



# NAVAL POSTGRADUATE SCHOOL

## IN REVIEW

### FEBRUARY 2007

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Hall of Fame alumnus*



# IN REVIEW

## PRESIDENT'S MESSAGE



It is a great honor to accept an appointment by Dr. Donald Winter, Secretary of the Navy, and to serve as interim president for the Naval Postgraduate School during a defining moment in the institution's history.

Secretary of the Navy, George von L. Meyer, established the first postgraduate education program at Annapolis in June 1909 under General Order No. 27. Over time this early program evolved into today's Naval Postgraduate School.

During World War II, Secretary of the Navy Frank Knox and Chief of Naval

Operations Fleet Admiral Ernest King pursued Congressional support to expand programs at NPS-Annapolis and find a larger campus to accommodate growth. Their actions led to the passage of numerous public laws and the development of NPS-Monterey.

Congressional legislation enacted between 1945 and 1948 paved the way for the institution's move and 55 years ago, on February 18, 1952, Secretary of the Navy Dan Kimball was the keynote speaker at the dedication ceremony for NPS-Monterey.

Secretary Kimball told distinguished guests, "If our Naval forces...are to cope on an equal footing with an alert enemy, we must take advantage of every technological advance. We must improve weapons and methods for our own use." He went on to highlight the important role NPS advanced education and research played in the nation's security.

Our efforts today are centered on enhancing academic excellence while remaining relevant to the Navy, DoD and other sponsors. Top priorities include increasing the number of U.S. civilian masters and doctoral scholarship-for-service students on campus, establishing a National Security Institute, and expanding partnerships with the University of California Santa Barbara, Lawrence Livermore National Laboratory and the University of Colorado.

We will also focus on the NPS National Capital Region presence and our developing partnerships with the Marine Corps, Naval Sea Systems Command and civilian education and research institutions in Virginia.

We have an ambitious agenda for this year and many opportunities to help our nation and coalition partners address security threats ranging from global terrorism to regional conflict. This issue highlights our innovative work and the results of our endeavors in education, research and national security.

### Editor in Chief

John Sanders  
[jfsander@nps.edu](mailto:jfsander@nps.edu)

### Editor

MCCS (AW/SW) Jacqueline Kiel  
[pao@nps.edu](mailto:pao@nps.edu)

### Production Editor

Mike DiFranco  
[mjdifran@nps.edu](mailto:mjdifran@nps.edu)

### Journalists

MCCS (AW/SW) Jacqueline Kiel  
Barbara Honegger

### Photographers

Mike DiFranco  
Javier Chagoya  
MC2 Sarah Bir

## NAVAL POSTGRADUATE SCHOOL

### Acting President & Provost

Dr. Leonard Ferrari

### Executive Director

Information Resources &  
Chief Information Officer  
Dr. Christine Cermak

### Office of Institutional Advancement

Naval Postgraduate School  
1 University Circle  
Monterey, CA 93943

[WWW.NPS.EDU](http://WWW.NPS.EDU)

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# SECNAV ATTENDS NPS BOARD OF ADVISORS MEETING, CHALLENGES BOARD TO DEVELOP FORWARD-LOOKING STRATEGIC PLAN

By Barbara Honegger

The Naval Postgraduate School Board of Advisors held its 46th bi-annual meeting Oct. 17-18 in Washington, D.C. Honored guests included Secretary of the Navy, the Hon. Donald C. Winter; Assistant Secretary of the Navy for Manpower and Reserve Affairs, the Hon. William Navas; and the Under Secretary of Homeland Security for Science and Technology, the Hon. Jay Cohen.

“We’re honored that Secretary Winter, Assistant Secretary Navas and Under Secretary Cohen were able to attend,” said then Acting President Air Force Col. David Smarsh. “We’re also honored to have such a distinguished board that includes active duty and retired admirals and generals, university presidents, respected academicians and leaders of industry.”

Board members and NPS leadership described the university’s expanding contributions to the global war on terror for Secretary Winter.

“The SECNAV charged the Board with developing a strategic plan that is consistent with Navy and Marine Corps plans and describes our role for the future,” said Associate Provost for Academic Affairs Julie Filizetti.

The Board established a subcommittee to provide advice and recommendations to NPS on the development of the new strategic plan.

During the Board meeting, Smarsh presented an NPS overview and update focusing on finances, growth in both in-residence and distance learning students, the facilities plan and the NPS School of International Graduate Studies’ recent designation as the Global Center for Security Cooperation.

Provost Leonard Ferrari briefed his vision for NPS focusing on academic quality while remaining relevant to the mission of the Navy and Department of Defense and ensuring the full engagement of the unrestricted line community in military higher education.

In other briefs, the Board heard from the superintendent of the U.S. Naval Academy, Vice Adm. Rodney Rempt, and Vice Adm. John Harvey, Deputy Chief of Naval Operations for Manpower, Personnel, Training and Education.

“This was one of the best Board meetings we’ve had due to the high level of the discussion and focused engagement on the future strategic direction of NPS and our role in the Navy and national security,” said Filizetti. 

## NEW EDUCATION AND RESEARCH PARTNERSHIP AGREEMENT GIVES NPS HISTORIC FOOTPRINT IN NATIONAL CAPITAL AREA

By Barbara Honegger

NPS and the University of Mary Washington (UMW) College of Graduate Professional Studies formalized a historic agreement, cementing a strategic partnership to share academic and information technology (IT) resources to promote joint educational, research and professional projects. UMW is a state university of the Commonwealth of Virginia.

President William J. Frawley signed the agreement in a formal signing ceremony at the Fredericksburg, Virginia campus.

Under the agreement, NPS will soon have academic and administrative offices, IT support, and access to classrooms and lab space for the first time in the National Capital Region (NCR).

Plans for the collaborative effort include NPS and UMW student involvement in programs at both institutions through student internships, research projects, work study and cooperative education programs.

“The future is in cooperative education, and this is the first step in a major leap forward in our being able to leverage NPS’ core competencies in graduate education and research in the National Capital area,” said Prof. Dan Nussbaum, director of NCR programs.

“The new offices and UMW classrooms and lab space are only a few miles from Naval Sea Systems Command at Dahlgren and Marine Corps Systems Command at Quantico. Imagine the possibilities when NPS faculty and students will be able to do research in, say, network centric warfare at Quantico, and Quantico military and civilian personnel can drive only 12 miles to take NPS video tele-education and in-residence courses at the new satellite location.”



*Left to right: National Capital Region (NCR) liaison for the NPS Office of Continuous Learning (OCL), USMC Maj. Mitch Cook (Ret.); OCL Director, Tom Hazard; UMW President Dr. William Frawley; and NPS Director for the National Capital Region, Operations Research Prof. Dan Nussbaum.*

“The agreement between NPS and the University of Mary Washington is a major step in bringing our expertise in graduate education and research to the Quantico-Stafford County (Virginia) region,” agreed NPS Provost Dr. Leonard Ferrari. 

# SPACE ROBOTICS PIONEER WINS PRESTIGIOUS MENNEKEN AWARD

By Barbara Honegger

A pioneer in spacecraft robotics has won the prestigious Carl E. and Jesse Menneken Faculty Research Award for Excellence in Scientific Research for 2006.

Assistant Prof. of Mechanical and Astronautical Engineering Marcello Romano (pictured below), founder of the school's Spacecraft Robotics Laboratory and a member of its Space Systems Academic Group (SSAG), received the honor at a Fall 2006 awards ceremony at the nation's premiere security research university. The award was in recognition of his two-year research project, "Experimental Verification of Navigation and Control Algorithms for Autonomous Proximity Maneuvers and Docking among Spacecraft."

"Laboratory simulation of the autonomous approach and docking of chaser satellites with friendly spacecraft is a perfect match between my background and one of the major areas of future importance to the Department of Defense," said Romano in an interview following the ceremony. "It offers a low-risk and relatively low-cost intermediate validation step between analytical-numerical simulations and expensive in-flight missions, and will make it possible to service spacecraft already in orbit and thus extend their life, greatly reducing costs. And by connecting smaller satellites, it may be possible to build larger in-space systems to achieve a wide variety of missions."

"Professor Romano's unique test-bed research gives NPS officer students a once-in-a-lifetime opportunity to work hands on with an enabling technology for many critical DoD missions," said Prof. Anthony Healey, chairman of the Department of Mechanical and Astronautical Engineering. "It has allowed the advance testing of the prototype docking interface mechanism that will be used by the Defense Advanced Research Projects Agency's

(DARPA) in its Orbital Express mission to be launched in January 2007. This mission will test autonomous docking and on-orbit servicing for the first time."

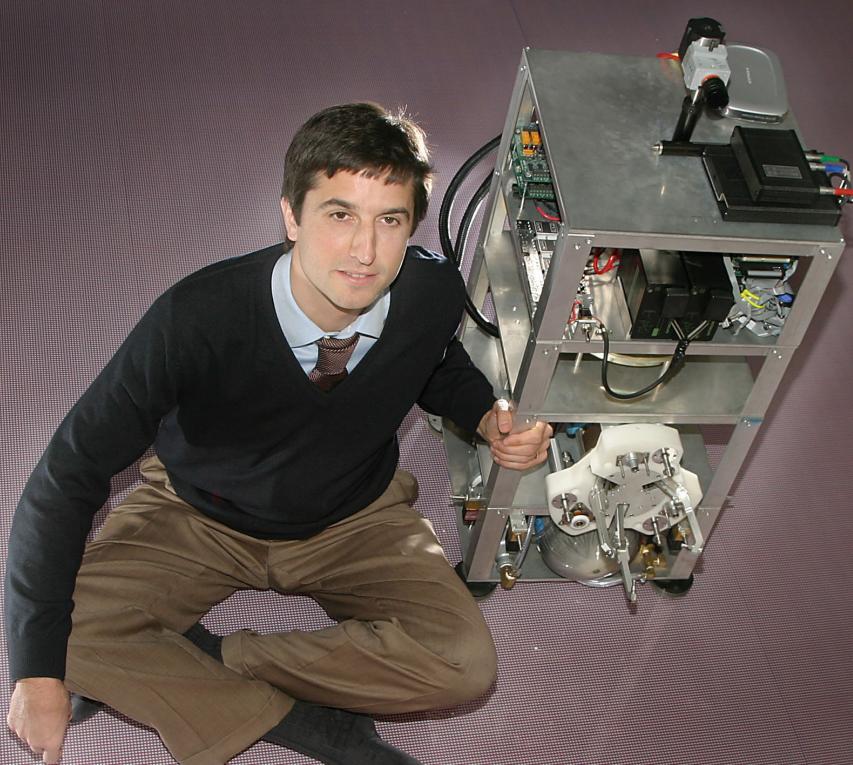
"Professor Romano is very deserving of this prestigious honor," said Prof. Rudy Panholzer, chair of the SSAG. "His research is critical for the Department of Defense and the education of military officers at NPS."

