelligence, Guitard provides operational and technical advice on infrastructure and intelligence community information management and information technology endeavors. ■



Naval Postgraduate School Research Associate Brian Wood and student Marine Corps Capt. Clayton Jarolimek inside NPS' Mobile CubeSat Command and Control (MC3) center. Wood and Jarolimek are working to assess the communications utility of CubeSat technologies recently deployed by U.S. Southern Command.

Southcom Turns to NPS to Evaluate CubeSats for Communications Support

By Kenneth A. Stewart

THE U.S. SOUTHERN COMMAND (Southcom) has embarked on an ambitious international CubeSat program, and turned to the Naval Postgraduate School for help.

The NPS Distributed Information Systems and Experimentation (DISE) research group along with the university's Space Systems Academic Group (SSAG) teamed up to help the combatant command evaluate how low-cost space communications capabilities can support information sharing and tactical communication across the remote and densely-forested areas common to the Southcom area of operations.

A specially-modified CubeSat, dubbed the Space and Missile Defense Command Nano-Satellite-3 (SNAP-3), was launched from Vandenberg Air Force Base aboard an Atlas 5 rocket, and housed inside the NPS SSAG-developed CubeSat launcher, NPSCuL.

DISE Research Associate Brian Wood has lead on the NPS effort to assess the operational value of the technologies employed by the mini-satellite.

"SNAP-3 is an attempt to fill a capabilities gap associated with the need

for other than line-of-sight communications in Southcom's heavily-forested area of operations," said Wood. "NPS will be conducting an assessment of SNAP-3's ability to fill that gap."

SNAP-3 seeks to

overcome line-of-sight limitations in two ways. First, it allows Soldiers on the ground to ping CubeSats in low earth orbit which in turn relay messages to command and control nodes or to other service members.

But SNAP-3 also utilizes Unattended Ground Sensor Exfiltration technology. Researchers hope to use unattended ground sensors to gather intelligence, such as the presence of insurgent or criminal groups trav-

“One of the things that drew me to this was my past experience on the ground without satellite communication in Helmand Province, Afghanistan. If adopted, SNAP-3 has the potential to bring satellite communications down to squad size units on the ground.”

Marine Corps Capt. Clayton Jarolimek
NPS Student, Space Systems Operations

eling along known smuggling routes, and then beam that data to orbiting SNAP-3 satellites. The satellites would then download the data to receivers without the need to place Soldiers in harm's way.

"Over the next 18 months, we will be traveling to Brazil and Peru, and possibly other interested nations, where we will set up a scenario that tests the ability of SNAP-3 to perform as designed," said Wood.

NPS space systems operations student, U.S. Marine Corps Capt. Clayton Jarolimek of Minto, N.D., is working with Wood on the SNAP-3 assessment.

"One of the things that drew me to this was my past experience on the ground without satellite communication in Helmand Province, Afghanistan," said Jarolimek. "If adopted, SNAP-3 has the potential to bring satellite communications down to squad size units on the ground.

"I will be conducting an analysis of the architecture of the constellation of the SNAP-3 network," continued Jarolimek. "I hope to be able to make recommendations to the U.S. Army's Space and Missile Defense Command and look at the manner in which the Marine Corps may be able to benefit from this technology as it is realized."

Vidur Kaushish and Wenshel Lan, doctoral students in the university's space systems program, are plenty familiar with the NPSCuL launcher, and helped get SNAP-3 into the payload for the Southcom launch.

"We built, tested and integrated the system before delivering it to Vandenberg," said Kaushish.

"I used to work on launch vehicles before I came to NPS, but I rarely had the opportunity to get up on the rocket and work with the hardware like we do here," said Lan. "It's something that not many people get to do."

Satellite education is central to the SSAG goal of "blending classroom experience into a hands-on pedagogy that links theory and reality," says SSAG Professor Dr. Jim Newman.

Newman has been educating NPS students, and developing satellite technology, since his time as an astronaut in NASA's space shuttle program.

"I realized that CubeSats are an ideal satellite-studies platform due to their cost, the variety of missions they are suited to perform and their ability to be used in conjunction with other CubeSats," said Newman.

That realization has led to numerous CubeSat launches and the incorporation of CubeSat technology into the SSAG curriculum, which has allowed NPS students and faculty to demonstrate the full spectrum of satellite operations.

"You get a rounded experience [at NPS] when it comes to how a satellite is developed from start to launch, its something that you would not see at other graduate institutions," added Kaushish.

Newman insists that satellite research at NPS has both academic and practical value.

"There is a need in the fleet to understand what the capabilities of our space systems are. We are educating students to understand and to be able to speak to satellite capabilities ... Students have a variety of these topics available to them, by studying in this area they know how to apply what they have learned," continued Newman.

SSAG's hands-on application of theory is evident in the two CubeSats it has launched this year. These satellites are helping students and researchers to understand the complexities of low-earth orbit and providing platforms that can be used to test new technologies.

In addition to SNAP-3, NPS also recently launched its Solar Cell Array Tester (NPS-SCAT) satellite. Indicative of the SSAG approach to both satellite education and development, SSAG students and faculty worked together to build and launch the NPS-SCAT satellite in order to test solar arrays in the low-earth-orbit environment.

"NPS-SCAT has room for four different types of solar cells, ranging from cheap to expensive high-efficiency cells. The experiment will allow us to see how the various cells perform and degrade in a low earth orbit," said Aaron Felt, an NPS intern from nearby California State University

Monterey Bay (CSUMB).

Felt is tracking the NPS-SCAT from SSAG's local ground station, the Mobile CubeSat Command and Control (MC3) center.

"There is currently a lot of interest in our command and control center from various groups and academic institutions; NPS currently has the only functioning CubeSat network," said Felt.

NPS has partnered with the University of Hawaii, Utah State University, and the Air Force Institute of Technology to develop the MC3 Center. Partnered universities donate sites for dishes and antennas and in turn, they are able to use NPS-provided ground stations for their own satellite programs.

"Our network of sites allows us to have more frequent and longer satellite contacts," said Felt. "This is important because if you are working with data-intensive payloads, a network gives you more room to download your data."

Other members of SSAG's eclectic student body are working on myriad technologies associated with neither SNAP-3 nor NPS-SCAT.

Lt. Jordan Goff of Pittsburgh, Pa. is working with Newman and Professor Hersch Loomis on the development of a payload processor that will be able to work in the presence of harmful radiation. He hopes that the work that he is doing now will be applied to future CubeSat technology.

"The processor that I am working to create will interface with CubeSats and will hopefully be able to do everything from process images to open doors," said Goff.

Natasha Nogueira came to NPS as a high school summer-intern. She is working with Newman on a high altitude balloon program to test the conditions of near space.

"A lot of what we do with our balloon is testing capabilities and technologies that will later go into CubeSats," said Nogueira. "Balloons are an inexpensive way to get the equipment we are testing into the low-earth-orbit-environment."

With a broad range of expertise across campus to tap into, NPS' diverse satellite program continues to support student efforts to harness emerging technologies and continue to push the envelope of space education and exploration. ■



A United Launch Alliance Atlas V rocket carrying a National Reconnaissance Office payload launches from Vandenberg Air Force Base in Southern California, Dec. 5, 2013. The launch included U.S. Southern Command-sponsored nanosatellites that students and researchers at the Naval Postgraduate School will assist in evaluating for low-cost space communication capabilities in support of information sharing and tactical communications.

