



NPS IN THE NEWS

Weekly Media Report – Mar 21- Apr 5, 2023

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SPACE SUMMIT:

[Naval Space Summit Brings SECNAV, Other Senior Leaders To NPS](#)

(Navy.mil 2 Apr 23) ... Lt. Cmdr. Edward Early

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[Seaside High School Hosts Robotics Competition This Weekend](#)

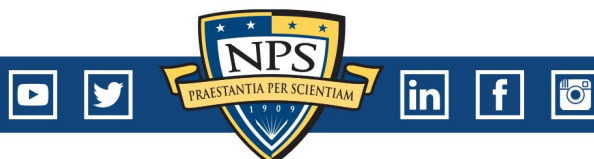
(Monterey Herald 27 Mar 23) ... Molly Gibbs

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[NIWC Pacific and Its Partners Are Building a Quantum Navy](#)

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Naval Information Warfare Center (NIWC) Pacific's mission touches cyber, sea, space — and, since 2000, the subatomic realm. We make sense of the first three through programming rules and various fields of classical mechanics; the fourth is something else entirely... Ptasinski continues to organize training opportunities for scientists at the Center and across the country. Soon NIWC Pacific will host a professor from the **Naval Postgraduate School** to teach a course on the fundamentals of quantum mechanics, which will also be open to the Defense Intelligence Agency.

[Charting the Navy's Future Course in Advanced Space Education](#)

(NPS.edu 30 Mar 23) ... NPS Public Affairs

(DVIDS.edu 30 Mar 23) ... NPS Public Affairs

In today's era of strategic competition, naval and joint operations depend more than ever on the space domain. The Naval Postgraduate School (NPS) and its Space Systems Academic Group (SSAG) provide graduate space education and research opportunities to naval officers and the joint force, helping to develop space-relevant warfighting competencies and qualified operators who will continue to enable maritime dominance and national defense.

[SEA-AIR-SPACE NEWS: Joint Warfighting Concept 3.0 'Definitely Coming,' Official Says](#)

(National Defense 5 Apr 23) ... Laura Heckmann

The Defense Department's most recent iteration of a Joint Warfighting Concept was reviewed Apr. 4 by the secretary of defense and chairman of the Joint Chiefs of Staff, according to Heidi Shyu, undersecretary of defense for research and engineering... A modernization effort of the Navy's learning centers — such as the Naval War College, the Naval Academy and **Naval Postgraduate School** — seeks to align their curriculums and research to deliver warfighting advantage, Hughes said. "This is education to win."... Marine Corps Captains Ben Cohen and John Schmaltz, while students at the **Naval Postgraduate School** (NPS), became interested in the defense applications of civilian hybrid aircraft like Airlander, the highly efficient aircraft currently under development by HAV, as a disruptive technology, and were introduced to HAV through the NPS alumni network. Their thesis, which serves as a guide to interaction and engagement for Department of Defense personnel to navigate the innovation ecosystem while assessing commercially developed, large-capacity transportation platforms, has been instrumental in the current work with HAV.

RESEARCH:

[NPS Hosts JIFX 23-2 With Focus on Innovation, Collaboration](#)

(Navy.mil 21 Mar 23) ... MC2 Lenny Weston

(NPS.edu 21 Mar 23) ... MC2 Lenny Weston

The Naval Postgraduate School (NPS) conducted the latest iteration of its quarterly Joint Interagency Field Experimentation (JIFX) program from Feb. 6-10 at the NPS Field Lab at Camp Roberts, Calif., with a focus on human performance monitoring and situational awareness.

[US DoD Operational Energy Office Announces Funding for Ground-Breaking Hybrid Aircraft Project](#)

(Hybrid Air Vehicles 6 Apr 23)

Hybrid Air Vehicles (HAV) in collaboration with U.S. defense personnel is set to revolutionize maritime logistics and communication, transforming the way the U.S. Navy and Marine Corps conduct operations across the Pacific and other contested and distributed environments.

FACULTY:

[Sea Power and the Operational Level of War: Linking Means with Ends](#)

(USNI 3 Apr 23) ... Captain Jeffrey E. Kline, U.S. Navy (Retired)

A fleet's composition (types of platforms, weapons, and technology) and capacity (numbers of ships, aircraft, weapons, sailors, and Marines) enable the choices for its employment and the strategic impacts it can achieve.



ALUMNI:

[Rear Adm. James Downey Tapped by Biden to Lead Naval Sea Systems Command](#)

(Executive Gov 23 Mar 23) ... Regina Garcia

Rear Adm. James Downey, program executive officer for aircraft carriers at the U.S. Navy since June 2019, has been nominated by President Biden to serve as the next commander of Naval Sea Systems Command, Defense Secretary Lloyd Austin announced Wednesday...Commissioned in 1987, Downey holds a master's degree in computer science from **Naval Postgraduate School** in Monterey, California.

[Women's History Month | Edwards' Flight Test Engineer Aims to Inspire](#)

(AeroTech News 27 Mar 23) ... Larry Grooms

Girls from elementary, middle and high schools possibly unaware of the heroic contributions made by women in the advancement of aeronautics, have a new best friend and role model who lives just around the Aerospace Valley corner... No, she didn't start out to be an engineer. She first thought of becoming a patents attorney, but an internship in a law office changed her mind. Drawn to mechanical engineering, she earned a BS degree at Cal Poly University San Luis Obispo, and a MS degree from the **Naval Postgraduate School** in Monterey. A civilian employee of the Defense Department, she wasn't in the Air Force. She well remembers her first flight in 2014, "and I was airsick."

[Resolve Marine Forms Government Relations Department](#)

(Marine Link 27 Mar 23)

Marine salvage, rescue, emergency response and specialized services company Resolve Marine announced the formation of a government relations department...Baumann brings decades of experience in both the naval and maritime industries. Having served as naval diving officer and the U.S. Navy's Director of Ocean Engineering, Supervisor of Salvage and Diving, he led numerous national and international maritime salvage disaster responses during his military career. After retiring from the military, he joined CACI Inc. as a Senior Program Manager in the Training and Warfighter Readiness group, leading their Foreign Military Sales. He then joined Thales Defense and Security as Director of Program Management for Systems Solutions where he oversaw the management and manufacture of domestic and international defense products. Baumann graduated from Clarkson University with a Bachelor of Science degree in chemical engineering and holds a Master of Science degree in mechanical engineering from the **Naval Postgraduate School**.