In an interview following the award's announcement, Romano insisted on sharing the credit with his students. "The research accomplishments that brought me to deserve this award would not have been possible without the dedicated participation of my students, especially Air Force Capt. David Friedman and Lt. Cmdr. Tracy Shay," Romano stressed. "They helped a lot in the research that is the basis for the award."

Capt. Alan Scott, NPS program officer for space systems engineering and operations, emphasized the importance of Romano's work on spacecraft robotics for the aerospace industry.

"This research is important not just for the Department of Defense, but for the space business as a whole," Scott said. "He has done some really great work that dovetails with our NPS space systems curricula, because of the huge focus today on just this area of research using small 'chaser' satellites to rendezvous and group with other spacecraft to perform modularized missions. Using smaller satellites keeps costs down, and they're much easier to manage."

The research for which Romano received the Menneken Award was sponsored by the Air Force Research Laboratory, Space Vehicle Director, in 2005 and 2006. 



# ACTING PRESIDENT AND PROVOST OUTLINES BOLD, CLEAR VISION

By Barbara Honegger

Provost Dr. Leonard Ferarri has been named NPS acting president by the Secretary of the Navy, effective Jan. 2. The Secretary of the Navy had previously selected Ferrari to be the new NPS provost, effective Oct. 1, 2006.

Ferrari recently outlined a bold, clear vision for the school's future at an all hands faculty meeting.

"We have been systematically developing a strategy for academic enhancement and growth over the last 18 months, which I began as dean of research," Ferrari said.

A new role for NPS in Ferrari's vision is a major expansion of in-residence doctoral programs for qualified U.S. civilians in scholarship-for-service assistantships.

"The goal is to attract the best doctoral and post-doctoral students to NPS to address pressing problems in national security and fill national security positions in the U.S. Navy, Department of Defense and other federal agencies," said Ferrari. "Expanding our Ph.D. program, in turn, is

critical to the long term strategic goal of strengthening NPS' academic position and reputation.

"Academic excellence will definitely be improved by our systematically taking advantage of two new congressional U.S. civilian education programs, the Total Force Education Initiative and Homeland Defense Ph.D. program," Ferrari emphasized. "These new Ph.D. students will be in addition to those already here on existing federal scholarship-for-service programs such as Naval Research: Science and Technology for America's Readiness [N-STAR]; Science, Mathematics and Research for Transformation [SMART]; and the National Science Foundation's cyber corps."

NPS will offer fully-funded civilian master's and doctoral degrees under these learn-and-earn programs. Tuition will be covered for a three- to four-year doctorate in science or engineering, with students also receiving an annual salary as research assistants from the National Security Institute while enrolled in departmental degree programs. Graduates will work for U.S. research laboratories, such as the Naval

Research Laboratory, the Space and Naval Warfare Systems Command, Lawrence Livermore National Laboratory (LLNL), and the Naval Sea Systems Command.

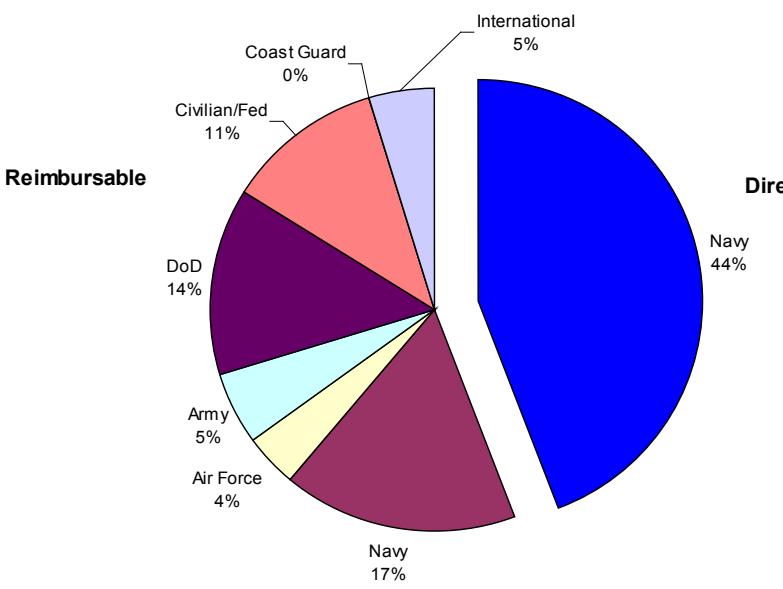
The Ph.D. programs will also provide tuition for graduate students in disciplines such as national security affairs and defense analysis.

"DoD may need as many as 3,000 science and technology workers with advanced degrees per year," Ferrari said. "We're positioning NPS to be a significant provider of this critical future workforce."

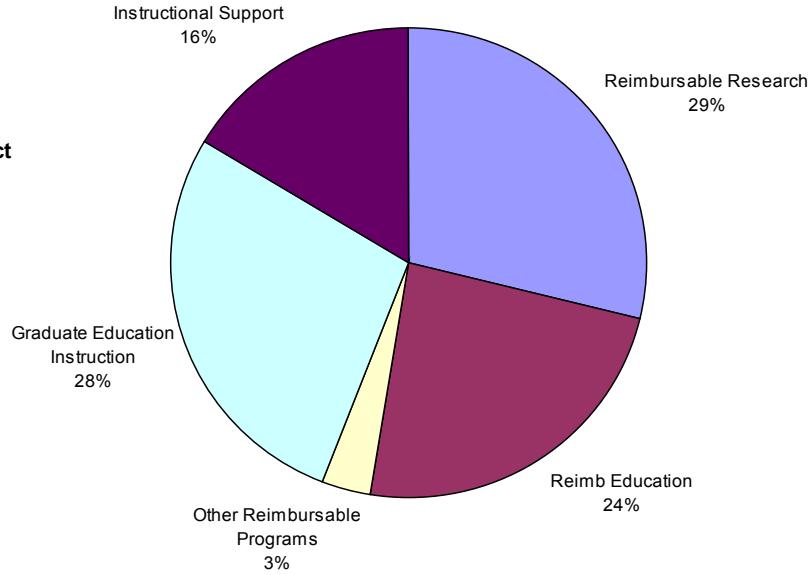
Ferrari's five- to eight-year plan, which focuses on a new partnership with LLNL and the University of California at Santa Barbara (UCSB), envisions adding 100 NPS doctoral students in the first few years. The program is projected to become nearly self-sufficient through research grants by the fourth year, with civilian Ph.D. candidates making up a significant fraction of the NPS student body by the eighth year.

Under the June 2005 memorandum of agreement for the partnership, students

NPS FY 2006 Revenues by Source  
Direct and Reimbursable  
\$204.2 million



NPS FY 2006 Expenditures by Category  
Direct and Reimbursable  
\$204.2 million





Naval Postgraduate School doctoral candidates discuss their dissertation projects with NPS Acting President Leonard Ferrari (center). Left to right: Chris Eagle (Computer Science), Air Force Maj. Barry Behnken (Physics), Ferrari, Steven Burnett (Modeling Virtual Environments and Simulation Institute) and Army Lt. Col. Andy Hernandez (Operations Research).

will reside at either NPS or UCSB, may participate in research projects at LLNL and can take off-campus courses via distributed learning.

"Increasing the number of Ph.D. students on campus will improve education for our traditional military student body of master's students; enhance the overall quality and depth of research at NPS; and enable us to attract top new faculty who will gain in academic standing by advising Ph.D. students in expanded research programs," Ferrari stressed. "And it will enhance the interaction and synergy between the military and civilian workforce."

Other pillars of Ferrari's strategic vision are moving to a traditional faculty salary model beginning in fiscal year 2008; giving deans greater autonomy for their schools; growing and broadening sponsorship of research programs; and partnering with world-class research universities and laboratories.

Additional goals will be to broaden homeland security and defense programs

to all NPS schools and research institutes; expand non-degree education and training, including certificate programs; and create satellite programs in major fleet concentration areas; Stafford County, Va.; and the National Capital Region.

Ferrari's plans include expanding academic and research support to the intelligence and homeland security communities, streamlining the school's administrative structure to reduce expenditures, improving resource allocation using standard management practices with process transparency and improving the university's impact worldwide.

Under Ferrari's leadership, NPS will also stand up a new Chief of Naval Operations Distinguished Fellow Program. The program will bring together Nobel laureates, top military strategists, academicians, industry leaders, inventors and visionaries, business leaders and entrepreneurs, and sociology and religion scholars who will be treated as NPS faculty to jointly address pressing national security challenges.

In addition to growing civilian enrollment in all four NPS graduate schools, Ferrari is developing specific goals for each: expanding science and technology research in the Graduate School of Engineering and Applied Sciences and Graduate School of Operational and Information Sciences; identifying research growth areas and developing an executive MBA program for military and civilians in the National Capital Area for the Graduate School of Business and Public Policy; and expanding programs in Security, Stabilization, Transition and Reconstruction, National Security Affairs research, Defense Resources Management Institute, Center for Civil-Military Relations, Regional Security Education Program and cultural awareness in the School of International Graduate Studies.