Flooding in New Orleans following Hurricane Katrina in August 2005. The U.S. Navy deployed 19 ships to the area to provide search and rescue support and augment field hospitals.

U.S. Airmen from the Air Force Special Operations Command, Hurlburt Field, Fla., offload injured people from a C-130 Hercules aircraft Jan. 15, 2010, after the earthquake in Port-au-Prince, Haiti. The command provided immediate rapid response capability to Haiti through U.S. Southern Command.

Philippine citizens gather around an MH-60S Sea Hawk helicopter from the Golden Falcons of Helicopter Sea Combat Squadron 12 as it delivers relief supplies in support of Operation Damayan. The George Washington Carrier Strike Group supported the 3rd Marine Expeditionary Brigade to assist the Philippine government in response to the aftermath of Super Typhoon Haiyan in the Republic of the Philippines.

Command Master Chief David Unnone of U.S. 7th Fleet Command Flagship *USS Blue Ridge* briefs Sailors about taking on humanitarian assistance supplies in Singapore to ensure the ship and crew are ready to support earthquake and tsunami relief operations in Japan if directed.

Members of the U.S. Armed Forces and the Armed Forces of the Philippines deliver family food packs in Manila donated by local businesses and private organizations to aid communities affected by Tropical Storm Ketsana in Oct. 2009.

OPERATION H.A.D.R



NPS students and faculty deploy to the Central Philippines to provide relief following Typhoon Haiyan, but it's on campus where the bulk of university efforts to improve HADR operations happens every day.

By Kenneth Stewart and Dale M. Kuska

At approximately 4:30 a.m. on Friday, November 8, Typhoon Haiyan first introduced its power to the modest municipality of Guiuan in the Eastern Samar province of the Philippines. Minutes later, nearly every single one of its 50,000 men, women and children had nothing.

By the end of the day, Haiyan had met a broad swath of the central Philippines, and it had left incomprehensible devastation across the Southeast Asian nation ... thousands had died, millions were homeless, and billions in damage had left the country in ruin.

Natural disasters, and the severity of damage caused by them, are on the rise. For the United States Armed Forces, and the Navy in particular, large-scale humanitarian assistance and disaster relief operations, or HADR, are already a primary warfighting capabilities.

Operation Damayan, the HADR operation in response to Haiyan's devastation, was a massive, multinational, joint service event with thousands of military personnel, the *USS George Washington* (CVN-73) and her escort ships, and several tons of relief supplies. And this is certainly not a new capability for Sailors and Marines in the U.S. Pacific Command area of responsibility, where more than 20 major HADR operations across the rim have been ex-

ecuted in less than that many years.

The bottom line, operating forward means many things for American power projection and immediacy in response to any and all threats ... It also means the U.S. is ready to respond when needed, period. And that is a powerful enabler to developing long-term partnerships with our allies and friends throughout the Pacific, and the world.

For this reason, and certainly others, former Chief of Naval Operations retired Adm. Gary Roughead and his counterparts with the maritime services described stability operations, and humanitarian assistance and disaster response, as core missions and capabilities for the Navy, Marine Corps and Coast Guard. And today's service chiefs, Combatant Commanders, and senior defense leaders in the Pentagon haven't altered that course since.

When Typhoon Haiyan struck late last year, the unfolding scenario was one that NPS Hastily Formed Networks (HFN) Research Group Director Brian Steckler, a Lecturer in the Department of Information Sciences, had seen before. Steckler has taken teams of students to the aftermaths of Hurricane Katrina, the earthquake in Haiti, and the 2005 tsunami in south-east Asia, among others.

Steckler's research focuses on the rapid

deployment of communications capabilities when every infrastructure needed to make them happen is destroyed.

"When you think of what's most needed in an emergency like this, water, food, shelter and medical supplies are what usually come to mind," said Steckler. "But emergency communications should be at the top of the list, because without them, you can't coordinate the others and can't operate."

"The communications link is critical, we cannot coordinate if we can't communicate," echoed NPS student Marine Corps Maj. Travis Beeson of Versailles, Ohio.

"A major complication in a situation like this is aid distribution — some areas do not get enough assistance and others get too much."

Steckler and his student teams travel with large-suitcase-sized 'fly-away' kits with an array of advanced but relatively affordable technology ... Satellite-enabled, handheld devices

to conduct immediate information and communications technology (ICT) assessments; Broadband Global Area Networks, small satellite terminals that create a 100-meter WiFi cloud connecting users to the Internet for e-mail, web, voice and video; WiMAX antennas for extending point-to-point interconnectivity across entire disaster-stricken regions; and a bevy of innovative, portable solar- and wind-powered

alternative energy sources to keep the meshed WiFi network running.

Students focus on the technologies in the classroom and in their theses — concepts of network communications,

HADR logistics necessitate a response supply chain, and these supply chains are very difficult to manage. There are critical time windows that must be met and a great need for collaboration amongst a diverse array of players ... We have the necessary faculty with the expertise to make it work.

DR. ARUNA APTE, ASSOCIATE PROFESSOR
NPS GRADUATE SCHOOL OF BUSINESS AND PUBLIC POLICY

alternative energy development on the front lines, etc. But they also gain a strong sense of satisfaction in knowing their military education is providing real value that goes beyond the halls of academia.

"The Hastily Formed Networks group is not just in it for the academic value. We have

deployed to other major disasters where we have provided real support to people in desperate need," said Beeson, who was actually in the Philippines shortly before the typhoon to establish a baseline assessment of the communications infrastructure in support of a thesis he is writing about communications in disaster relief operations.

Lt. Cmdr. Anthony Bumatay is a former Communications Officer on board the aircraft carrier *USS Carl Vinson* (CVN-70). But as a native Filipino (*see sidebar*), his communications capabilities proved to help the team in more ways than one.

"When you engage in humanitarian operations overseas, the first obstacles to overcome are cultural and language barriers," said Bumatay, who established a reliable communications link between the multinational command center (MNCC) in Cebu, and personnel operating in disaster areas.

"I was fortunate to be able to speak the language fluently. I understood the culture, and more importantly, my professional relationships and contacts within the country helped us coordinate efforts," he added.