[USS Shoup Holds Change of Command](#)

(DVIDS 29 Mar 23) ... Ensign Jayla Darby

The Arleigh Burke-class destroyer USS Shoup (DDG 86) held a change of command ceremony, Nov. 23.... Ashore he served on the SECNAV's Staff, Surface Warfare Officer's School (N-72), and was a student at the **Naval Postgraduate School** earning a Master of Business in Financial Management. "The Officers and Crew of Shoup are excited to be in Japan; for many this is their first time out of the United States. They have worked hard through the ship's two year modernization and follow-on training to get to this point. They are ready to deploy today -- at the peak of warfighting readiness, and could plug into any assigned mission in a matter of hours."

[Artemis II Mission Astronauts Have Central Coast Connection](#)

(KSBW 5 Apr 23) ... Paul Dudley

NASA has announced the crew for the upcoming Artemis II mission and KSBW got a chance to talk to one of the astronauts with ties to the Central Coast...When Artemis II takes off for their historic lunar fly-by in November 2024, the Orion Spacecraft will be piloted by Victor Glover, a graduate of California Polytechnic State University, San Luis Obispo and the **Naval Postgraduate School**.

UPCOMING NEWS & EVENTS:

May 1 - 5: [JIFX 23-3](#)

May 10 -11: [NPS 20th Annual Acquisition Research Symposium](#)



SPACE SUMMIT:

Naval Space Summit Brings SECNAV, Other Senior Leaders To NPS

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As global dependence on space-based technology continues to grow, senior leaders from throughout the Department of Defense joined Secretary of the Navy Carlos Del Toro at the Naval Postgraduate School (NPS) from March 29-31 to examine the challenges, needs and opportunities of space operations unique to the maritime domain.

The inaugural Naval Space Summit at NPS featured a series of classified discussions involving top representatives from the DOD's major stakeholders in the space domain. The main goals of the summit were to foster greater understanding about the reliance of the Navy and Marine Corps on existing space capabilities, to acknowledge the issues faced in adapting to and incorporating rapid technological changes, and to identify the challenges involved in enabling future naval and joint warfare and protecting the United States and its allies.

"We are here today because in the years to come, we will all face new challenges, and we also stand to benefit from new opportunities in this domain," said Del Toro. "When thinking strategically about the future, it's often a good idea to take a step back and recall where we came from, and how we actually got here. We are 'here' because of the Department of the Navy's mission: to sustain global presence for projection of sea power."

Del Toro was joined at NPS by a number of senior Navy and Marine Corps military and civilian leaders, including Under Secretary of the Navy Erik Raven, Commandant of the Marine Corps Gen. David Berger, Vice Chief of Naval Operations Adm. Lisa Franchetti, and Adm. Samuel Paparo, Commander, U.S. Pacific Fleet.

Also attending the summit were the commander of U.S. Space Command (SPACECOM), U.S. Army Gen. James Dickinson, and the Vice Chief of Space Operations, U.S. Space Force Gen. David Thompson.

"It is important that we come together and have these vital conversations to create shared understanding and strengthen the relationships between the Navy, Marine Corps, Space Force, and Space Command. Space capabilities and the expertise provided by our Maritime Space Officers are essential contributors to the effectiveness our Navy and broader joint force," said Franchetti.

NPS was chosen as the site for the summit due to its longstanding role in educating and empowering students in space systems operations and engineering, most notably through its Space Systems Academic Group (SSAG), established in 1982.

Through the years, hundreds of NPS students – including Del Toro, a 1989 NPS graduate – have obtained Master of Science degrees in space systems engineering and related space-based disciplines. NPS contributes to manned and unmanned space missions, including satellite launches and payloads with military applications. Additionally, 44 NPS graduates have flown in space as NASA astronauts, more than any other graduate school in the United States.

"The Navy's education framework identifies 13 individual competencies that are critical to achieving net warfighting advantage," said retired Vice Adm. Ann E. Rondeau, president of NPS. "Space crosses all of them and is essential to preparing both the future joint force commanders and service leaders able to develop and generate a maritime force capable of dominance in the space domain and ensure freedom of action when that dominance is challenged."

During the summit, leaders were briefed on current space capabilities and operations within the Navy, Marine Corps and Space Force, as well as SPACECOM. In addition, NPS students from SSAG were on hand to discuss their current space-based research, including the use of commercial satellite technology to help decision-makers communicate with operational forces in the field.

"The fact that this unique event was held at NPS only solidifies how important innovation, education, and collaboration in space are in the mind of Navy and DOD leaders," said Lt. Cmdr. Hans Lauzen, one of the NPS students who briefed senior leaders on their research. "In the long run, I believe the Naval



Space Summit will provide the ideal forum for cross-talk, problem-solving, and cross-domain awareness that will enhance the Navy's ability to maintain and increase our advantage in space."

Senior leaders also had the opportunity to meet with Navy officers from the Maritime Space Officer (MSO) community. The MSO designator was launched in 2021 to help the Navy fill key space-oriented billets at fleet and component commands within Maritime Operations Centers (MOC), Warfighting Development Centers (WDC), SPACECOM, and the intelligence community. MSOs, who are managed by the Navy's Information Warfare (IW) community, also support the IW type command.

"We must think about the exquisite expertise we must develop as a force in the Maritime Space Officer cadre," Rondeau said. "We must also consider the knowledge and skills required across all levels of the total force to ensure we preserve our warfighting advantage by enabling leaders at all levels the ability to discern and decide force employment that understands space as an integrated enabling capability or as an independent battlespace. No domain more than space operations highlights the essential blend of both the operational art of war as well as the science and technology of warfare."

Del Toro and other attendees agreed that the choice of NPS to host the Naval Space Summit produced a timely and unique forum for relevant discussions about the present and future of Navy and Marine Corps operations in the space domain.

"As someone who knows the value of the NPS Space Systems Academic Group firsthand, I can't think of a better venue for these important conversations," Del Toro said. "Bringing the first Naval Space Summit to NPS highlights the deep insights that this institution provides to the Navy and Marine Corps. It also shows that Navy leadership has every confidence in the direction that NPS is going as the home of graduate education for the Department of the Navy."

The Naval Postgraduate School provides defense-focused graduate education, including classified studies and interdisciplinary research, to advance the operational effectiveness, technological leadership and warfighting advantage of the Naval service. For additional information, visit NPS online at <http://www.nps.edu>.