As provost, Ferrari has been responsible for developing and aligning the Naval Postgraduate School's academic planning, strategies and research initiatives with the Department of the Navy and Department of Defense joint doctrines.



# SOCOM COMMANDER GIVES SECRETARY OF THE NAVY GUEST LECTURE

By Barbara Honegger

The ‘tip of the spear’ of the Global War on Terrorism, Commander of U.S. Special Operations Command (USSOCOM) Gen. Bryan “Doug” Brown, presented the Secretary of the Navy Guest Lecture at the Naval Postgraduate School, Nov. 9. The information-packed brief on the Command’s “no borders, no boundaries” post-9/11 mission kept 1,800 officer students, faculty and staff in rapt attention and asking questions for nearly two hours.

USSOCOM is DoD’s lead command for planning and synchronizing the Global War on Terrorism and recruits, trains, organizes, equips and operates all U.S. active duty and reserve special operations forces.

“This is an incredible institution, and there’s a lot of work NPS can do for us in SOCOM as we grow to meet this new global threat,” Brown said. “And because the threat is global, we need a global solution. We need your input and we need your help, because after 9/11 we had to start from square one. Everything we’ve thought and done and been is on the table.”

Gen. Brown stressed the importance of information operations (IO) and networking to winning the Global War on Terror, and the key contributions NPS faculty and students can make in these vital fields.

“I’m impressed by this institution and am especially impressed that NPS is focusing on Information Operations, because IO is critical,” he said. “We need to build a global, friendly, informal counterterrorism network to address the long-term, indirect, larger environment side of this struggle to erode support for the worldwide extremist agenda, and networking and IO are vital to our success in that effort. We’ve also stood up a Knowledge and Futures Center, which is a natural fit with a lot of the research that goes on here.”

Gen. Brown had a personal message for every officer student in the room. “You don’t need to be trained in special forces to work with SOCOM. For instance, we need to increase the number of people we have in civil affairs operations right now.”

Brown also highlighted SOCOM’s growth and interagency cooperation. The Command is on track to add 20,000 special operators for a total force target of 60,000, and included Marine recruits this year the first time in its 20-year history. It has new aircraft and Predator unmanned aerial vehicles and is ramping up its West coast presence, including two new SEAL team equivalents. Over 60 representatives from other U.S. government agencies work with SOCOM staff on approximately

800 programs, and 75 SOCOM personnel liaison with other commands and agencies.

Gen. Brown is the first member of the Army’s Aviation Branch to be promoted to the rank of four-star general and is the Army’s senior aviator, with more than 4,400 flight hours logged in both fixed and rotary wing aircraft.

Brown entered the Army in infantry in 1967 and immediately went into special operations training. He attended Army Flight School at Fort Rucker after completing officer candidate school, and flew helicopters in Vietnam for 129th Aviation Company. In addition to Vietnam, he has been involved in combat operations in Grenada and in operations Desert Shield and Desert Storm, among others.

Over his military career, Gen. Brown has commanded three companies and two battalions, and the 160th Special Operations Aviation Regiment (Airborne). As a general officer, he served as assistant division commander (Maneuver), 1st Infantry Division (Mechanized) at Fort Riley, then returned to special operations as director of Plans, Policy and Strategic Assessments at USSOCOM, MacDill Air Force Base. Brown then commanded Joint Special Operations Command and later U.S. Army Special Operations Command, both at Fort Bragg. 



*Commander, U.S. Special Operations Command  
Gen. Bryan Brown answers questions during his  
Secretary of the Navy Guest Lecture.*

# SEPP SERVES ON IRAQ STUDY GROUP MILITARY-SECURITY TEAM

By John Sanders

Walking into Kalev Sepp's office in Root Hall is much like the experience of entering a professor's office at Stanford, Berkeley or UCLA. The shelves are neatly lined with textbooks and non-fiction works. His doctoral dissertation from Harvard, along with his case studies of insurgencies and special operations, rests with books on American foreign policy and national security.

Sepp himself looks comfortable in the role of an academic. Tall and bespectacled, wearing professorial chic attire, he evokes an aura of quiet confidence and expertise. But as he dons his sport coat, a noticeable blue pin tells a story of another side of this scholar and defense analyst.

The pin is a blue rectangle superimposed with a rifle, all surrounded by an oak wreath - the Combat Infantryman Badge - earned during the Salvadoran Civil War and operations in Panama when Sepp was a Special Forces officer.

The walk from his office to the classroom is like the walk any professor makes before beginning a lecture. Along the way, he stops for brief exchanges with colleagues and students. Arriving at class, he heads to the front of the room.

In spite of appearances, his students are unlike those at any other university or in any other classroom. They are all members of U.S. and coalition special forces. They have all seen combat. Some have lost friends on the battlefield or have themselves been wounded in action.

There is an unmistakable bond between Sepp and his students. He understands the depth of their military experience. They understand the significance of their current studies. And they share a common goal. They are all – professor and students – preparing for a future mission to bring stability and peace in regions marred by conflict, terrorism and sectarian violence.

In the classroom, Sepp's exceptional blend of direct experience in counterinsurgency, urban warfare, psychological operations, civil affairs, drug interdiction, interagency coordination, nuclear-chemical-biological defense and strategy formulation provides unmatched perspective for the students.

As a consultant to several military leaders and commands, he has co-authored an official study of U.S. Army special operations in Afghanistan. He assisted Gen. George Casey's Multi-National Force-Iraq strategy staff during the second battle of Fallujah in 2004 and, in the summer of 2005, he endured daily daytime desert temperatures hitting nearly 120 degrees Fahrenheit to visit dozens of sites in Iraq outside of the Green Zone while analyzing requirements for counterinsurgency operations. He provided additional in-country assistance later in 2005, during the Iraqi elections.



Professor Kalev Sepp  
NPS, 2007  
Inset: Iraq, 2006

His experience and credentials earned him a place on the Iraq Study Group (ISG) military and security expert working group, one of the four expert teams that supported the ten presidential appointees on the ISG. For nine months, "We were like researchers, preparing answers to questions posed by the members," Sepp notes. Some of the questions covered the basics of troop strength, logistical support requirements and intelligence gathering capabilities. Most questions probed at thorny issues the members needed to understand in order to provide viable recommendations to the president.

There have been 53 major insurgencies since the second Anglo Boer War in 1899, Sepp observes. "While every counterinsurgency is exceptional and unique, you can look for parallels." A notable lesson from these historical fights is that it takes time. "The Malayan emergency lasted 12 years...the Mexican Civil War was from 1910-1920."

Sepp knows that time alone will not end the conflict. Economic, diplomatic and political solutions are essential. "Security can't be sustained unless you give the people of Iraq something to work for. They have to have a motivation," he explains.

Petroleum law must go hand-in-hand with rebuilding the production system. Clean water, electricity and other forms of reconstruction are vital. "You've got to start real job creation programs," he emphasizes.

Quelling the violence today requires a focused effort to train and equip the Iraqi Army and police so that they can demobilize militias and provide security. This will not be won by American and coalition forces fighting a long war in Iraq. He states emphatically, "The Iraqis must fight for their own country." 

# STUDENTS BRIEF PROJECTS ON RIVERINE WARFARE AND JOINT FIRES

By Barbara Honegger

Two teams of Systems Engineering and Analysis Cohort 10 (SEA-10) students briefed their capstone integrated thesis projects on joint fire support and the Navy's riverine force, Dec. 1, sponsored by the Wayne E. Meyer Institute for Systems Engineering.

"Capstone joint thesis projects are a major way the Naval Post-graduate School contributes to emerging missions of the Navy and the nation," said Meyer Institute Director Prof. Frank Shoup.

One team studied the Navy's current riverine force and identified the lack of sensors to detect and engage beyond visual range as the key capability gap.

The second team evaluated three 2020 joint fire request, coordination and tasking support architectures. Its main finding was that, whereas a distributed joint fire-support network is the ultimate goal, the most operationally feasible means to that end is to move from the current status quo-plus option to a centralized joint fire-support network in the near term. The brief defined status quo-plus as the integration of existing service-centric systems, an option which does not achieve the critical goal of interoperability.

## RIVERINE 2010

"The Navy is returning to brown water missions where the rivers are the 'roads' in coastal areas increasingly important in the Global War on Terrorism," retired Rear Adm. Richard Williams told the audience of students, faculty and military and industry leaders. "This is because rivers are increasingly used to support terrorist operations, transport illegal drugs, weapons and contraband, and for human trafficking. Because the Navy is still working to establish a command and train and equip its riverine force, this is basically a blank piece of paper, which makes it an ideal topic for a systems engineering and analysis project."

"The riverine mission is a challenging and increasingly important area that's making a difference for the Navy," added NPS acting President Air Force Col. David Smarsh, noting that Rear Adm. Donald K. Bullard, commander, Naval Expeditionary Combat Command (NECC), had tasked the study

by asking the NPS Meyer Institute to identify the riverine force enhancement package that would return the biggest bang for the buck. "The SEA-10 team did a great job doing this and just briefed their findings to Commodore Michael L. Jordan, Commander, Riverine Group ONE."