Meanwhile, back on the university's main campus in Monterey, Calif., dozens of students

CONTINUED ON PAGE 16



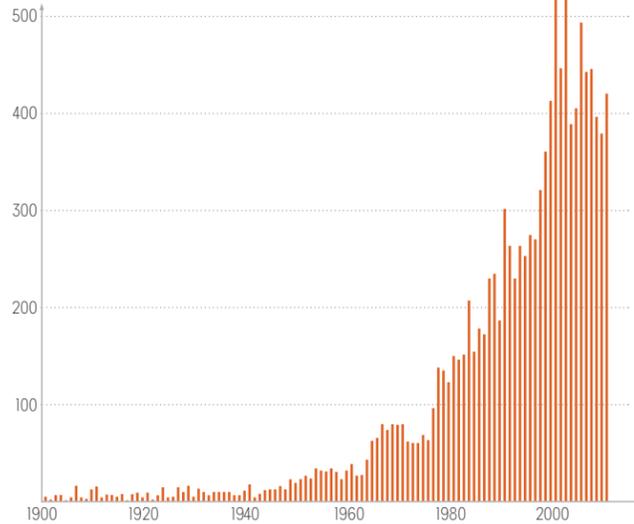
HUMANITARIAN ASSISTANCE AND DISASTER RELIEF

Student Research at the Naval Postgraduate School

The girth of student-driven research into all aspects of HADR operations is reflected in the graphic spanning these two pages. In part, it's a reflection of students' wishes to create impact with their chosen these topics, for it is clearly an area of significant growth on campus. But altruistic goals aside, HADR operations are a core mission objective for every Combatant and Fleet Commander across the service, and the detailed analyses by students and faculty in every department, and a laundry list of curricula, are proving to be a resource for future Task Force commanders and decision makers at every level.

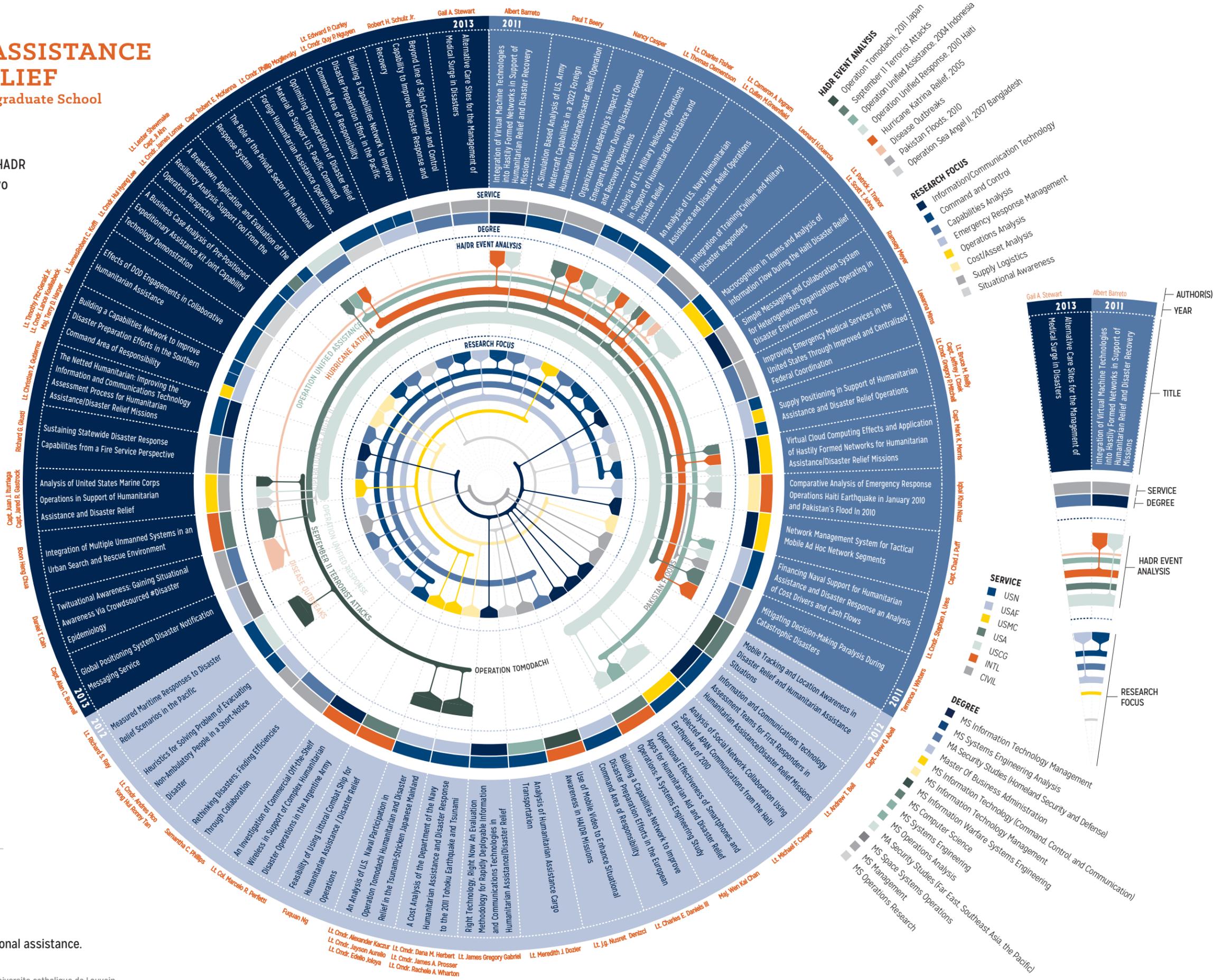
On the surface, the information represents three years of work for some 60 students generating a total of 45 theses. But the depth of this work will only be known when the U.S. Navy responds to the next crisis, and does so more efficiently and effectively.

NATURAL DISASTERS REPORTED 1900-2010



Natural Disasters are classified using the criteria:

- 10 or more people killed
- 100 or more people affected
- Declaration of a state of emergency or a call for international assistance.



Sources: Dudley Knox Library; Centre for Research on the Epidemiology of Disasters, Universite catholique de Louvain

Lt. Cmdr. Timothy Mickel reviews an X-Ray as he performs surgery aboard the Military Sealift Command hospital ship *USNS Comfort* in Port-Au-Prince, Haiti during Continuing Promise 2011. Continuing Promise is a five-month humanitarian assistance mission to the Caribbean, Central and South America.



Lt. Cmdr. Damon Loveless uses a hand-held radio to communicate with the U.S. Navy's forward-deployed aircraft carrier *USS George Washington* to coordinate airlift operations from Tacloban, Philippines airfield to nearby villages in support of Operation Damayan.



CONTINUED FROM PAGE 13

and faculty across several curricula are charging forward on a wide range of these projects analyzing every aspect of HADR operations imaginable, from command and control to supply chain logistics to emergency response management.

Two of the key players are NPS Graduate School of Business and Public Policy Associate Professor Dr. Aruna Apte and Assistant Professor Dr. Keenan Yoho with the university's Graduate School of Business and Public Policy. The two faculty are guiding a series of important, student-led HADR research efforts with the aim of improving processes and meeting the Navy's burgeoning HADR research requirements.

"I was looking for a service-oriented military topic when Hurricane Katrina hit in 2005," said Apte. "Like many academics, Katrina inspired me to look into HADR research topics."

Apte, who is an operations management expert with an extensive mathematics background, approaches her analyses of HADR operations from an optimization point of view. And she quickly realized that NPS had an important con-

tribution to make on these common missions for commanding officers around the fleet.

Fellow logistics strategist Yoho developed a passion for improving HADR operations after being exposed to Apte's work, and watching the devastation caused by the Haiti earthquake.

"Naval HADR operations have broad implications beyond war that demonstrate the generosity of the U.S.," said Yoho. "When the earthquake in Haiti happened, I realized that I needed to bring HADR research into my classroom."