[Naval Space Summit Brings SECNAV, Other Senior Leaders To NPS > United States Navy > News Stories](#)

[DVIDS - News - Naval Space Summit Brings SECNAV, Other Senior Leaders To NPS \(dvidshub.net\)](#)

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GRADUATION:

Chief of Navy Reserve Encourages NPS Winter Quarter Graduates

(Navy.mil 21 Mar 23) ... MC2 James Norket

(NPS.edu 21 Mar 23) ... MC2 James Norket

The Naval Postgraduate School (NPS) honored its 2023 Winter Quarter graduates during a commencement ceremony held in King Hall Auditorium, March 24.

NPS alumnus Vice Adm. John Mustin, Chief of Navy Reserve, served as the keynote speaker for the event recognizing 218 graduates, including 19 international students from 15 countries.

"This is a momentous day for all of you, it's a proud day," said Mustin, who graduated from NPS in 1996 with a Master of Science degree in Operations Research. "You've worked hard and you've likely overcome many obstacles, not the least of which were academic. The fact you're here today celebrating this moment is a remarkable achievement in itself.

"But make no mistake – your real work starts today."

The president of NPS, retired Vice Adm. Ann E. Rondeau, opened the ceremony by reminding the audience of other prestigious graduates who also walked the halls of NPS – including Mustin.



“Graduates, this is your day,” Rondeau said. “This is about you – it’s also about the alumni whose spirits and whose legacies and whose performance came before you.”

In his remarks, Mustin acknowledged the challenges that will be faced by NPS’ newest graduates in today’s constantly evolving global climate.

“Let’s be clear – based on historical norms, today’s security environment is increasingly competitive, it’s faster paced, it’s more complex than even five short years ago,” Mustin said. “And the things you studied here are even more in demand, more important, and a more critical path to global stability than ever.

“As you rejoin your operational forces, the nation is depending on you to apply what you learned here to immediately contribute and deliver integrated all-domain military power, and to maintain a clear-eyed resolve to compete, deter, and decisively win today.”

Mustin, who also holds a Master of Business Administration from Babson College, also encouraged the graduates to continue their education after leaving Monterey.

“While this may be the last thing you want to hear on graduation day, I will offer that you must never stop learning,” he noted. “Commit yourself to applying what you learned in the classrooms and lecture halls of the Naval Postgraduate School, commit yourselves to mastering your tradecraft ... but also commit yourselves to the relentless pursuit of lifelong learning.”

In addition to the commencement festivities, the ceremony also featured the induction of another NPS alumnus, Chilean Navy Vice Adm. Alberto Soto, as the 27th member of the NPS Hall of Fame.

Soto, who earned his Master of Science degree in Operations Research from NPS in 2000, most recently served as the Chilean Navy’s Commander of Naval Operations. Soto’s leadership helped guide the Chilean Navy’s participation in several fleet exercises, events and operations, demonstrating partnership and collaboration between Chile and the U.S. Navy.

Soto was presented with his NPS Hall of Fame honors by Rondeau and Rear Adm. James A. Aiken, Commander, U.S. Naval Forces Southern Command and Commander, U.S. Fourth Fleet.

“I don’t consider this award as my award,” said Soto. This is an award for my country and especially for my navy. I humbly thank you for this great honor and responsibility.”

The NPS Hall of Fame was established in 2001 to honor NPS’ most distinguished alumni and friends who, through the attainment of positions at the highest levels of public service, have made the greatest contributions to society, their nations and to the institution.

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EDUCATION:

Students Practice Diplomacy, Interpretation Skills in Realistic International Crisis Simulation

(Middlebury 21 Mar 23) ... Jason Warburg

Middlebury Institute students were recently joined by students and faculty from San José State University, the Defense Language Institute, and the **Naval Postgraduate School** for a weekend-long simulation designed to give them the opportunity to apply diplomacy best practices to a hypothetical international crisis.

Thirty-five Institute students from seven different academic programs participated in the International Strategic Crisis Negotiation Exercise (ISCNE), which was designed and led by faculty members of the Army War College and organized by a planning committee consisting of Toni Thomas (associate dean



for academic operations), the Institute's resident Army War College Fellow COL Ken McGraw, and Professor Sharad Joshi of the MA in Nonproliferation and Terrorism Studies program.

"Participants have the opportunity to gain greater knowledge and understanding of regional situation analysis, strategic thinking, negotiation best practices, time management, leadership, decision making, and teamwork," said McGraw. "The exercise also emphasizes more nuanced skills such as critical reasoning, empathy, cooperation, and creativity. What I believe resonates most with participants is the realization that relationships are essential in diplomacy because they provide a foundation of trust, respect, and communication between two parties."

This year's ISCNE scenario focused on a crisis in the Arctic Circle with both environmental and geopolitical implications. Student participants were organized into country teams of five to six members, each representing a nation with a stake in the issues at hand. Each delegation met to strategize based on the scenario parameters, and the representatives of the delegations negotiated with their counterparts from other nations toward a mutually agreeable resolution. Multiple strategy and negotiation sessions played out over the three-day exercise, with initial briefings supplemented by new information—and twists—as the exercise progressed.

Hands-On Practice for Careers in International Policy and Diplomacy

"ISCNE provides a practical, hands-on, problem-solving experience for students," said Joshi. "It builds on the rich foundation of academic courses at the Institute on policy studies, security, area studies, diplomacy, trade, environmental policy, and language interpretation, among other subjects. Students take their academic and policy training and apply it to diplomatic negotiations in a crisis scenario, helping them to hit the ground running as they go on to meaningful careers in complex international policy and global security arenas."

Thomas agrees. "Student participants build skills that will be directly relevant to the career paths they are pursuing, while learning and practicing the key elements of successful negotiations. The scenarios are all real-world examples of major conflicts. The students not only learn about what actually happened, but have the chance to think through other ways that the negotiation may have been approached to achieve different—perhaps better—outcomes."

Students take their academic and policy training and apply it to diplomatic negotiations in a crisis scenario, helping them to hit the ground running as they go on to meaningful careers in complex international policy and global security arenas.

— Professor Sharad Joshi

In previous years, ISCNE scenarios have included crises in Kashmir, the South China Sea, the Korean Peninsula, and South Sudan. This is the eighth year the Institute has hosted ISCNE on campus since the exercise first came to Monterey in spring 2016, organized by 2015–16 Army War College Fellow LTC Christopher Wendland.