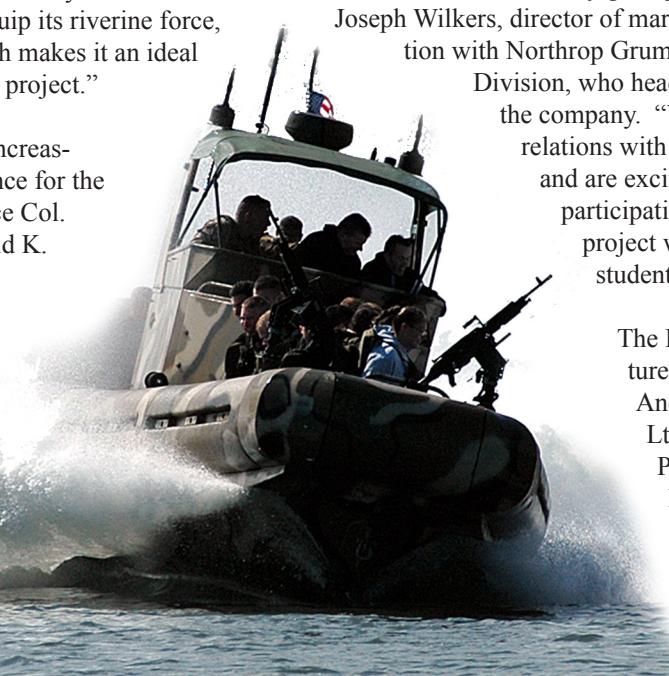
In thanking the students, Jordan stressed the value of looking out to 2010. "In our headlong rush to establish and deploy this capability to a combat zone in less than a year, nearly all of our own efforts have been toward the short term," he said. "Having this work on medium term capabilities is of great benefit to us."



"I run special operations for the Navy, and this is great work," said Capt. Evin H. Thompson, commodore, Naval Special Warfare Group Four, at the conclusion of the NPS student team's brown water brief. "I have 99 special warfare combatant crewmen on the rivers who have lots of operational data they can share, so come down and talk to us."

The SEA-10 team interviewed Riverine Group ONE and naval special warfare and Marine riverine operators to identify key operational needs during the study's research phase. They also spoke with industry analysts and experts, as well as a dozen NPS faculty members with relevant expertise, and collaborated with the Air Force Institute of Technology.

"The students have done a very good job on the analysis," said Joseph Wilkers, director of maritime systems integration with Northrop Grumman's Integrated Systems Division, who heads riverine operations for the company. "We've had great working relations with NPS on previous projects, and are excited about supporting and participating in the next SEA-11 project with Dr. Shoup and his students."



The Riverine 2010 team (pictured above) consisted of Lt. Andrew Bucher, team leader; Lt. Cmdrs. James Beaver and Pedro Mercado; and Lts. Richard Byers, Jennifer Free and Tristan Oliveria.

## JOINT FIRE SUPPORT 2020

The focus for the Joint Fire Support capstone project came from a request by U.S. Joint Forces Command to NPS and the Air Force Institute of Technology to design a system of systems to enable future joint close-air support, time-sensitive targeting and joint-fires missions.

After an analysis of existing and proposed joint-fire support systems, the NPS student team chose a challenge identified in the 2005 Joint Battle Management Command and Control road map: the need to define an operationally feasible joint-fires request, coordination and tasking architecture to maximize rapid battlefield

retired Adm. Wayne E. Meyer's famous dictum to "Build a little, test a little," is to move to immediately implement a centralized joint fire-support network as an evolutionary step towards the ultimate goal of standing up a distributed joint fires-support network.

Both centralized and distributed networks were found to be significant improvements over the current road map's goal of status quo-plus.

The team also recommended continuing the current evolution to capability-based operations; developing better ground and air combat support relationships among the services; establishing a



*The Joint Fire Support 2020 team (pictured above) consisted of Air Force Maj. Tyler Gabriel, team leader; Lt. Cmdrs. Matt Bartel, Leo Paiz and Matthew Savage; Army Maj. Shawn Dorrough; Air Force Maj. Brian Peters; and Lt. Spencer Nordgran. Faculty advisers were Paulo, Shoup and Capt. Starr King.*

effects through efficient target-fires provider pairings. They developed, and then compared and contrasted, alternative system architectures to achieve this goal: the 'as is' or status quo system; evolving the current system, or status quo-plus system; adding net-centric man-portable joint fires, deemed not feasible within a reasonable time frame; a centralized joint fire-support network, combined decision making organization; and a distributed joint fire-support network with automated tasking algorithm and dynamic chains of command.

The joint fires team used an agent-based simulation to evaluate the performance of the three alternative architectures that made the feasibility cut. Its main recommendation, following the

joint tactical doctrine for joint fires; consolidating functionally equivalent organizations across services with formal organizational linkage under the Joint Forces Command; developing a core syllabus of standardized calls-for-fire training to be included in all basic combat skills training, and developing a joint tactical doctrine for joint fire support and tactical automated aides.

Other recommendations included realigning to require the development of interoperable weapons command and control systems with an emphasis on consolidation; establishing a single joint acquisition executive officer over all service and assistant secretary of defense command and control programs; and providing greater bandwidth to ships, troops and aircraft. 

# DAD KNOWS BEST: NPS OPTIMIZATION WARRIORS SIMULATE 'PERFECT' ENEMIES TO DEFEND CRITICAL INFRASTRUCTURE

By Barbara Honegger

Naval Postgraduate School faculty and students are modeling worst-case attacks on the nation's critical infrastructure to identify key vulnerabilities and plan optimal defenses.

"The question we're answering is, 'Where do we best spend limited funds to harden our critical national infrastructure?' with the goal of getting to the point that, no matter what our adversaries do, they can't significantly hurt us," explained NPS operations research Prof. R. Kevin Wood (pictured), a key faculty researcher in the area. "But to defend something, you have to first learn how to attack it, and you do that by modeling where and how an optimal attacker would strike."

The Department of Homeland Security has officially designated 13 critical infrastructure sectors that are the focus of such studies: agriculture, water, emergency services, the defense industrial base, energy, banking and finance, postal and shipping, food, public health, government, information and telecommunications, transportation and the chemical industry.

"Because we don't know where terrorists are going to strike electric power grids, airports or oil pipelines, we don't want to use risk models where we have to guess which attacks will happen or are most likely," he said. "Instead, we determine where and how a fully informed enemy -- one who knows everything about our systems and how they operate -- would use his limited resources to attack to inflict the most damage. Then we add a new level of analysis to learn how to best pre-defend against such worst-case attacks. We've built models, for example, that define all possible scenarios for five near-simultaneous attacks on a power grid; and we've answered questions like, 'If you want to minimize the maximum time to detect a nuclear, biological or chemical attack in a subway system and can only afford three detectors, where do you place them?'"

Wood and his NPS colleagues and students specialize in this far more complex third level of mathematical analysis.

"Bi-level -- that is, two-level -- optimization models can implicitly analyze the effects of thousands or even millions of possible 'red team' attacks against an infrastructure to reveal which would be the most damaging," Wood noted. "We call these two-level attacker-defender (AD) models that help us identify system vulnerabilities ADs. In an AD, the defender is really just a victim; after being attacked, he simply observes the results and operates his damaged system as best he can. But we can add a third level to create a defender-attacker-defender model, or DAD, which lets us plan an optimal, proactive defense. If you measure success in terms of minimizing dam-

age from worst-case attacks, you need this third level of a DAD, which reveals where to apply limited defensive resources to reach that goal.

"Bi-level ADs are already hard to solve," Wood stressed, "but the third decision level in a DAD makes it an even tougher nut to crack. DADs require innovative theory and new algorithms to solve, and that's exactly what we're developing here at NPS."

NPS Operations Research (OR) Department faculty and students are incorporating the theory and algorithms for bi- and tri-level models into decision support systems to make these cutting-edge methods available to key decision makers. In a project sponsored by the Depart-



ments of Homeland Security, Justice and Energy, for example, Wood and Assistant Prof. Javier Salmeron have developed the Vulnerability of Electric Grids Analyzer (VEGA) to study regional electric power grids, identify grid vulnerabilities and make suggestions for cost-effective remediation.

"With VEGA we've looked at real U.S. power systems," Wood stressed. "It might identify a set of substations whose operations are the most critical to keeping customers supplied with power, and can compare the benefit of hardening those substations against attack to the benefit of adding new power lines and redundant circuits to bypass them if damaged. System operators already mathematically optimize a grid's power generation and dispatch continuously, but we've extended that math to account for attacks and defensive actions that will mitigate the effects of attacks."

NPS operations analysis student and submariner Lt. Robert Rose is doing his master's thesis on defending electric power grids.

"My research on limiting the amount of disruption should an attack occur is extremely challenging," Rose said, "because even relatively small electric networks have almost endless defense-attack combinations."

Spanish Navy Lt. Cmdr. Pablo Alvarez San Martin, an operations research (OR) student, is using tri-level models in his thesis research.

"The NPS optimizers' integrated approach to protecting critical infrastructure is very important and one of the main reasons my sponsor, the Spanish Navy, has been sending officers to the OR master's program here for many years," said Spanish Navy Lt. Cmdr. Pablo Alvarez San Martin, a student in operations analysis. "The military, in Spain at least, normally thinks in terms of protecting high-value military assets rather than including them in optimally defending a complete infrastructure system. I'm especially interested in tri-level models by which we are able to know, given specified available resources, the best way to defend a network." Upon graduating, Alvarez San Martin will report to the operations research department at Spanish Naval Headquarters.

Wood, Salmeron and Ross Baldick's key paper on defending electric power grids, "Analysis of Electric Grid Security Under Terrorist Threat," was published in IEEE Transactions on Power Systems.

Students in the OR Department's networks course have also analyzed rail systems in Asia, border security in Arizona, the electric power grid in South Carolina, strategic road and rail networks, domestic water systems, sea lanes, canals, multi-commodity

supply chains, petroleum distribution networks and economic warfare, among other topics.

"The same mathematical theory and models can be applied to optimizing our missile defense," Wood noted. "The Naval Warfare Command is funding NPS to develop a new Theater Ballistic Missile Defense planning system based on bi-level and tri-level models. In this case, we are beginning with a defender-attacker model and extending that to a DAD. The purpose is to position anti-ballistic missile platforms, like Aegis cruisers, in the best combinations of locations to defend against an emergent threat."

Wood, operations research Profs. Gerald Brown and Matt Carlyle, project leader Senior Lecturer Jeff Kline and master's student Lt. Douglas Diehl published a paper on this topic, "A Two-Sided Optimization for Theater Ballistic Missile Defense," in the journal Operations Research.