"I spent the first 10 minutes of each class I taught speaking about Haiti and providing operations management methods to analyze the problems," continued Yoho. "For example, we looked at Haiti's single runway and started using queuing calculations to see how long it would take supplies to arrive. After that experience, I was all-in."

A business school may not seem like a natural fit in conducting HADR research, but Apte insists that GSBPP's acquisition, financial management and logistics orientated faculty and student body possess the ideal mix of academic

and operational expertise necessary to tackle HADR challenges.

"We have the necessary faculty with the expertise to make it work," said Apte. "We look at processes and at weakness within those processes. That sort of education lends itself naturally to looking at HADR problems."

"A lot of our background in operations and logistics management deals with process management and we tend to think in terms of processes. We have to ask, when do these processes start, when do they end, what is the capacity, where are the bottlenecks, when do you have to hand off to another organization and how do you mitigate quality costs?" added Yoho.

And while the logistics and supply chains that support HADR operations are similar to those that are used to support both industry and other DOD operations, they do require considerable foresight and planning - luxuries that are rarely afforded to disaster relief professionals.

"HADR logistics necessitate a response supply chain, and these supply chains are very difficult to manage," explained Apte. "There are critical time windows that must be met and a great need for collaboration amongst a diverse array of players ranging from government agencies to military and regional actors."

"When conducting HADR operations we have to look at priorities. For example, people need water more than food, so how do we get the water in first? We would prefer to avoid a situation where we just push items forward but sometimes that is necessary if we do not have clear demand signals and priorities clearly indicated," added Yoho.

One of Apte's students, Cmdr. Stephen Ures of Burbank, Calif. with the Navy Service Cost Agency, applied his NPS MBA to HADR operations by conducting an extensive cost analysis of recent relief operations.

"The idea was to help the Navy to plan for disasters in the future with the focus on costs," said Ures. "The DOD does not set aside funds in the expectation of war, disaster or other unexpected catastrophes, obligation of those funds

is contingent on the event actually occurring."

Ures looked at the costs associated with everything from hospital ships to flights in and around disaster centers. His analysis drew upon case studies involving the 2004 Indian Ocean Tsunami, which costs the U.S. Navy \$63.8 million, the 2010 Haiti earthquake, which cost \$155 million, and the 2010 Pakistan floods, which cost \$22 million.

With costs like these, Ures felt that it was necessary to look at the manner in which HADR budgets are forecast and to develop priorities that matched needs against capabilities. He identified three areas in particular where the Navy could better employ HADR assets.

"The U.S. navy should focus on accurate forecasting of the required level of services for helicopter vertical lift capability, ship platforms that facilitate that service, and hospital ships. Getting these three functions right will better utilize the Navy's unique core competencies," said Ures.

He also looked at the role of information and the degree to which increased coordination maximizes the ability of relief professionals to serve devastated areas.

"The best way to maximize the capabilities that currently exist will be through improved information sharing... applying new technologies from the fields of human-terrain-mapping and crowdsourcing will allow the Navy to plug into the already substantial aid networks," said Ures. "Sharing information that allows the Navy to deliver the right aid at the right time will do more to maximize scarce resources."

Student theses like Ures are far from unique... In fact, more than 40 theses covering all aspects of HADR operations have been completed at NPS over the past three years, representing a comprehensive resource for task force planners and commanding officers across the service.

And given the likelihood that the capabilities required across the HADR mission set will only increase, the Naval Postgraduate School is poised to leave a powerful mark on the Navy's forward presence around the world. **IR**

Communal Spirit Central to Relief Op Success

By MC2 Shawn J. Stewart



The military means a lot of things to different people, but to Lt. Cmdr. Anthony Bumatay, it is the call to 'Bayanihan.'

"Filipinos have an ethos called 'Bayanihan.' It's where the whole village comes to the rescue of a resident who may be in dire need of assistance," he described.

During one of his courses last year, NPS Department of Information Sciences Lecturer Brian Steckler introduced Bumatay's Network Operations class to the Hastily Formed Network research group and its work in support of humanitarian assistance and disaster relief (HADR) operations worldwide.

Soon after, Bumatay volunteered to become a member of the HFN group, but little did he know then that it would soon lead him on his own path to Bayanihan.

Bumatay said his drive to volunteer was an easy decision, and that sentiment was put to the test when the HFN group deployed to the Central Philippines in support of disaster recovery efforts in the wake of Typhoon Haiyan last Nov. 18.

A former Communications Officer serving on the aircraft carrier *USS Carl Vinson (CVN-70)*, Bumatay leveraged his abilities to establish a reliable communications link between the multinational command center (MNCC) in Cebu and personnel operating in the disaster areas.

"If you can't communicate, you can't operate," said Bumatay. "The Philippines lacked [satellite communications] capability and this was a communications gap that our team was able to fix immediately.

But it was far more than an effort in establishing emergency communications for Bumatay. After the successful humanitarian mission to his homeland, Bumatay relected back on his experience of Bayanihan.

"Filipinos believe in the communal spirit inside of us that makes seemingly impossible feats possible through the power of unity and cooperation," said Bumatay, who was himself a victim of natural disaster as a child during the 1991 eruption of Mt. Pinatubo. "I was on the receiving end of 'Bayanihan' 23 years ago. Without other people coming to me and my family's aid, recovery would have been extremely hard.

"Going back to the Philippines as part of NPS' disaster response provided me an opportunity to return the favor," continued Bumatay. "It was the right thing to do, U.S. military personnel and the international community may not have been aware of it, but what we all accomplished evoked the 'Bayanihan' spirit and I know the people of the Philippines are eternally grateful."



A HISTORY OF DISASTER



NPS Students, Staff and Faculty Build Culture of Volunteerism Off Campus

By MC2 Shawn J. Stewart

VOLUNTEERISM IS DEFINED by Merriam-Webster's dictionary as, "The act or practice of doing volunteer work in community service."

The very act of volunteering is a cornerstone for the United States military — there are nearly 1.5 million individuals in the uniformed services, and all of them volunteered to be there. They are volunteers who decided to sacrifice their lives for the betterment of themselves and their country. For some, enlisting or commissioning was enough, while others are driven to extend further into the immediate communities around them.

At the Naval Postgraduate School, officer students, staff Sailors, and their colleagues from across the services and the classroom, place a priority on making a difference in the local region.

"We volunteer in Monterey and its surrounding counties," said Lt. Endia Mendez, Vice President of the Monterey Chapter of the National Naval Officers Association and a student in NPS' Graduate School of Business and Public Policy. "One of our programs is entitled Breakfast for Your Brain, where we tutor local elementary, middle and high school students."

Whether it is standing in the rain asking for donations or getting my hands dirty, I will do anything I can to help this community. The Navy core values of Honor, Courage, and Commitment are not just something to follow in regards to being on duty."

Information Technician 1st Class Lance Bloodworth
Lead Petty Officer, NPS Information Technology and Communications Services

Service members enjoy reaching out to the community because it gives them a chance to give back while helping to shape minds for the future.

"These sort of programs show that we care about our community," said Mendez. "We get to talk to the students about their career goals while helping them plan for college and all of their future endeavors."

"It is our pleasure to volunteer in a variety of events around the Monterey Peninsula," echoed Information Technician 1st Class Lance Bloodworth, Lead Petty Officer for NPS' Information Technology and Communications Services group.