Joshi has helped to plan six of the eight ISCNEs held at MIIS to date. "Students learn the basics of diplomacy in the bilateral and multilateral setting, the very language of diplomatic communication, crisis negotiations, and international law. They refine their public speaking, research, negotiation, and listening skills and must learn to work as a team, building friendships and professional bonds."

Adds Thomas, "Our version of ISCNE has been unique in two respects: we invite regional universities to participate, and we incorporate our translation and interpretation programs." Including student interpreters in the proceedings provides valuable experience for both the interpreters themselves and the delegation members who gain experience working with interpreters in a simulated diplomatic setting.

Collaboration with Local Military Institutions Expands Offerings for Students

The ISCNE's return to Monterey continues the long history of cooperation and collaboration between the Middlebury Institute's academic programs and its neighbors, the Defense Language Institute (DLI) and the **Naval Postgraduate School (NPS)**. The Middlebury Institute (then known as the Monterey Institute of Foreign Studies) was founded in 1955 by three former DLI faculty members. Today DLI students may also take language courses at MIIS, and DLI faculty may take courses in the Institute's MA in Teaching Foreign Language program.



The Middlebury Institute's reciprocal exchange agreement with NPS has brought 45 students over from two NPS departments: national security affairs and defense analysis, with the same number going to NPS from the Institute.

"Our students love taking classes on a military installation and mixing with career military professionals," says Jill Stoffers, senior director of institutional partnerships. "And having NPS and DLI students on our campus often broadens and enriches the conversations our students and faculty have in the classroom."

In addition, during a typical semester the Institute's student body includes 15 to 20 full-time students who are veterans of the U.S. military and several more who are considered "military affiliated" (active duty, dependents of active duty, reserves, etc.).

McGraw says that the most valuable part of his experience as an Army War College Fellow at MIIS has been "the international perspectives that offer me a wide range of context on global issues, including diplomacy, environmental policy, international trade, nonproliferation, and conflict resolution." He also appreciates the focus on language and what he describes as the "practitioner approach to learning, emphasizing practical, real-world experiences that encourage students to seek internships, research projects, and other hands-on experiences in their field of study."

Still, he says, "the highlight of my time here has been getting to know students and faculty. The students have welcomed me, and helped me expand my diversity of thought, particularly on environmental issues and concerns. The faculty has also been exceptionally welcoming of me and has empowered me to explore my intellectual curiosity in class."

[Students Practice Diplomacy, Interpretation Skills in Realistic International Crisis Simulation | Middlebury Institute of International Studies at Monterey](#)

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Seaside High School Hosts Robotics Competition This Weekend

(Monterey Herald 27 Mar 23) ... Molly Gibbs

Seaside High School will host the Monterey Bay Regional robotics competition this weekend.

The 2023 FIRST Robotics Competition is a competitive event that challenges students to design, build and program a robot to compete. The competition features strict rules, limited resources and time constraints to add to the challenge.

Students from Monterey and Seaside high schools will have teams competing against 34 other teams from schools in central and northern California. Monterey's team consists of 15 students – from freshman to seniors – and Seaside's team consists of 17 students.

The Monterey Bay Regional is the fifth competition event of the season, which began in January.

Students have competed in preseason from August 2022 through December 2022. During preseason, students use robots from the previous years to brainstorm new designs, programming and models.

"Our teams are currently designing and building their robots and testing them under authentic conditions," said Robin Coyne, a teacher and robotics coach at Monterey High School. "Robotics extends beyond building robots. This program helps students develop leadership skills and further prepare them for their future careers. The sport enhances collaboration, critical thinking, shared creativity, and the ability to go through a design process together to develop solutions."

The event features community collaboration. Monterey and Seaside high schools have received mentorship and support from the **Naval Postgraduate School** and professional metal specialists in the area who want to support the students in the challenge.

Practice matches begin Thursday from noon-6:30 p.m. Opening ceremonies start at 8:30 a.m. Friday and the competition will run through Saturday at 4:30 p.m.

[Seaside High School hosts robotics competition this weekend – Monterey Herald](#)

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U.S. Sixth Fleet Develops Wargaming Capability

(Navy.mil 29 Mar 23) ... MC2 Jasmine Suarez

The U.S. **Naval Post Graduate School** (NPS) conducted a two-week Basic Analytic Wargaming Course (BAWC) for U.S. Sixth Fleet on Naval Support Activity (NSA) Naples, Italy, Feb. 27-March 10, 2023.

The Sixth Fleet wargaming department was developed last year under the deliberate plans directorate and is the first numbered fleet, in recent history, to have a resident capability.

Wargaming is a time-honored tradition in the U.S. Navy, going back to the late 1880s, credited with shaping the naval strategy that led to victory in the Pacific during World War II. They consist of three elements: decisions, competition or conflict, and the consequences of those decisions. Used to derive information that assists military commanders in reaching decisions and developing strategy, the exercise provides a safe, controlled environment for decision-makers to learn the consequences of their decisions.

“This course was designed to train a cadre of personnel,” said Charles Leonard, an operational planner and wargaming subject matter expert at Sixth Fleet. “By the end of the 10-day course, everyone who participated should be able to design, develop, conduct, and analyze future wargames in support of Sixth Fleet.”

According to Dr. Jeff Appleget (Col. retired), director of the Naval Warfare Studies Institute Wargaming Center at NPS, “Wargaming is not a pure science, or exclusively an art – it is a craft that should be continuously practiced.”

“We were taught that wargaming is a craft,” Leonard said. “The only way to perfect your craft and become a practitioner of wargaming is with hands on experience and continued learning.”

Leonard was one of 18 participants in the BAWC and he said, “I believe the course was successful. I think it gave us the knowledge and skills needed to jump into a wargaming exercise or into a real world event.”

David Watkins, Naval Forces Europe-Naval Forces Africa, U.S. Sixth Fleet Deputy Director of Deliberate Plans & Wargaming said, “Wargaming provides decision making experience and enables you to gather information on the situation that is wargamed. Wargaming does not provide validation to a course of action, but it does provide understanding to the effects of decisions.”

As for the future of this capability within Sixth Fleet, Watkins said, “We are in the initial stages of developing this capability. We plan to provide additional advanced training to our cadre in order to provide an advanced wargaming capability for our leadership and staff.”