Some key lessons learned by the NPS critical infrastructure protection team are: contrary to classical military theory, the attacker has the advantage; systems vary widely in robustness; hardening infrastructure can be expensive; system data and system

vulnerability data are available on the Internet and other open sources; the most damaging attacks, and most effective defenses, are often non-intuitive; coordinated hostile attacks can be far more damaging than natural disasters like earthquakes or hurricanes; the right redundancy can be the solution; and deception and secrecy can be helpful for defense.

An overview article by Wood, Brown, Carlyle and Salmeron on defending critical infrastructure will be published in a special issue of Interfaces, a journal of the Institute for Operations Research and Management Science (INFORMS). A tutorial they presented at the society's November 2005 conference, "Analyzing the Vulnerability of Critical Infrastructure to Attack, and Planning Defenses," was published in its Tutorials in Operations Research: Emerging Theory, Methods and Applications. The papers present specific examples of applying ADs and DADs to infrastructure protection problems, including defending the Washington, D.C. metro system from nuclear, biological or chemical attacks; hardening the Strategic Petroleum Reserve against physical attacks; improving security at the Los Angeles International Airport's Terminal One; and analyzing the vulnerability of the Saudi oil pipeline system to attack.

Current sponsors of Naval Postgraduate School research on critical infrastructure protection include the Office of Naval Research, the Department of Energy and the Air Force Office of Scientific Research. U.S. Northern Command is also sponsoring NPS thesis research in the area.

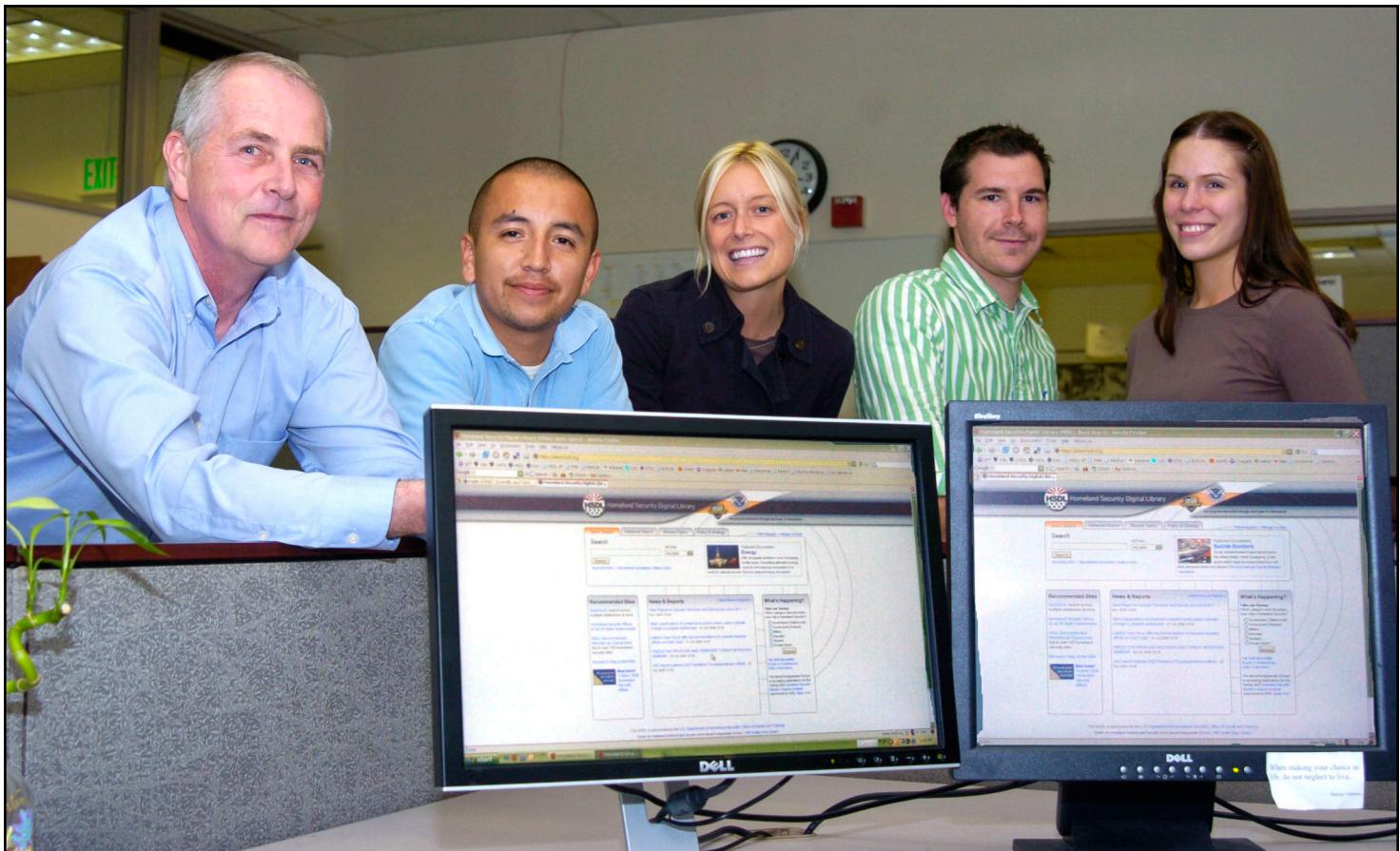
# HOMELAND SECURITY DIGITAL LIBRARY SEES SURGE IN ONLINE USERS

By Barbara Honegger

Where would one go to find information on a discipline that until recently did not exist? This was the challenge the Naval Postgraduate School faced when it launched the first homeland security related graduate and executive education programs in the nation and, to support them, the Homeland Security Digital Library (HSDL).

ter for Homeland Defense and Security (CHDS) and is located at and administered from the NPS Dudley Knox Library.

"Since 2002, the Center has pioneered the development and delivery of homeland security graduate and executive education programs across the country, including the HSDL, as well as modeling state-of-the-art distributed learning course delivery," said Heather Issvoran, CHDS spokesperson.



Left to right: Homeland Security Digital Library project manager Tom Mastre with content specialists Omar Murillo, Lindsay Fritz, Brad Parker and Sarah Stouffer. A team of HSDL content specialists reviews all of the online collection's electronically searchable documents, now at 40,000 and growing, for relevance and quality before posting.

"Just a few years ago in the wake of Sept. 11, homeland security and defense as an academic discipline was like criminology in the 1970s -- it was just beginning," said Tom Mastre, HSDL project manager. "The Homeland Security Digital Library was created in part to capture the emergence of this vital field as a brand new academic discipline."

The mission of the library, the nation's premiere digital collection of homeland security policy, strategy and organizational documents sponsored by the U.S. Department of Homeland Security Office of Grants and Training, is to support U.S. local, state and federal homeland security and counterterrorism decision makers and analysts, and to assist the research of academicians from all disciplines in these vital areas. The collection is part of the Cen-

As measured by its increase in users, HSDL is an unqualified success. Monthly usage increased from approximately 2,000 in September 2005 to almost 7,000 in September 2006. During that same period, the number of visits to the site also more than doubled, from about 6,000 in fall 2005 to over 15,000 a year later.

"The Homeland Security Digital Library is the place to go for all unclassified, open-source documents on policy, strategy and organizational structure information in homeland defense and security," said Tom Mastre, HSDL project manager. "Because we're a narrow niche, controlled access service, our universe of potential users is limited, but we've grown tremendously since we began collecting user data in January 2005. We continue to collect 200 documents a week, or an additional 10,000 a year. A year from now we'll be at 50,000 online sources."

"This growth has been among our main users – the instructors and student-participants of the Center for Homeland Defense and Security, the center's half dozen university partners, over 200 other universities the library supports, and the local, state and federal first responder, counterterrorism and law enforcement communities," added Melissa Roberson, a user support coordinator who oversees outreach and customer support for the library.

"HSDL is for U.S. use only," Roberson noted. "There are several ways to gain access. Individual user names and passwords are granted to approved applicants, and we also provide organization-wide access to large user groups such as the U.S. military and federal, state and local government offices. The exception to the U.S.-only rule are NPS international students, who have automatic access while at NPS until graduation. NPS faculty, staff and students can log in with their regular Dudley Knox Library user name and pin number." The steps by which individuals can request an HSDL account are detailed at the site.

HSDL currently boasts an extensive collection of over 40,000 highly relevant resources on a wide range of topics relating to homeland security and counterterrorism, from disaster management and response to border security. It provides quick and free access to important U.S. national policy and strategy documents, presidential directives and executive orders, major legislation, research reports, theses and dissertations, speeches and reports from universities and local and state agencies. The collection also includes state-of-the-art multi-media offerings and other

valuable assets identified by the HSDL team and the center's master's degree student-participants and instructors.

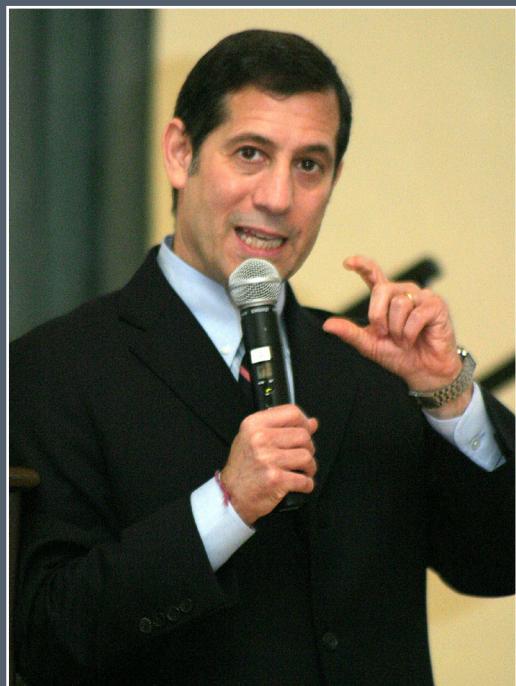
"As important as its extensive digital content is, the library's greatly improved search capability," Mastre stressed. "Searching the text of the entire collection is now robust and highly user friendly. All documents are accessible via full text searching and browsing by key words, topic, geographic region and event based on a unique, highly intuitive 'living' taxonomy."