"We have served in a variety of ways, from coaching kids baseball and softball to relocating the Habitat for Humanity's

warehouse from a dangerous location in Fort Ord to a new location in Seaside. Without a doubt, volunteering has really been a highlight for us here at NPS," he continued.

Sailors frequently serve the local community in a wide variety of events and programs. Food drives to feed the hungry, golf tournaments that raise money for local charities, and athletic events that build awareness are only the beginning. Some Sailors even take it a step further by



Naval Postgraduate School personnel, from left to right, IT1 Lance Bloodworth, Lt. Endia Mendez, and YN3 Breana Ruiz are just a few of the countless NPS students, staff and faculty that help build a culture of volunteerism outside campus through their tireless efforts in the local community.

manning vital positions at local support centers.

"I've been a volunteer at the MCRCC [Monterey County Rape Crisis Center] since November of 2012," said Yeoman 3rd Class Breana Ruiz. "I man the phones at MCRCC every Tuesday from 1600 through 0600 the next day," she said. "I volunteer because Monterey Bay is also my community and home."

The culture of volunteerism at NPS will continue to flourish with programs like Breakfast for Your Brain, honor guard and various volunteer opportunities throughout the Monterey Bay area.

"Whether it is standing in the rain asking for donations or getting my

hands dirty, I will do anything I can to help the this community," said Bloodworth. "The Navy core values of Honor, Courage, and Commitment are not just something to follow in regards to being on duty; they are values that I align with everyday of my life," he said.

At the heart of the volunteer efforts of those across the entire NPS community is a simple, straightforward idea – helping those in need.

"If I walked in the shoes of those who are less fortunate than me, I would want someone to help me if I desperately needed it," said Bloodworth. "That is why I cannot sit idle knowing that there are less fortunate people out there that need our help." ■

NPS Students Join Community Effort to Build Home for Wounded Warrior

By Kenneth A. Stewart

STUDENTS FROM THE Naval Postgraduate School and nearby Defense Language Institute Foreign Language Center (DLIFLC) joined the regional community in welcoming Army Sgt. Brian Jergens and family to their new home during a ribbon-cutting ceremony in Hollister, Calif., Dec. 12.

The home was donated by Homes for Troops, a national non-profit organization founded in 2004, and was built by members of the local community including a cadre of volunteers from both NPS and DLIFLC. Homes for Troops has built and donated 155 homes in the last 10 years to wounded service members.

While deployed to Afghanistan in 2011, Jergens was severely injured by a roadside bomb in the Uruzgan Province. The improvised explosive device that ripped through his vehicle blew off both his legs below the knee, broke his neck, and injured his brain, hearing and internal organs.

Despite the trauma, or perhaps because of it, Jergens remembers nothing of the long road home that took him from field hospitals and medical centers in Afghanistan to Landstuhl, Germany and then to

Brooke Army Medical Center in San Antonio, Texas. In fact, he does not remember Afghanistan at all.

"I don't remember what happened until I look down," quipped Jergens with his ever-present smile and infectious positive attitude.

Jergens and his wife are working hard to reclaim their lives and to raise their young family in Hollister, and the community has welcomed them with open arms. The ribbon-cutting ceremony was attended by the mayor, the chief of police, city council members, a local Boy Scout troop, members of the Patriot Guard Riders, and even Santa Claus himself.

NPS Department of Defense Analysis student, U.S. Air Force Maj. Jeff McMaster of Fort Worth, Texas, was one of many volunteers to work on the Jergens family home

"It was a great chance to give back to someone who has sacrificed so

much, someone who maintains a great attitude and who is such an inspiration despite the severity of his injuries. It was a privilege," McMaster said.

Army Maj. Alex Williams, also in the defense analysis program, coordinated much of the NPS contributions to the volunteer effort for Jergens.

"All of us have friends, colleagues and comrades who have been injured or damaged in some capacity," said Williams. "It's kind of cathartic for us to see that people do get better. The courage of this Soldier and his wife is truly inspiring ... it puts your own problems into perspective."

Army Maj. Alex Williams
Defense Analysis

"When all of the fanfare dies down and these people start getting back to their daily lives, things are going to be very difficult. These Soldiers need to know that they have somewhere to turn, that there are people out there that they can contact. We are in this for the long haul," Williams added. ■



Army Sgt. Brian Jergens, left, inside his new kitchen with his family during an emotional ceremony in Hollister, Calif., Dec. 12. Through the tireless efforts of hundreds of volunteers, including a large contingent of NPS defense analysis students, national non-profit Homes for Our Troops provided Jergens and his wife Jennifer with a new, free custom home.

Operations Research Professor Honored With Surface Navy Association's Literary Award

By MC3 Danica M. Sirmans

IN A TIME that requires the fleet to do more with less, somewhere sleep is overlooked in the equation of mission readiness. Navy tradition didn't necessarily include sleep to begin with, but in the rough waters of fiscal scrutiny, 18-hour workdays are not unheard of for Sailors across the service.

Naval Postgraduate School Department of Operations Research Associate Professor Dr. Nita Shattuck has been working for the past 12 years to change the status quo when it comes to sleep and fatigue in an operational environment.

And through the course of her efforts, has helped more than 10 NPS students complete their master's theses on the topic since joining the faculty at NPS.

"About a dozen NPS students have helped with this research project along the way," said Shattuck. "Each of them has helped at different stages and I've really valued their input and operational experience over the years. It's been essential."

"About a dozen NPS students have helped with this research project along the way. Each of them has helped at different stages and I've really valued their input and operational experience over the years. It's been essential."

Shattuck, along with co-author retired Navy Capt. John Cordle, detailed some of their results in the article, "A Sea Change in Standing Watch," published by the U.S. Naval Institute. And the duo was honored for their efforts at the Surface Navy Association's Annual Symposium in Springfield, Va., Jan. 15, receiving the SNA's Literary Award for top journal article of the year.

Associate Professor Dr. Nita Shattuck
NPS Department of Operations Research

"The award was such a surprise and very humbling but the recognition is not so much about the writing, it's about addressing the needs of the fleet," said Shattuck. "It's really about improving the lives of sailors."

The article discussed the benefits of maintaining a circadian rhythm to better match the needs of the human body in a stressful environment. The studies aim to prove that setting the same working and sleeping hours reduces fatigue, and thus fatal errors, significantly in the fleet.

Co-author Cordle, who recently retired as a surface warfare officer, helped conduct studies aboard the *USS San Jacinto* (CG-56) by implementing a 3/9 watch standing schedule. The schedule, modeled after an idea employed by the German navy, was thought to be unorthodox but proved successful by, researchers say, the implementation of a much-needed circadian rhythm.

The crew, where possible, worked three hours on, three hours off, three hours on, followed by 15-hours off. There was some pushback from the "old salts," as Cordle describes them, and it did not work out for every department. In general, however, Shattuck and Cordle found that the shorter watches allowed for better focus and less fatigue in participating Sailors.

Follow-on interest has come about through the Combat and Operations Stress Control (COSC) program, headed by retired Navy Cmdr. Leanne Braddock. Studies have shown that sleep deprivation is a significant contributing factor to stress. With COSC programs looking to reduce stress on the crew in all areas possible, Shattuck's research seems a perfect fit.