And for Watkins and his team, their goal is to make an impact with their wargaming capability.

“Our goal is to be the premier maritime wargaming Center of Excellence in this theater and support U.S. and NATO decision makers and maritime planning efforts,” said Watkins.

To find out more information about wargaming, visit the NPS website and the U.S. Naval War College website.

For more than 80 years, U.S. Naval Forces Europe-U.S. Naval Forces Africa (NAVEUR-NAVAF) has forged strategic relationships with allies and partners, leveraging a foundation of shared values to preserve security and stability.

Headquartered in Naples, Italy, NAVEUR-NAVAF operates U.S. naval forces in the U.S. European Command (USEUCOM) and U.S. Africa Command (USAFRICOM) areas of responsibility. U.S. Sixth Fleet is permanently assigned to NAVEUR-NAVAF, and employs maritime forces through the full spectrum of joint and naval operations.

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NIWC Pacific and Its Partners Are Building a Quantum Navy

(DVIDS 29 Mar 23) ... Maison Piedfort

Naval Information Warfare Center (NIWC) Pacific's mission touches cyber, sea, space — and, since 2000, the subatomic realm. We make sense of the first three through programming rules and various fields of classical mechanics; the fourth is something else entirely.

For one, classical physics can predict, with simple mathematics, how an object will move and where it will be at any given point in time and space. How objects interact with each other and their environments follow laws we first encounter in high school science textbooks.

What happens in minuscule realms isn't so easily explained. At the level of atoms and their parts, measuring position and momentum simultaneously yields only probability. Knowing a particle's exact state is a zero-sum game in which classical notions of determinism don't apply: the more certain we are about its momentum, the less certain we are about where it will be.

We're not exactly sure what it will be, either. That particle could be both an electron and a wave of energy, existing in multiple states at once. When we observe it, we force a "quantum choice," and the particle collapses from its state of superposition into one of its possible forms.

Just as subatomic matter can exist two ways at once, it marks a strange intersection of order and disorder.

While it's hard to hammer down exactly what or where a particle will be, energy at the subatomic level moves only in discrete, concerted packets, or quanta, defying classical notions about continuous transfer of energy.

Then there's quantum entanglement, what Albert Einstein called "spooky action at a distance." It's often described as two dice that always show the same number when rolled, together or even miles apart. When an entangled particle is measured, its partner instantaneously matches the measured particle's state.

For Joanna Ptasinski, head of NIWC Pacific's Cryogenic Electronics and Quantum Research branch, this strangeness is what defines quantum: it's a complex system of matter or information where these phenomena — which can't be explained by classical notions of how the world works — are possible.

"Quantum is quirky," said Ptasinski, who holds a doctorate in electrical engineering. "Its essence is superposition and entanglement. We're researching the power — the naval applications — lurking behind this weirdness."

Heisenberg's Uncertainty Principle, superposition, and entanglement are all part of a growing mathematical framework for subatomic phenomena called quantum mechanics, and it raises questions about the nature of reality as we know it. What can we learn from entangled particles for which space — even vast expanses of it — is no obstacle? If matter exists in many forms at once until we observe it, what role does observation play in building the world around us? And how do we harness a domain defined by potentiality?

This is what NIWC Pacific scientists explore in its labs, with its partners, and on the National Science & Technology Council's Subcommittee on Quantum Information Science. With quantum experts from across the nation, they ask: What will harnessing quantum phenomena mean for the Navy and the warfighter?

Answers fall in a few categories: sensing, computing, communications, and materials, and the Center has projects to show for each. Answers outside of practical applications have to do with building a quantum Navy: attracting dedicated talent, giving and receiving training, and contributing to national discussions about the future of quantum technology.

All answers point to a vision of a Navy equipped with even more secure communications networks, more advanced sensors, and the faster threat detection and response that comes with them. It's a vision of improved navigation, smarter autonomous systems, and more accurate modeling and simulation. It's unprecedented decision advantage at quantum speed in an increasingly uncertain world.

To Ptasinski, it's more advanced supporting technologies. "That's what is needed in order for the field to mature," she said. "How about a dilution fridge that isn't half the size of this office? Why not a small dilution fridge? And is that even possible?"



The dilution fridge provides the low temperatures needed to measure quantum systems with accuracy. NIWC Pacific's dilution fridge functions in the tens of millikelvin — colder than outer space — and is one of only two across all warfare centers and the Naval Research Laboratory.

With a dilution fridge, researchers can measure and manipulate qubits, or bits of quantum information. Unlike classical bits, qubits can be in superposition of both binary values 0 and 1 at the same time. That superposition is the key to quantum computing's exponential power.

Measuring the path of a qubit through steps in a quantum system is fundamental for quantum research; it teaches us how quantum systems work. And the more we know about how they work, the more we can use them to perform powerful computations.

Ptasinski explains this quantum walk by drawing what looks like a Pachinko machine on the back of this story draft. Drop a particle in at the top and use a traditional computer to figure out in which slot it will end up at the bottom, and you're looking at a major computational task. With just 10 entangled photons and eight layers of potential paths, knowing the probability distributions of where each particle will end up would require more circuits than there are stars in the universe.

Enter quantum. Run the same task on a quantum computer, and a qubit's 0-and-1 superposition means more paths can be explored simultaneously. A classical computer would have to calculate the path of a bit expressing 0 separately from the path of a bit expressing 1; a quantum computer can explore both at once, allowing for faster, more intensive calculations. "It's like doing linear algebra with complex numbers," Ptasinski said. "And wouldn't it be fun to be able to do it with smaller, more powerful equipment?"

To Ptasinski, fun would be the ability to build and entangle superconducting qubits, fit many qubits on a single microchip, and discover algorithms that would mitigate errors caused by environmental interferences. "It's a very exciting field because we have a lot of puzzles that still need to be solved," she said. "Our researchers don't want to work on something that's been done before. We're looking ahead at how quantum computing can solve real-life problems for the Navy."

Exploration of the new frontier won't decelerate anytime soon. Co-leads Naval Research Laboratory and NIWC Pacific established the Naval Quantum Computing Program Office Dec. 2 where quantum subject matter experts across all 14 naval warfare centers will collaborate on quantum applications for the Department of Defense.

The program office will manage access to the Air Force Research Laboratory's hub and its advanced quantum computing power on the IBM Quantum Network. First up for time in the hub is a project from NIWC Pacific.