The site also has a dynamic blog capability where homeland security and counterterrorism experts can learn about breaking news and the latest advances in their fields, as well as an interactive 'Ask a Librarian' feature.

A highly collaborative effort, the Homeland Security Digital Library continually seeks document contributions and suggestions from homeland security professionals and researchers across the country. The process by which suggestions are made and submissions forwarded are detailed at the site. All sources are reviewed and vetted for relevance and quality by a team of content specialists and all appropriate permissions are obtained before posting.

"We invite all U.S. homeland security policy planners, strategists, researchers, scholars, managers and first responders to use this resource," said Mastre. 

## HOFFMAN DISCUSSES AL QAEDA & TERRORIST THREAT



Dr. Bruce Hoffman was the featured speaker at the CHDS Annual Conference held at the Naval Postgraduate School in Monterey on January 4 and 5, 2007. Dr. Hoffman, Professor of Security Studies at Georgetown University's Edmund A. Walsh School of Foreign Service delivered a presentation entitled, "Salafis in Suburbia, What the London 7/7/05 Bombings Tell Us About Al Qaeda & The Terrorist Threat."

Dr. Hoffman's presentation was the finding from his current research on radicalization and terrorism. He gave detailed background information on the issues, people and circumstances that surrounded the British 7/7 bombing. From these and coupled with his intimate and encyclopedic knowledge of terrorism, terrorists and political violence of all types, Hoffman gave the audience an analysis that suggested al-Qaeda far from being on the run, is rather, on the march. Recent prevailing knowledge has been to suggest that rather than AQ central being in control of Salafis attacks - that portion of AQ led by bin-laden and Zawahiri in Afghanistan and Pakistan - that the problem is springing up through various forms of self-radicalization of Islamic converts in the West. Hoffman's presentation showed clearly from both recent history and current information that while Islamic conversion and radicalization is occurring in the West and is in some cases leading to political violence, at the same time, AQ Central maintains significant ability to influence attacks today.

Dr. Hoffman's visit was highly anticipated. Jay Hagen, CHDS Alum, says "After reading his book, having him speak on current events and put them into context was a rare opportunity. The occasion to interact with him in small group settings and participate with him in an academic discussion was truly unique."

# METOC TEAMS OPTIMIZE STEALTH FOR SUB-LAUNCHED COVERT OPS

By Barbara Honegger

Advances in applications of atmospheric modeling and prediction by faculty-student teams may make the difference between success and failure for submarine-launched covert operations in the Global War on Terrorism (GWOT).

Over the past two years, NPS Prof. Kenneth Davidson and a team of dedicated students have developed dynamic meteorology and oceanography (METOC) decision aides for GWOT applications. Most importantly, they have honed ways to detect and avoid or exploit critical atmospheric phenomena which can seriously impact radio, infrared and optical signals used by submarines and sub-launched SEAL teams for surveillance, imaging, target designation and route planning. One of the most important of these: a wave guide that traps radio waves called ducting.

“Accurate, near-real-time data on the presence and variation of ducting is key to denied-area littoral mission planning and execution because, depending on how high it is above the sea surface, the enemy can see you further from shore, or closer to it, than you think you can be seen,” Davidson explained.

“Submarine commanders want to launch covert ops teams as close to shore as possible while maintaining stealth, so ducting is key to determining the optimal stand-off distance. Atmospheric variables can also be exploited to optimize the propagation of sub and SEAL delivery vehicle communications signals and surveillance frequencies, so it’s vital to both seeing and not being seen.”

The development and testing of METOC modeling and prediction applications for submarines and sub-launched covert operations is a new and rapidly developing specialty.

“Two years ago, Submarine Development Squadron 12 (DEVRON 12) came to NPS and asked us to develop capabilities to transition operational METOC products for the Global War on Terrorism, because we’ve been the group that’s supported Navy infrared and radar propagation field testing for the last 15 years,” Davidson noted.

“Historically, submarines haven’t been concerned with above-the-waterline conditions, but all that changed with the Global War on Terrorism, the conversion of Tridents into special operations subs, and the emphasis on planning for denied-area littoral operations with more SEALs in surface boats,” he added. “When teams use a sub for launching missions, you need to ensure correct counter-detection procedures, so your periscope and the delivery vehicles remain unseen.”

The Navy is reconfiguring four Trident submarines to house as many as 66 special operations troops each. Vertical missile tubes are being converted into lock-in/lock-out chambers allowing SEALs to exit and re-enter the sub while submerged. These

and other new capabilities will allow covert operations closer to hostile shores in support of GWOT missions.

“SEALs have become far more METOC aware in the last three to four years,” said SEAL and former NPS defense analysis and information systems and operations student Lt. Brian Harp, who developed and field tested essential components of the NPS Atmospheric Detection and Effects Prediction Tool (ADEPT) for his master’s thesis under Davidson. Harp is now interagency coordinator for Commander, Second Fleet.

“ADEPT and other enhanced atmospheric-awareness decision tools being developed at NPS are vital to our being able to detect the occurrence of ducting, which can extend above 200 feet depending on air humidity and sea-surface temperature, and can significantly effect the propagation of EM (electromagnetic) signals,” Harp noted.

“If the duct is shallow, only radar frequencies are trapped, but if it’s deep, communications frequencies are trapped. In field tests, we’ve been able to measure the thickness of the duct with instruments called radiosondes attached to kites and weather balloons (see photo). We need to explore and test alternative ways to get this information to submarines, as, obviously, they’re not able to obtain it by this means.”

Harp’s thesis, “Small Unit Situational Awareness for Naval Special Warfare,” focused on connectivity with tactical-operations centers and Fleet Numerical Meteorological and Oceanographic Center, also in Monterey.

Current NPS information systems and operations student Lt. Angel Rodriguez, a nuclear-qualified submariner, consulted DEVRON 12 before zeroing in on a topic.

“My thesis will answer the question, ‘What’s the best METOC information package a submarine can have to optimize its ability to take advantage of atmospheric conditions?’ There’s no reason to put a \$2 billion-dollar sub in harm’s way when you can position it just far enough off shore to preserve the use of ducting effects and optimize the distance to target radars.”

Recent graduate Lt. Cmdr. Richard Murphy said, “As METOC officer now for the USS John F. Kennedy, I am teaching my Aerographer’s Mates what’s going on when they use these atmospheric prediction programs.”

Lt. Thomas Moneymaker, also a recent meteorology and physical oceanography graduate who is now METOC officer for Commander, Carrier Strike Group Ten, did his thesis on how radars searching for low-cross-section surface targets, like small combatant boats, are affected by the environment.

“This is very manpower intensive right now and needs to become more automated,” he said. “I look forward to the time when ducting data goes directly into the radar to adjust it. There’s always the threat of missing small boats, and we need to be able to find them faster.” 

# NPS HOSTS CLASSIFIED SESSIONS FOR SHOCK AND VIBRATION SYMPOSIUM

By Barbara Honegger

Everyone's heard of 'shock and awe,' but few are aware of the vitally important field of mitigating the effects of shock and vibration on ships and other military systems.

On Nov. 2, the Naval Postgraduate School hosted all classified sessions of the leading forum for scientists and engineers in the shock and vibration research community, the 77th Shock and Vibration Symposium annually organized by the Shock and Vibration Information Analysis Center (SAVIAC).

"This symposium is my top choice to attend," said Distinguished Prof. of Mechanical and Astronautical Engineering (MAE) Young Shin (left photo), a co-chair of the symposium. "It's strongly DoD relevant, with all of the U.S. services represented, and has the longest and most respected history," he said. "I always contribute to this symposium, especially now with the global war on terrorism and the need to prevent and mitigate the damage from IEDs (improvised explosive devices) and small boat attacks on our ships, like the USS Cole. My own focus is on how to design ships to protect against the effects of just such underwater explosions."

The conference highlighted NPS as a featured government agency, and NPS faculty members Shin, Associate Prof. Joshua Gordis and Assistant Research Prof. Lt. Cmdr. Jake Didoszak presented papers on underwater explosions and other topics. Shin and Gordis also gave tutorials. Their presentations were among 200 covering a wide range

of topics, including shock-ship

testing, a specialty

of the NPS MAE Department; the physics of shock and vibration; water and ground shock; air blasts; cratering; penetration weapons effects; earthquake engineering; structural dynamics; software developments; accelerometer isolation problems; and shock and vibration instrumentation and experimentation techniques.

"It's very important that NPS is able to provide the space and processing for classified sessions, which for this symposium are up to the Secret level," said Shin. "Very few facilities have this capability, which is necessary for the most critical technology and research to be presented in closed forums of cleared U.S. government and government contractor researchers. NPS also hosted the classified sessions of this symposium in 1985 and 1994.

"It's also important that the papers myself and other faculty presented are jointly published with NPS students," Shin emphasized. "In the MAE Department, we highly encourage our students to write a paper based on their thesis research for presentation at this and other conferences. And NPS' contributions, whether by faculty or students or both, are unique in that they are cutting edge and militarily relevant.

"In the shock and vibration field in the department, we do a lot of modeling and simulation," Shin explained. "It's a lot less expensive to run a ship shock modeling and simulation than to do a multi-million-dollar underwater explosion test on an actual ship, and we're now almost to the point where the results are equally reliable."



Left to right: NPS Mechanical and Astronautical Engineering Distinguished Prof. Young Shin, Assistant Research Prof. Lt. Cmdr. Jake Didoszak, Electronics Technician Tom Christian and NPS students Lt. Cmdr. Hal DuBois and Lt. j.g. Hakan Ucar of the Turkish Navy examine an imploded cylinder in the department's Shock and Vibration laboratory.

## NPS COURSES TO ADOPT SEA ENTERPRISE APPROACH

By Jacqueline Kiel

Sea Enterprise, the Navy's initiative to change business processes, is not a "flavor of the week," another program to get personnel to do the right thing right now. It addresses the business of manning, training and equipping the Navy. Sea Enterprise is here to stay and its fundamental concepts will be integrated into NPS curricula.