Meanwhile, Shattuck is not one to rest on the laurels of her award-winning article. Only days after accepting the award at the SNA Symposium in Virginia, she made her way to Southern California to board the *USS Independence* (LCS-2) for a 3-week research effort collecting data on Sailors and their sleep patterns during rough-water trials.

And while Sailors are tending to the ship during rough waters at sea, Shattuck and her team are working diligently to navigate the rough waters of policy to change the status quo and push for change. **IR**



NPS Department of Operations Research Associate Professor Dr. Nita Shattuck has been honored with the 2013 Surface Navy Association (SNA) Literary Award, alongside co-author retired Navy Capt. John Cordle, for their article, "A Sea Change in Standing Watch," as the year's best journal article.



Operations analysis student Lt. John Sprague, center, is presented with the Navy League of the United States Vice Adm. Robert F. Batchelder Award by NPS President, retired Vice Adm. Ronald A. Route, during a small ceremony in Herrmann Hall, Nov. 19. The Batchelder Award is presented annually to select Supply Corps officers based on significant personal contributions to the supply readiness of the Navy's operating forces.

NPS Supply Corps Student Honored With Prestigious Batchelder Award

By MC3 Danica M. Sirmans

NAVAL POSTGRADUATE SCHOOL operations analysis student Lt. John Sprague was officially presented with the Navy League of the United States Vice Adm. Robert F. Batchelder Award by university President, retired Vice Adm. Ronald A. Route, during a small ceremony in Herrmann Hall, Nov. 19.

The Batchelder Award is presented annually to select Supply Corps officers based upon their significant personal contributions to the supply readiness of the Navy's operating forces. Sprague was honored for his time serving with SEAL Team Three. "It really is a team award," said Sprague. "I was very fortunate to be with a great team at LOGSU-1 [Logistics Support Group ONE] and SEAL Team Three. I'd like to share this recognition with them."

Sprague worked with the Combat Service Support (CSS) personnel for SEAL Team Three and the Naval Special Warfare Group Logistics Support Unit in 2012.

"Our mission was to develop and maintain a wide range of enabling options for the combatant commander, and this award is really a testament to the dedication and expertise of the entire CSS troop in fulfilling

that mission," Sprague said. "I'm grateful to the Navy League for recognizing the contributions of Naval Special Warfare logisticians, and am very pleased to accept the award on behalf of our entire team."

Due to limitations in travel, this year's Batchelder Award honorees were presented with their awards during small ceremonies at their respective current commands. Sprague recently checked into NPS in pursuit of his master's degree in the NPS Department of Operations Research.

"Effective and efficient resource allocation is a fundamental task for Supply Corps officers. The operations research curriculum [at NPS] provides a world-class opportunity to study and apply advanced methods for analysis and decision-making."

Lt. John Sprague
NPS Operations Analysis

"Effective and efficient resource allocation is a fundamental task for Supply Corps officers," said Sprague. "The operations research curriculum [at NPS] provides a world-class opportunity to study and apply ad-

vanced methods for analysis and decision-making."

Sprague was one of five officers presented with the Batchelder Award this year. Supply Corps Officers from the O1 to O4 level are eligible and are nominated by their commanding officers.

The Batchelder award recognizes work done over the course of one full calendar year. Nominations are due in April of the following year and a Flag-led board selects awardees in May. **IR**



Senior officials and representatives from several southeast Asia nations gather for a group photo during the ASEAN Defense Ministers Meeting Counter Terrorism Exercise in September of 2013. The weeklong exercise, involving 18 nations and more than 800 personnel, utilized multiple planned and surprise scenarios to improve regional capability in transnational counterterrorism. (Photo courtesy NPS Center for Civil-Military Relations)

University's Center for Civil-Military Relations Supports Multinational Counterterrorism Exercise

By Kenneth A. Stewart

STUDENTS AND FACULTY at the Naval Postgraduate School's Center for Civil-Military Relations (CCMR) recently completed a three-year effort to lead an unprecedented 18-nation counterterrorism exercise conducted under the auspices of the Association of Southeast Asian Nations (ASEAN) states at the Indonesian Peace and Security Center located in Sentul, Indonesia.

The exercise was born of the 2010 inaugural meeting of the ASEAN Defense Ministers Meeting (ADMM) held in Hanoi, Vietnam. Participants were drawn from an elite group of ministers from the ten ASEAN member states — Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam — and the eight partnered or “plus” nations – Australia, China, India, Japan, New Zealand, Russia, South Korea and the U.S.

In Hanoi, ADMM Plus members created five Expert Working Groups (EWG) focused on regional security issues. Indonesia and the United States were selected as the first co-chairs for the Expert Working Group for Counter-Terrorism (EWG-CT).

“Working together develops regional capacity and the habits of cooperation we need to solve today’s complex problems,” said U.S. Secretary of Defense Chuck Hagel during an address to the ADMM Plus Defense Ministers Meeting in Brunei. “Exercising together builds trust and understanding that reduces the risk of conflict when disputes arise.”

CCMR Deputy Counter Terrorism Program Director retired Navy Capt. Tim Doorey Doorey helped play a lead role in coordinating the massive exercise, and stressed the strategic and economic importance of the ASEAN Plus mem-

ber states taking part in the exercise.

“This exercise involved 872 military and civilian personnel from all 18 ASEAN Plus countries and was the first to be conducted under the auspices of the ADMM-Plus EWG-CT,” said Doorey. “More people live inside ADMM-Plus countries than the rest of the world combined, and more than half of the world’s GDP resides in these 18 nations.”

“The long-term goal of the exercise was to have a common regional procedure in tackling transnational terrorism,” added Indonesian Armed

“From my perspective, the ASEAN goal was met with the complexity of bringing 12 different countries under an umbrella of combating a common threat and achieving the same goals for the first time ... I feel the exercise was a great success and spearheaded the way for future counterterrorism exercises in the Asia-Pacific region.”

U.S. Army Sgt. 1st Class Kindu E. Delaleu
Asia-Pacific Counter IED Fusion Center

Forces Commander Gen. Moeldoko.

CCMR involvement in the exercise dates back to Feb. 2012, when the Deputy Assistant Secretary of Defense — Special Operations and Low Intensity Conflict approached CCMR for assistance in the preparation of a series of realistic scenarios and the creation of a strategic-level Table Top Exercise (TTX) designed to help ASEAN member states to improve multinational, regional responses to terrorist threats in Southeast Asia.

“The decision was made to have a two-year program leading to a major exercise. We were tasked to come up with scenarios that were designed to force regional cooperation,” said Doorey.

“Counterterrorism is generally treated as a national or law enforcement issue. We wanted to show through realistic scenarios that there are many areas where unilateral, or even bi-lateral, responses to terrorism would likely fail and demonstrated the utility of a multinational effort to eradicate this problem,” continued Doorey.

Research into counterterrorism is one of the core areas that CCMR has been addressing since its inception in 2002.

“The CCMR’s mission is to build partner capacity and to improve interagency and international coordination and cooperation by addressing civil-military challenges which include, amongst other things, combating terrorism,” said CCMR Combating Terrorism Program Manager Paul Shemella.