Back in the Center's own labs, scientists and engineers are making arrangements for a new government-owned facility dedicated to quantum research. They'll make and test their own prototypes in a lab designed to perform powerful, ultra-precise quantum experimentation.

Ptasinski continues to organize training opportunities for scientists at the Center and across the country. Soon NIWC Pacific will host a professor from the **Naval Postgraduate School** to teach a course on the fundamentals of quantum mechanics, which will also be open to the Defense Intelligence Agency.

High performers will get a shot at a seat in IBM's Quantum Summer School, where distinguished quantum experts teach a small group of students from across the globe. Then NIWC Pacific students will make their way back to its quantum optics laboratory for hands-on experiments led by Ptasinski and her colleagues.

"We have many dedicated and motivated scientists and engineers expanding our quantum portfolio," Ptasinski said when asked why NIWC Pacific is the right team for the job. "Our researchers have connections to not only industry and other government labs, but also with researchers across the world. We're the U.S. experts in high-temperature superconductor sensors. Among the warfare centers, we're leading quantum information science and technology."

There's more to learn about quantum, the puzzle with no visible pieces. Zoom in and you'll find shapeshifting pieces which match each other even miles apart, and a precarious system that falls out of its quantum state and into a classical one at the wrong temperature. But despite all its precarity and complexity, over hours of conversations about building a quantum Navy, Ptasinski expressed no doubts about the Center's ability to solve it.



If we are experiments away from making sense of the quantum world — quanta of training, partnerships, and groundbreaking moments away — then scientists at NIWC Pacific are making strides toward the answers.

NIWC Pacific’s mission is to conduct research, development, engineering, and support of integrated command, control, communications, computers, intelligence, surveillance and reconnaissance, cyber, and space systems across all warfighting domains, and to rapidly prototype, conduct test and evaluation, and provide acquisition, installation, and in-service engineering support.

[DVIDS - News - NIWC Pacific and its partners are building a quantum Navy \(dvidshub.net\)](#)

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Charting the Navy’s Future Course in Advanced Space Education

(NPS.edu 30 Mar 23) ... NPS Public Affairs

(DVIDS.edu 30 Mar 23) ... NPS Public Affairs

In today’s era of strategic competition, naval and joint operations depend more than ever on the space domain. The Naval Postgraduate School (NPS) and its Space Systems Academic Group (SSAG) provide graduate space education and research opportunities to naval officers and the joint force, helping to develop space-relevant warfighting competencies and qualified operators who will continue to enable maritime dominance and national defense.

No domain more than space operations highlights the essential blend of the operational art of war – as well as the science and technology of warfare.

From the very beginning of the “space race” in the late 1950s, the U.S. Navy established itself as a global leader in the utilization of the space domain. By employing game-changing satellite platforms and developing tactical capabilities from space-based systems within the Department of Defense, the Navy proved unmatched in its use of the “final frontier” for maritime supremacy.

In today’s era of strategic competition, however, naval and joint operations depend more than ever on the space domain – everything from intelligence, surveillance, and reconnaissance, to positioning, navigation, and timing, to communications, environmental monitoring, space domain monitoring and more. As a result, there is a clear demand signal that America’s sea services must do more than just maintain a foothold in space.

One organization poised to help the Navy answer that call is the Naval Postgraduate School (NPS), which has played a critical role in the evolution of the Navy’s space leadership through education, space-related science and technology research since 1959, most notably with the establishment of its Space Systems Academic Group (SSAG) in 1982.

Under the guidance of Professor Emeritus Rudy Panholzer, who served as Space Systems Chair from 1984 to 2016, SSAG and its associated curricula in space systems engineering and operations provided NPS students with a one-of-a-kind graduate education degree in space applications specific to warfighting. SSAG also gave those students the technical depth to understand the design and engineering of satellites and other space-based systems.

Currently under the leadership of former NASA astronaut Dr. Jim Newman, SSAG has the same mission and vision that has been in place since its establishment – but it also has a renewed urgency to develop “agile and innovative minds” who are prepared to “lead in transformation and manage change in tomorrow’s complex and technically challenging world.”

“Our product really is the students themselves,” said Newman. “What I’m trying to do, as Rudy Panholzer was doing when I got here 17 years ago, is to build that next generation of naval [space] operators and engineers. The bottom line is ... we need naval and other officers who are technically capable of understanding and knowing what is in the realm of the possible. We have very technically capable adversaries and you can see examples of the military facing that truth.”

That truth, Newman explained, is that the reality of today’s space domain is more complex. Space as an operating environment is increasingly congested and contested. U.S. superiority in space is frequently



challenged; competitors advance the means to disrupt or deny our ability to leverage the constellation of sensors and connectors that serve as the backbone of a networked and distributed maritime force.

As a result, the Navy must be prepared to innovate, be creative and agile, and truly compete in today's highly-contested space domain. The Navy-Marine Corps team is the only all-domain warfighting force in DOD, operating under, on, and above the sea, on land, and in the cyber realm – and space connects them all.

By their very nature, naval operational problems are multi-disciplinary; as a result, they require interdisciplinary approaches and solutions. As an institution, NPS recently implemented a new Strategic Framework which addresses these problems, as well as unique naval graduate education needs and research, by consolidating curricula into nine interdisciplinary core program areas.

Among the program areas is "Space Technology and Operations," led by SSAG, which covers a range of defense-relevant applications from communications to orbital mechanics and satellite reconnaissance, culminating in space operations and engineering solutions for warfighters from a wide variety of backgrounds.

One NPS Space Systems Engineering student, Navy Lt. Cmdr. Tim Musmanno, graduated from the U.S. Naval Academy in 2011 with a degree in aerospace engineering. After multiple flying deployments and a staff tour with Carrier Strike Group 15, he became an Aviation Engineering Duty Officer. His research at NPS with advisor Dr. Mark Karpenko is focused on autonomous maneuver optimization methods applied to NASA's Lunar Reconnaissance Orbiter, in partnership with NASA's Goddard Space Flight Center in Greenbelt, Md.

"There are unique optimization methods that can help overcome system constraints and maximize efficient utilization of both new and old spacecraft," said Musmanno. "My operational aviation experience combined with this educational opportunity had helped me to build a more complete understanding of aerospace systems requirements, integration, and tradespace which will help me contribute more during my expected next tour at the National Reconnaissance Office and subsequent career in naval aerospace acquisitions."