To demonstrate the program's importance, Vice Adm. Justin D. McCarthy, director of Material Readiness and Logistics, visited NPS to discuss Sea Enterprise and the potential role of NPS in preparing junior officers who can steer the Navy on its new business enterprise course.

McCarthy, a distinguished NPS alumnus who is the first staff officer to hold his current position, is responsible for the strategic planning for all Navy Fleet readiness and logistics programs. "Trends indicate that we cannot keep doing things the way we've been doing them," McCarthy told deans and faculty. "We have to get people to understand the urgency of change. That's the leadership challenge we continue to have to take on."

One GSBPP faculty member, Jim Suchan, professor of managerial communications and the academic associate for the MBA core has his own description of Sea Enterprise. "Sea Enterprise is an application of collaborative decision making. At the core level we're trying to get people up to speed, so that they can apply it to theories that we're teaching here," he explained.



*Vice Adm. Justin D. McCarthy speaks to NPS faculty.*

The bottom line is the most efficient use of resources. Sea Enterprise is one of three supporting processes of Sea Power 21, and in basic terms it provides a way to be fiscally more efficient and to reinvest savings for Fleet recapitalization.

GSBPP Dean Robert Beck sees the value of getting the word out to his faculty and staff. "In all my years of managing in the global environment I have never seen an organizational change of the magnitude of the implementation of the Enterprise Management Model the Navy has embarked on," Beck stated. "Dan McCarthy, who has been involved since the beginning, was the key person to help us begin the understanding of the desired outcomes and enable us to reflect changes in our curricula and research."

## NAVY PAYS ULTIMATE TRIBUTE TO NPS HALL OF FAME ALUMNUS REAR ADM. WAYNE E. MEYER

By Barbara Honegger

The Navy will pay its highest tribute to "The Father of the Aegis" and Naval Postgraduate School Hall of Fame alumnus, retired Rear Adm. Wayne E. Meyer, by naming the 100th ship to carry the weapons system he pioneered in his honor.

At a Nov. 27 ceremony at Lockheed-Martin's Surface/Sea-based Missile Defense Systems facility in Moorestown, N.J., Chief of Naval Operations Adm. Mike Mullen made the historic announcement with Meyer at his side. Officers and Sailors from the highest ranks to the deckplates joined hundreds of company employees to hear tributes to Meyer's transformative contributions to the Navy, hear his remarks and watch documentaries on his career at the ceremony celebrating the delivery of the 100th Aegis system to the Navy. In the capstone moment, Mullen presented Meyer with a graphic rendition of the new ship that will bear his name.

"I can think of no better name for a new destroyer than Wayne E. Meyer and no better tribute to the man who inspired and delivered Aegis to our fleet," said Mullen. "The namesake of a warship inspires the crew and instills its fighting spirit. That's why DDG-108 will be forever known as the United States Ship Wayne E. Meyer."

"Rear Admiral Wayne Meyer is one of the great heroes of the Navy, and it's fitting that one of the Aegis class of ships which he fathered is now being named after him," said NPS Chair of Expeditionary and Mine Warfare retired Rear Adm. Rick Williams upon hearing the news.

"This is a truly important honor, the very highest the Navy can give."

"Wayne Meyer has been honored in many ways in his career, but dedicating a ship to him is the ultimate tribute," agreed Prof. Frank Shoup, director of the NPS Meyer Institute of Systems Engineering, also named in the Aegis pioneer's honor in 2002.

"At Admiral Meyer's induction into the NPS Hall of Fame -- the ultimate tribute NPS can bestow -- I quoted the CNO as saying, 'The mission of naval education is to create an environment in which we can find and develop the next Alfred Thayer Mahan, Arleigh Burke and Wayne Meyer.' NPS is proud to host the Wayne Meyer Institute of Systems Engineering, where we take great pride in contributing to the creation of an environment which will fulfill Rear Admiral Meyer's vision."

"Throughout his career Rear Admiral Meyer has exemplified the virtues of tenacity, perseverance and 'bringing home the bacon,'" said NPS Distinguished Visiting Prof. retired Vice Adm. Tom Hughes, Graduate School of Business and Public Policy Con-



*"I can think of no better name ... and no better tribute to the man who inspired and delivered Aegis to our fleet."*

- Chief of Naval Operations Adm. Mike Mullen

From left to right, Chief of Naval Operations (CNO) Adm. Mike Mullen, retired Rear Adm. Wayne E. Meyer, Mr. Fred Moosally, president of Lockheed Martin Maritime Systems and Sensors and Rear Adm. Charles S. Hamilton, program executive officer for ships pull the plug to de-energize the 100th Aegis Weapons System to be delivered the Navy.

rad Chair for Financial Management. "Naming a ship after him will inspire our junior officers in their challenge to reach higher plateaus of learning."

"The military and the Navy prizes innovation, but what we prize most is that incredibly rare military leader who brings about truly revolutionary change," said then NPS President Adm. Richard Wells at Meyer's Hall of Fame induction ceremony. "Admiral Wayne Meyer is just such a leader, one of those incredibly rare individuals and living legends who brought revolutionary change to the Navy."

"The Aegis weapons system really changed the way we fight," Mullen recalled at the Lockheed-Martin event. "Before, you had separate radar and fire control systems and had to manually transfer data between the two. With Aegis, it's all incorporated into one and has taken the decision-making process from a matter of minutes down to just seconds."

Those are the seconds that can make the difference between life and death for Sailors at sea, as Wells noted at the Hall of Fame ceremony. "Most importantly, Admiral Meyer is recognized by the young men and women who serve on our ships every day, whose lives he helped save and continues to help save through his systems," Wells said. "That is the highest honor, to know that you've given the greatest gift to all of your shipmates, now and in the future."

At the ceremony, Meyer himself focused on the Sailors. Recalling Adm. Arleigh Burke's emphasis on integrity, he said he hoped all on the decks of his namesake will embody that critical quality. "I've tried to lead that way and I've tried to be that way, and I'm hoping the Wayne E. Meyer has the capacity also to recognize it," he said.

Noting that most ships are named in honor of those who are no longer with us, Meyer, 80, quipped, "Most ships are named after people who are dead. I hope to see this ship from commissioning through decommissioning," he said to great laughter.

And with the humility of greatness he is noted for, Meyer immediately shared his honor. "Aegis was the greatest engineering production team in Navy history," he stressed at the announcement ceremony. "Aegis has all kinds of fathers today."

In originating and developing Aegis, and throughout his career, Meyer's trademark slogan was "Giant steps lead to failure. Build a little, test a little, learn a lot." Ironically, the most notable exception to that philosophy is Meyer himself, whose truly giant steps, according to DoD Executive Learning Officer Adm. Phil Quast, "changed the face of Naval warfare and saved the surface Navy."

The USS Wayne E. Meyer will be built at Bath Iron Works and is scheduled to enter service in early 2009. 

# IRAQ RECONSTRUCTION GENERAL: “BREAK CHINA” FOR JOINTNESS

By Barbara Honegger

Reconstruction engineers are used to breaking down damaged and outdated structures before they can build new ones.

The Army general who recently oversaw all reconstruction in Iraq, Maj. Gen. William H. McCoy, had a similar message for 351 graduates at the Naval Postgraduate School’s Fall commencement ceremonies, Dec. 15.

In his keynote address, the top Army engineer called on officers from all four U.S. services and 20 allied nations to be willing to “break some China” to achieve true jointness and coalition interoperability after leaving the nation’s premier security research university.

McCoy is now commander of the U.S. Army Maneuver Support Center and commandant of the Army Engineer School at Fort Leonard Wood. As commandant of the Gulf Region Division of the Army Corps of Engineers in Baghdad from Sum-

mer 2005 through October, he oversaw nearly 4,000 construction and reconstruction projects, from repairing oil, water, electricity and sewage systems to building hundreds of schools and medical centers.

“You’ve just received a world class education from some of the best and brightest educators in the world, where you’ve learned how to think critically and creatively about how to really get ‘out of the box,’” McCoy said, “and now you need to apply those skills to doing what your nation needs most.

“And what we really need is to be better jointly, which requires real change. Though we’re the Army Corps of Engineers, we brought all four services together for reconstruction in Iraq and I’ve seen the tremendous synergy that happens when you bring in the Air Force and Navy and Marine Corps for that kind of truly joint effort. So when you get back in the field, I want you to drive that change and be ready to break china. After 20 years of talking about it, I want you to put all that creativity to work getting to the simple solution that really solves the (jointness and interoperability) problem.”

Following his keynote, McCoy remained on stage with NPS Acting President Air Force Col. David Smarsh, Dean of Students and master of ceremonies Cmdr. Debbie Monroe and the platform party to present graduate diplomas to 105 Navy, 34 Marine Corps, 30 Army, 73 Air Force, one Army Reserve and six Naval Reserve of-

ficers; 62 Department of Defense civilians; and 71 international officers from 20 allied nations and coalition partners.

Awarded were five doctoral, 328 Master of Science, 44 Master of Arts, 12 Master of Business, one executive Master of Business, one mechanical engineer, three astronautical engineer, two Bachelor of Science, and 14 dual degrees. Of the 351 who crossed the stage, 87 also received diplomas in Joint Professional Military Education. Thirty one graduates received their degrees in absentia.

Lt. Laird-Philip Ryan Lewis, who earned an astronautical engineer degree and won the prestigious Monterey Council Navy League Award for Highest Academic Achievement as well as the Astronaut Michael J. Smith and Astronaut William C. McCool Astronautics Award, was given the honor of cutting the cake with McCoy and Smarsh at the reception after the ceremony, in Herrmann Hall.