CCMR-developed counterterrorism scenarios were pitted against four multinational working groups tasked with addressing a major maritime threat against a liquefied natural gas facility or tanker, an attack against a major regional athletic and cultural event with global attendance, and the threat of a Man-Portable Air Defense Systems (MAN-PADS) in the hands of a sophisticated regional terrorist organization was injected on the last day of the exercise.

“The TTX was very strategic in nature, we looked at the long range work that needs to be done in response to terrorism and piracy,” said former NPS Superintendent and CCMR Strategic Communications Specialist, retired Rear Adm. Richard Wells. “The answer to dealing with terrorism is a strategic planning process which includes communicating, building infrastructure, and training together to deal with terrorism.”

Organizers strategically placed members of key regional states together in an effort to foster both formal and informal relationships with the potential to persist long after the completion of the exercise.

“In my group we had Singapore, China, Cambodia and Brunei working together. The idea was to get all of these nations, from diverse cultures and philosophies, working together at the same table for a common goal. The results were astounding,” said Wells. “There was no nationalism; the exercise facilitated serious, regional discussion about the common enemy of terrorism.”

As the tabletop working groups grappled with counterterrorism strategy and policy, personnel from member states participated in a practical exercise led by members of Special Operations Command — Pacific. The practical exercise consisted of field exercises and classroom events wherein junior officers and senior enlisted facilitators were exposed to a wide ranging series of topics including IED threat analysis, best practices and anti-terrorism procedures.

“The goal of the practical exercises was to develop counterterrorism capabilities by exchanging best practices and demonstrating the counterterrorism tactics, techniques and procedures among military forces in support of law enforcement and other designated government agencies,” said Doorey.

“From my perspective, the ASEAN goal was met with the complexity of bringing 12 different countries under an umbrella of combating a common threat and achieving the same goals for the first time,” said U.S. Army Sgt. 1st Class Kindu E. Delaleu with the Asia-Pacific Counter IED

(improvised explosive device) Fusion Center.

“Many of the participants from partnered nation teams stated that they had not received this type of familiarization before and requested additional material. I feel the exercise was a great success and spearheaded the way for future counterterrorism exercises in the Asia-Pacific region,” he added.

Indonesia has a robust, national-police-led counterterrorism effort, but Indonesian leaders acknowledge that force alone will not stop terrorism from occurring and that deterrence must coincide with an on-going commitment to democratic values, freedom of speech, and freedom of assembly.

“Our initiatives and activities range from working with former terrorists — the re-education and rehabilitation of ex-convicts and their families; the empowerment of religious education institutions; and, the enhancement of awareness in schools – to engagement with the media to generate counter-narratives against radical terrorists,” said Retired Indonesian Inspector General Ansyad Mbai, Director of the Indonesian National Counter-Terrorism Agency (BNPT).

The BNPT is also working with non-governmental and religious organizations to combat extremist-led radicalization efforts by targeting prisons, places of worship, and schools and the media. The Indonesian approach was born of the realization that, within the Indonesian context, kinetic operations were often counter-productive.

“The more physical pressure brought to bear upon them [terrorists], the more militant and radical they become,” said Mbai.

As the Indonesia, U.S. three-year co-chairmanship of the EWG-CT comes to a close, preparation for the second iteration of exercises and multinational counterterrorism efforts are already underway. Singapore and Australia will assume co-chairmanship for the EWG-CT in April of 2014. **IR**



Members of an elite Indonesian counterterrorism group rappel down the front of a building during a multinational counterterrorism exercise in Sentul, Indonesia. NPS' Center for Civil-Military Relations played a lead role in designing the exercise, helping develop regional capacity through a multinational approach to combating terrorism.



Naval Postgraduate School student Lt. Jerry Wyrick, pictured among the stacks in NPS' Dudley Knox Library, is one of several students taking advantage of Naval Studies Program funding to perform detailed analyses on behalf of Navy leaders. Wyrick is developing a training program to provide a focused, cyber operations training in a fraction of the normal training time.

Naval Studies Program Pits NPS Student Expertise Against Navy's Challenges

By Kenneth A. Stewart

THE OFFICE OF THE Secretary of the Navy (SECNAV) has turned to the Naval Postgraduate School and its core of operationally-experienced students and expert faculty to directly address some of the most challenging questions facing the sea services today under the umbrella of the Naval Studies program.

According to NPS leadership, the program "is intended to facilitate rapid studies designed to meet the real-time, research requirements of the Navy's operational codes," said NPS Dean of Research Dr. Jeff Paduan. "These studies will provide our sponsors with alternative solutions and several possible courses of action."

Paduan notes that while NPS has been conducting advanced naval research for decades, the prestigious institution can also answer the needs of Navy leaders interested in finding detailed answers to more immediate, short-term concerns. "We are working to educate the operational code leaders about what we are capable of here at NPS and working with the codes in the Pentagon to find matches between operational needs and our capabilities," said Paduan.

"What I think is exciting is that this program will allow students and faculty to rotate through operational problems and learn what is important to the Navy. In turn, the program gives us the opportunity to showcase some of our abilities and to highlight the value that we bring," he added.

NPS Associate Professor retired Army Col. Alejandro "Andy" Hernandez serves as the Naval Studies Program project manager at NPS. "NPS studies and analysis activities will serve as a focal point, stimulus, and major source of strategic, tactical, and operational thought within the Navy communities," said Hernandez.

"These studies serve as a means for naval resource sponsors and

budget submission offices to have analysis and decision-support studies conducted using the applied, soft and hard sciences. Studies completed at NPS will help to solve diverse and complex resource allocation and strategic issues facing the Navy today, and those that analysts have envisioned for the future," Hernandez continued.

While the Naval Studies Program is still in its infancy, several program-sponsored studies are already underway. In fact, a combined total of 76 Marine Corps and Navy studies were in full swing by December 2013.

NPS student Lt. Jerry Wyrick, for example, is using Naval Studies Program to develop a course that will answer the cyber community's basic training needs. "There are a lot of joint and extended computer science programs out there, but all of them are a minimum of 18 months long. We do not have the manning, resources or time to put everyone through a traditional cyber studies program," said Wyrick.

"Upon graduation, course participants will be able to do entry level programming. If you understand the logic of programming and what your system is capable of, you will be able to gain the skillsets necessary to understand the capabilities that exist," said Wyrick.

Wyrick and Fulp's work represents just one example of work funded through the Naval Studies Program, but it is indicative of what officials say can be accomplished by matching the needs of senior Navy leaders with NPS students and faculty.

As the second year of the program begins to ramp up, the group will be holding a comprehensive requirements "fair" in March 2014, where Navy, Marine Corps leaders will have the opportunity to directly share their most pressing issues, and hear directly from NPS subject matter experts, to develop a stronger connection between the players. ■

NPS, Marine Corps Research Partnership Drives Energy Independence

By Kenneth A. Stewart

THE NAVAL POSTGRADUATE SCHOOL and the U.S. Marine Corps Expeditionary Energy Office (E2O) have partnered under an initiative to conduct student-led research that will address some of the Marine Corps' most pressing energy challenges.