U.S. Marine Corps Maj. Dillon Pierce is an infantry officer who completed his master's degree at NPS in 2020, put his expertise into practice on a utilization tour, and has since returned to NPS to complete his doctorate in space systems engineering.

Pierce's payback tour, at USMC Combat Development & Integration (CD&I), provided him with an opportunity to utilize his graduate education at NPS to introduce new and emerging space capabilities for the Marine Corps to support the warfighter. The tour gave him perspective on the true value of his education with SSAG.

"I stumbled into the SSAG small satellite lab one day and saw that the development of CubeSats and the new technologies that you can apply to their payloads was something they're really interested in," Pierce said of his Masters research into high-powered rockets for CubeSats. "I saw some tactical uses for this I wanted to try to operationalize, and I figured high powered rocketry for these CubeSats would be a good venue to get them up [into space] a little bit faster."

Pierce is now on the third quarter of his doctorate, with a deeper respect for the education and research processes in SSAG and the expert faculty guiding his work.

"Having graduated past entry level work, I now have this really special time with Dr. Newman where he dedicates multiple hours a week to my development," Pierce said. "I'll get him up to speed on a problem that I have been working on and talk through how I'm solving things. Even without having the same familiarity with the details of the problem, he quickly gets up to speed and then he can look at the problem critically in a way that analyzes the connections, inner relationships, the dependencies.

"We can really get to the heart of the solution," he continued. "For me, that process and skill is what I'm really trying to focus on, as well as my dissertation."

For that dissertation, Pierce will focus on the development of a low-cost, rocket-based precision strike system that integrates commercial off-the-shelf components and a novel guidance and control solution.

The space systems curricula that both Musmanno and Pierce have gone through are demanding programs. Over the years, SSAG has added distance learning and graduate certificate options based on its



two core curricula and a doctorate in its space systems engineering track, and is exploring a second Ph.D. program in space systems operations as well.

Still, students and faculty alike speak highly of the camaraderie that develops between members of each SSAG cohort – usually 30 students from the Navy, Marine Corps and Air Force – and their professors.

While perhaps known more for leading the nation in graduate schools producing NASA astronauts – 44 to date – NPS has also launched dozens of satellites and contributed to space payloads for military applications. Today, SSAG faculty members contribute to a wide variety of space missions and boast an innovative Mobile CubeSat Command and Control (MC3) network led by faculty associate Dr. Giovanni Minelli, with support from the National Reconnaissance Office.

Ten active MC3 ground stations worldwide provide a global common-use infrastructure and operational network for low-cost, small-satellite research projects, many of them classified, using NPS CubeSats and DOD satellites in orbit. The network includes collaborations with academia, industry and international partners from the Five Eyes (FVEY) intelligence alliance – Australia, Canada, New Zealand and the United Kingdom. Minelli indicated that the U.S. Naval Academy will bring its own ground station online in April 2023, with three more international ground stations being added later this year.

“We are currently providing MC3 ground network support for (Five Eyes) applications and also for two Missile Defense Agency CubeSats performing a networked communications experiment,” said Minelli. “A few other partner satellites are expected to use our ground network this year, including a NASA mission for hyperspectral thermal imaging, a U.S. Special Operations Command mission for modular intelligence surveillance and reconnaissance, and a U.S. Coast Guard Academy CubeSat called SeaLion-1.”

In fact, two more NPS CubeSats, named Mola and Otter, will launch in the summer of 2023 and the winter of 2024. Faculty senior lecturer Dr. Wenschel Lan is leading the design/build effort with her students to demonstrate pathfinding and on-orbit activities, and a FVEY federated space system will enhance coalition advantages in maritime domain awareness, global command and control, and cyber resiliency.

“Industry partners also play a vital role in our space research applications,” said Lan. “We are leveraging an NPS cooperative research and development agreement with Microsoft for satellite ground testing by establishing a cloud-enabled data connection between the MC3 ground station and a Microsoft Azure Stack Edge. This will allow experimentation in space operations enabled by data and telemetry downlinked from CubeSats to the cloud environment. Expansion of the ground capability with our industry and international partners is a significant part of this research effort.”

In addition, NPS’ ability to conduct classified research, focusing on relevant applied and innovative solutions to today’s most vexing challenges ensure the space systems operations and engineering curricula are more necessary, and equally relevant, to naval and joint space operations as they have ever been.

Going forward, the Navy has signaled its intent to develop critical, advanced space and information-related capabilities. In his CNO Navigation Plan for 2022, Chief of Naval Operations Adm. Mike Gilday identified investments in space-based capabilities as one of the Navy’s force design imperatives.

The Navy has already taken two preliminary steps towards making these investments with the creation of the Maritime Space Officer (MSO) community in 2021 and the establishment of Commander, Navy Space Command (NAVSPACECOM), in January 2023. MSOs will help the Navy fill key space-oriented billets at fleet and component commands within Maritime Operations Centers (MOC), Warfighting Development Centers (WDC), U.S. Space Command (SPACECOM), and the intelligence community. NAVSPACECOM will be the Navy’s component command under SPACECOM, supporting the service’s mission to maintain maritime superiority from the sea floor to space.

According to retired Vice Adm. Ann Rondeau, president of NPS, SSAG is working in concert with the Department of the Navy’s efforts to accelerate space capabilities and capacity, adapting to meet the intellectual and cognitive readiness needs of a future cadre of tech-savvy leaders who will guide the sea services and deliver solutions to maritime needs in space, answering a national security imperative.



“Most of us will only be able to look up at the heavens, but NPS is fortunate to have the leadership and scholarship of Dr. Jim Newman who has actually walked among the stars,” said Rondeau. “Together, we are building on past strengths in space graduate education reframing our approaches to warfighter development and the development of warfighting solutions that will generate the highest consequence outcomes for the Navy, Marine Corps, and joint force.”

NPS Space Systems Academic Group video: <https://youtu.be/Gi9fskxOYlw>
[Charting the Navy’s Future Course in Advanced Space Education - Naval Postgraduate School \(nps.edu\)](https://www.nps.edu)

[DVIDS - News - Charting the Navy’s Future Course in Advanced Space Education \(dvidshub.net\)](https://dvidshub.net)

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SEA-AIR-SPACE NEWS: Joint Warfighting Concept 3.0 ‘Definitely Coming,’ Official Says

(National Defense 5 Apr 23) ... Laura Heckmann

The Defense Department’s most recent iteration of a Joint Warfighting Concept was reviewed Apr. 4 by the secretary of defense and chairman of the Joint Chiefs of Staff, according to Heidi Shyu, undersecretary of defense for research and engineering.