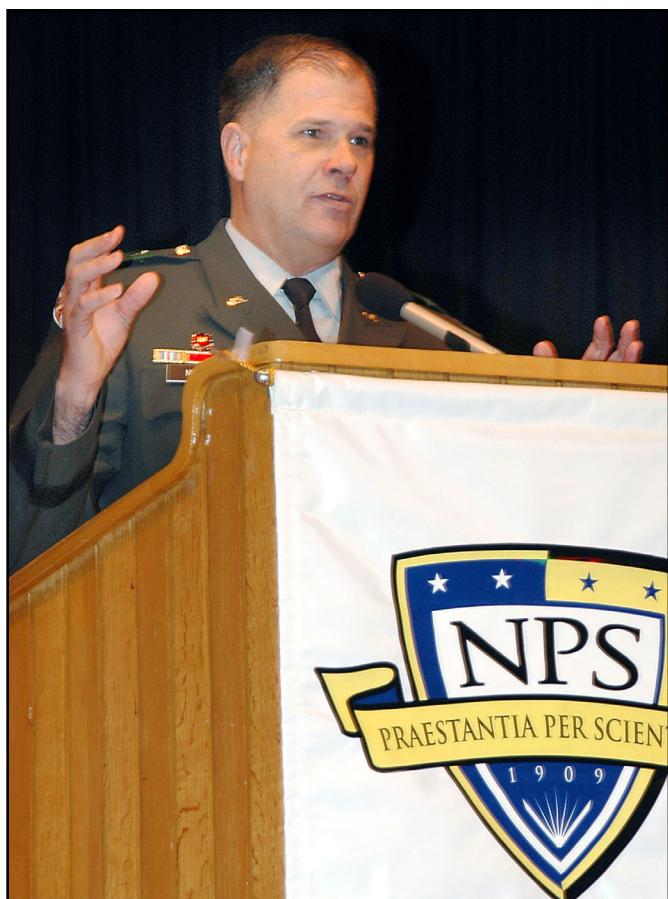
For the Lewises, the ceremony was a true family affair. After the cake cutting, the honor grad was joined by his father, 1971 NPS oceanography graduate and retired Navy Lt. Laird Lewis, and his young son Caidon. “That’s Irish for ‘spirited warrior,’” Lewis explained. “He takes after his mother, my wife Gina. By the way, that was her cheering loudly from the bleachers in King Hall. She’s in the Air Force Reserves at Travis Air Force Base and drove over two hours just to be able to see me walk across the stage, and then had to drive right back.”

When asked what he valued most about his NPS experience, one aspect stood out.

“The greatest value of NPS for me has been the opportunity to receive graduate-level education and to mix with officers from other services and other countries,” Lewis said.

“NPS is one of the grounds for getting to where Gen. McCoy says we need to go, to true jointness, because it’s already so joint and multi-cultural.”

*Army Maj. Gen. William H. McCoy makes a point during his keynote address at Fall 2006 graduation ceremonies. McCoy currently commands the U.S. Army Maneuver Support Center and Army Engineer School.*





(Above) Top Fall 2006 graduate Lt. Laird-Philip Lewis, right, with his son Caidon (Irish for "spirited warrior") and NPS alum (1971, oceanography) father, retired Navy Lt. Laird Lewis, at the Fall 2006 graduation reception. Lewis's wife Gina drove all the way from Travis Air Force Base, where she serves in the Air Force Reserves, "just to see me walk across the stage," he noted with pride, "before having to turn around and drive right back. That loud cheering that filled the auditorium you heard when I got my diploma – that was her."

(Right) Ph. D. students glance through the commencement program prior to receiving their diplomas.



New defense analysis graduate Shah M. Nazmul Karim of the Bangladesh Navy is the first military officer from his country to attend the Naval Postgraduate School. He was at the reception with his wife, Mehtab Jabreen, who served as the family chair of the International Executive Committee during their 18-months at the university.

"I hope many more officers from my country will come to NPS," Nazmul Karim said. "Coming here changed my vision about everything – about the U.S., about U.S. students, about this country – all of it positive. This is invaluable for both of our countries."

"The academic standards here are so high that the curriculum forces you to learn so much," he added. "I'm in special operations in our Navy, with a background in intelligence. What I've learned in my classes and thesis research here about terrorist financing and the terrorists' culture and motives will enable me to give back so much more to my country. After NPS, I hope to have a position in the counterterrorism wing of our joint forces intelligence."

"The Naval Postgraduate School is an extremely valuable asset to the national defense, because it's so important that our officers be as skilled as possible," McCoy said after the ceremony. "It's such a great value, I would have liked to have come here myself."

# PEARL HARBOR REMEMBRANCE

By Jacqueline Kiel

A poignant commemoration was held in Monterey, Calif., in remembrance of the attack on Pearl Harbor on the 65th anniversary of that fateful day, with many distinguished guests in attendance.

The event was coordinated by the Monterey Bay Commandery of the Naval Order of the United States and the Monterey Peninsula Council of the Navy League of the United States in conjunction with the Military Officer Association of America.

The guest speaker at the commemoration was retired Cmdr. Allen Smith who saw duty on board the USS Ralph Talbot (DD 390) as a Signalman Second Class, and who witnessed the beginning of U.S. involvement in World War II.

Smith had two jobs, one was to review message traffic and the other was to brief the captain. He had figured it would be a quiet Sunday morning. At the time, he was waiting for morning colors. "To watch flags go up at the stern (on the various ships) together precisely at 0800 is something to watch," he said.

Standing by just prior to 8 a.m. Smith's fellow signalman told him to "put the glass on Schofield Barracks," which is located just past Kolekole Pass. "There were Japanese planes all over, and I could see smoke and fire," he recalled.

Smith saw three planes coming toward the harbor. "I could see the prop wash," he said. One was quite close. "I could have hit it with a baseball bat," he said.

Shortly thereafter, morning colors began and the Star Spangled Banner could be heard through the noise of the attack. "This was the one time in history that war was begun by the playing of the national anthem," Smith emphasized.

"It all happened in about three minutes," Smith explained. He called it humiliating. "I try to forget it."

Smith remembers seeing only one American airplane, and that was a B-17 that was crashing into a cane field.

However, Smith is resolute about correcting what others called chaos. "You hear about chaos, but nothing could be further from the truth" Smith explained adamantly. "Those kids were highly trained. They didn't stand around waiting for someone to tell them what to do. The answer is there was no chaos."

The Talbot was the second most decorated ship of World War II, just behind USS Enterprise (CV 6).

For a great deal of time, Smith wouldn't talk about Pearl Harbor. One day he heard a child say, "We're not going to forget Pearl Harbor. We're going to remember it, Grandpa." This changed Smith's mind and he began to tell his story, one that is well worth listening to.

Smith enlisted in the Navy in 1937, beginning his service as a signalman in Destroyer Battle. Later he attended flight school at Naval Air Station Pensacola and graduated as an enlisted pilot. Following his commission, Smith served another 28 years in the Navy, eventually serving a total of 34 years.

The event included a dinner and patriotic music presented by the Defense Language Institute choir, who also sang the national anthem. Colors were presented by the Monterey County division of the Naval Sea Corps and the Chester Puller Division of the Naval Sea Cadet Corps.

One special guest was Carolyn Standley whose naval officer father was stationed at Ford Island during the time. She remembers wanting to go to church that Sunday morning, because she wanted to receive a pin for Sunday school attendance. When she and her family arrived at the church they saw soldiers all around. "It was like you disturbed an ant hill," she said.

Standley and her family were told that Pearl Harbor was under attack, and to go home and stay there. She never did receive her pin, but that was rectified, as she was presented a pin at the commemoration ceremony.

Another special attendee who was honored was Charlotte Minor, who lived in Hawaii while her husband served aboard the USS Utah (AG 16). Ultimately Minor's husband was put in charge of recovering bodies from the sunken ships, including the Utah.

Also present was retired Lt. Cmdr. Nona Cheatham, who lived on the island of Kauai. Currently an active member of the Navy League, she remembers seeing cane fields burning as a result of shelling by Japanese submarines.

The commemoration was also attended by Grover Carver, a crew member of the USS Indianapolis (CA 35), who was one of the 316 survivors of a crew of nearly 1200 who were lost at sea following a Japanese submarine attack.

Dean of GSBPP Robert Beck was also in the audience, as was retired Vice Adm. Tom Hughes, who holds the NPS Conrad Chair for financial management and Rear Adm. Ray Jones, who holds the NPS chair for undersea warfare.

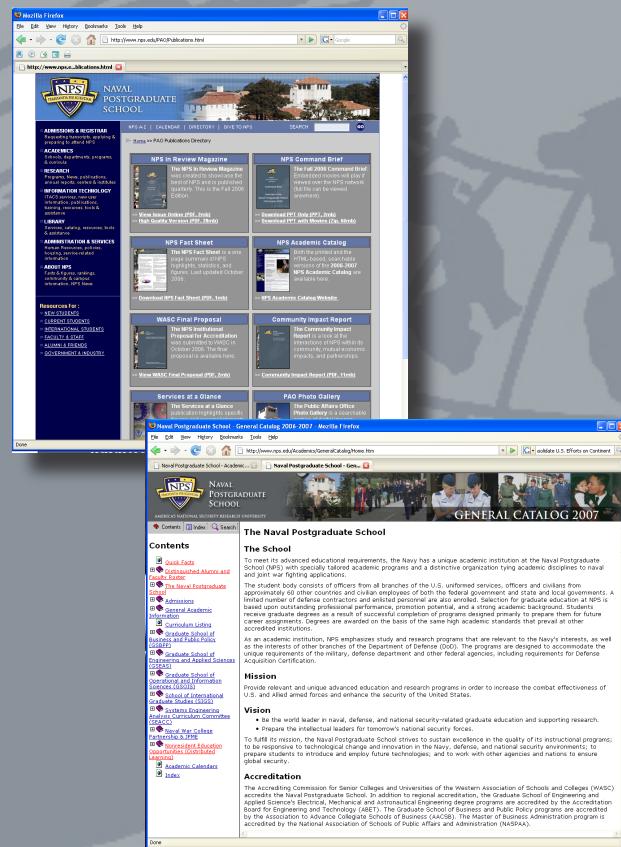


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