The Marine Corps first initiated the E2O program in 2009 with the mission to "analyze, develop and direct the Marine Corps' energy strategy." The impetus for the initiative was born of the realization that the Marine Corps is using far more energy today than it did in the past.

"Over the last 10-15 years, we have had a 250 percent increase in computer usage on the battlefield, and the average Marine infantry battalion is using four-times the amount of fuel today than it did in 2001," said E2O Director Marine Corps Col. Jim Caley.

"The investments we are making today in technology and cultural change at the forward edge of the battlefield have the opportunity to reduce our fuel reliance and the number of logistical convoys that feed that need," continued Caley.

Caley notes that Marine Corps efforts to reduce reliance on traditional fuel sources will increase the operational reach of expeditionary units and save lives as well as dollars. He also insists that the student research being conducted at NPS provides real value to the Marine Corps.

"Our students study at NPS and then come back prepared to lead us to a great energy future," said Caley. "We get tremendous value from the non-uniformed perspective [of NPS faculty]. They look at us from outside with, the audacity to question why we do things, but then help us to move forward."

NPS Associate Professors retired Army Col. Andy Hernandez and Dr. Jomana Amara lead the E2O effort at NPS.

"We want to educate Marine Corps officers to look at energy differently, and to help them to come up with energy solutions for the Marine Corps' energy problems," said Amara. "The E2O program is concerned with expediting applications of portable and renewable energy."

"We are most concerned with the manner in which green technologies affect the operational footprint," said Hernandez. "Whenever you look at an operational gap, you have to consider the energy usage."

Program administrators say the program is a win for both the Marine Corps, and the students pursuing energy-related studies. But the NPS-E2O partnership is not just about new technology. Organizers insist that it's about fundamentally changing the Marine Corps' culture of energy consumption.

"The breadth and depth of what we are trying to do is very large," said Hernandez. "We are trying to change the minds of folks, to make them aware of the benefits of saving energy."

Still, all of this attention to energy conservation and alternative energy sources should be viewed in the context of the Marine Corps operational mission. NPS Senior Marine Corps Representative, Col. Mitchell McCarthy, insists that Marine Corps investments into energy research directly support the Marine Corps' combat effectiveness.

"The amount of fuel required to support a single Marine in the field is really astronomical," said McCarthy. "What we are doing here is finding solutions that will allow us to reduce those fuel needs and focus our

logistical trains on those things that we need to use to accomplish our mission. What the E2O program is doing is a combat multiplier." ■



TOP: NPS Associate Professor retired Army Col. Andy Hernandez, left, and NPS students Marine Corps Capt. Matthew Morse, center, and Lt. Cmdr. Timothy Householder, right, stand amongst a field of photovoltaic panels atop NPS' Dudley Knox Library, Nov. 20. Hernandez, Morse and Householder are working with the Marine Corps' Expeditionary Energy Office to address match the Corps' alternative energy and conservation needs with NPS student research.

BOTTOM: NPS student Lt. Cmdr. Timothy Householder shows off a microelectromechanical system (MEMS) in NPS' Materials Research Lab, Nov. 20. Householder is working with the Marine Corps' Expeditionary Energy Office on his NPS research in using MEMS to harvest "waste energy" from military equipment.



Retired Adm. Mike Mullen, 17th Chairman of the Joint Chiefs of Staff, 28th Chief of Naval Operations, and an NPS operations research alumnus, offers keynote remarks during Fall Quarter 2013 commencement ceremonies, Dec. 20.

Former Chairman of the Joint Chiefs, CNO Keynotes Fall Graduation

By MC3 Danica M. Sirmans

THE NAVAL POSTGRADUATE SCHOOL honored its latest round of graduates during the 2013 Fall Quarter Graduation Ceremony held in King Auditorium, Dec. 20.

Presiding over a graduation ceremony for the first time, NPS President retired Vice Adm. Ronald A. Route, introduced a fellow operations research graduate in the day's keynote speaker, retired Adm. Michael G. Mullen, 17th Chairman of the Joint Chiefs of Staff and 28th Chief of Naval Operations. As Mullen took the podium to address the graduating class, the alumnus first expressed his gratitude to the graduates' families and friends.

"There's not a graduate here that could succeed without the support of their families," said Mullen. "Having done this for awhile, I can tell you that you have set the standard for that kind of support and we are eternally grateful."

He went on to offer his praise to the students for achieving such an accomplishment, and reaching an important milestone in their career.

"Thank you to the students for your service and your dedication. You are beacons for hope, and you set the example for so many different in-

stitutions and countries around the world," Mullen said.

"And it doesn't stop here. That service is going to be equally, if not more challenging, than that of the past. But that optimism will prove to deliver," he continued. "As the economy gets better, and as wars come to an end, it is the battalion, shift and squadron commanders who must focus on retaining our best junior officers — many of whom are in this room."

In closing his remarks, Mullen reminded the graduates that their work is far from over and encouraged them to go forth with a renewed sense of responsibility.

"What I ask of everyone in uniform is that you

figure out a way to lead. You make a difference in people's lives, institutions, and in your countries," Mullen stressed. "You are just beginning in your learning hill... And there's a great deal to learn. Continue to learn, grow and expand your comfort zone."

NPS graduated a total of 373 students earning 377 advanced degrees this quarter. Of note, Mullen's own son, Lt. Cmdr. John S. Mullen, was a member of the quarter's graduating class, earning a Master of Business Administration degree. **IR**

"Thank you to the students for your service and your dedication. You are beacons for hope, and you set the example for so many different institutions and countries around the world"

Adm. Michael G. Mullen
U.S. Navy, Retired

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To the Fleet and Force

The two, large armored combat vehicles positioned on each side of this proud group of NPS alumni is clear evidence they are not celebrating their graduation inside the campus' King Auditorium.

The cohort of 31 students, from the U.S. Army TACOM Life Cycle Management Command (TACOM LCMC) in Warren, Mich., is the latest to complete the Graduate School of Business and Public Policy's Advanced Acquisition Program (AAP). The AAP is a 12-month, distance-learning program focused on graduate-level defense acquisition and program management education.

"This is a very challenging program requiring you to think hard, work hard, and prepare for even greater challenges," said Kevin M. Fahey, Program Executive Officer Combat Support & Combat Service Support (PEO CS&CSS) during an address to the graduates at the TACOM LCMC facility in late 2013. "Your graduation is timely, because that's just the kind of effort we need in today's challenging environment."

It would seem the AAP program's benefits are timely, no matter what

acquisition challenges are thrust toward the command, one of the Army's largest weapon systems research, development and sustainment organizations. Over the past 14 years, at least eight cohorts of 20-30 students have taken the program, at the command's expense.

"No travel is required by the students whatsoever ... NPS takes the education to the students at their workplace ... This is why commands of all services continue to buy education products from NPS for their distributed civilian and military workers," said GSBPP Associate Professor J.D. Dillard, AAP program manager. "We have always felt it to be a very efficient means of delivery."

NPS' AAP provides an on-site source for Level III Program Management certification training, and is the only other education provider that provides Defense Acquisition University (DAU) equivalency in Program Management. The curriculum covers acquisition and program management, contract and financial management, acquisition logistics, test and evaluation management, manufacturing and quality assurance as well as software acquisition management.

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