“We just reviewed it yesterday ... and that will be eventually signed into a doctrine,” Shyu said at the Navy League’s Sea-Air-Space exposition Apr. 5.

The secretary of defense first tasked the chairman of the Joint Staff with developing a new Joint Warfighting Concept, or JWC, in 2019 to address strategic conflict, according to a statement released by the chairman in 2021. The JWC is a multi-year effort to “develop a comprehensive approach for joint operations against future threats and provide a guide for future force design and development,” the statement read.

The current version of JWC, which is classified, includes four supporting concepts: fires, information, logistics and command and control, said Gen. David W. Allvin, vice chief of staff of the Air Force, at the Air & Space Forces Warfare Symposium in March.

“If we ignore them and just focus on the capabilities that we think are going to be required for the main fight, we won’t get to the main fight,” he said. “And that’s why I think those supporting concepts are so important.”

Shyu said version 3.0 has taken joint warfighting concepts and decomposed them into “capability needed for a ... highly contested fight.” From there, the concept focused on identifying critical physics-based modeling and simulation that can present options and choices tied to campaign-level modeling, she said.

“And that campaign-level modeling simulation capability enables the team to literally play red on one side and blue on the other side,” she said.

The physics-based modeling simulation tells the outcome of the conflict, she said. “And then what we’re able to do is learn from that. And the next stage you can do that again.”

Shyu said the next piece is prototyping activity and tying rapid prototyping into experimentation, “not just in the laboratory, but ... in a real exercise in a live environment.”

A war room has “finally” been stood up in the Pentagon, cleared at all [Special Access Programs] levels, with “every single caveat you can imagine,” she added.

As the red-on-blue exercises play out, she will be looking for gaps, she said. “If there are gaps, are there asymmetric ways I can counter?” adding that asymmetrical capabilities are a focus, using Afghanistan as an example of the concept.

An improvised explosive device is asymmetric, a “very low-cost bomb can blow up our vehicle,” she said. “So, I’m working with an asymmetric capability against advanced adversaries.” In other words, unconventional strategies adopted to meet unconventional adversaries.



As the military seeks to understand and develop advanced capabilities, the driving force will be the student and the scholar, said Vice Adm. Jeff Hughes, deputy chief of naval operations for warfighting development.

Education, learning and adaption are “foundational enablers for innovation” and will “[drive] us to solutions faster than potential adversaries,” he said.

One of the six force design imperatives from the Chief of Naval Operations’ Navigation Plan 2022 is decision advantage, he added. Identifying a need to outpace the adversary reinforces a culture for competent warfighting. The plan is clear — students and faculty researchers will focus on warfighting concepts and capabilities, he said.

“We need critical thinkers. We need creative problem solvers,” he added.

A modernization effort of the Navy’s learning centers — such as the Naval War College, the Naval Academy and **Naval Postgraduate School** — seeks to align their curriculums and research to deliver warfighting advantage, Hughes said. “This is education to win.”

Marine Corps Lt. Gen. Matthew Glavy, deputy commandant for information, called education “so, so important,” citing examples of Marines taking capabilities, understanding them and taking them “to the next level and operational — we became relevant overnight.”

Glavy said he “keeps score” of outcome-driven events within the Marine Corps to fully understand how their outcomes are generated, specifically through education.

“It’s remarkable,” he said. “You will find [a **Naval Postgraduate School**] graduate at the center of it.”

Shyu also emphasized the importance of science, technology, engineering and math programs, calling them “incredibly important, because we need the talent.”

Shyu said the Defense Department has initiated week-long STEM camps, with junior high students to “get them excited.” Shyu said 64,000 students attended STEM camps last year.

“This is how broad of a reach we have now, which is fantastic,” she said. “We realized that if you get them exited early, they have a much higher likelihood of going into STEM.”

She also said they have been “steadily increasing” scholarships, awarding more than 480 “Smart Scholars” last year. The Defense Department swaps funding for four years of education for four years of work in their laboratories after students graduate, she said. Retention after finishing is “extremely high,” she added.

Lastly, she said the department is looking at attracting more minorities and rethinking the approach to internships.

“If the average family income is far less than the average income of the nation, what you have to do is think differently about the internship, because the family may not be able to afford to send their son or daughter away for the entire summer,” she said.

[Joint Warfighting Concept 3.0 ‘Definitely Coming,’ Official Says \(nationaldefensemagazine.org\)](https://www.nationaldefensemagazine.org/Article/Joint-Warfighting-Concept-3.0-Definitely-Coming-Official-Says/2023/03/21)

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RESEARCH:

NPS Hosts JIFX 23-2 With Focus on Innovation, Collaboration

(Navy.mil 21 Mar 23) ... MC2 Lenny Weston

(NPS.edu 21 Mar 23) ... MC2 Lenny Weston

The Naval Postgraduate School (NPS) conducted the latest iteration of its quarterly Joint Interagency Field Experimentation (JIFX) program from Feb. 6-10 at the NPS Field Lab at Camp Roberts, Calif., with a focus on human performance monitoring and situational awareness.

During the week-long JIFX 23-2 event, a total of 181 registered participants conducted and observed 21 experiments. JIFX participants represented a wide range of organizations, including key stakeholders



such as the Naval Air Warfare Center (NAWC), Naval Special Warfare, U.S. Army Combat Capabilities Development Command (DEVCOM) and U.S. Air Force Special Operations Command (AFSOC),

One of the highlights from the week was the thesis work of NPS student Hellenic Army Capt. Stergios Barmpas, who focused on the exploration of multispectral imaging in camouflage detection using an unmanned aircraft system (UAS) platform.

Barmpas leveraged a huge advantage offered by JIFX events – access to restricted airspace to conduct field experimentation to advance his NPS research. But that wasn't the only benefit, he said.

“I think sometimes you're constrained by the academic environment, not being able to get in touch with stakeholders that are in the armed forces or government,” said Barmpas. “By coming here, you can get in touch with those stakeholders and other people developing systems that can advance your research.”

Capt. Barmpas proved himself knowledgeable, adaptive, competent, generous, and engaging,” noted retired U.S. Army Col. Michael Richardson, the director of JIFX. “His highly-relevant research found interest with several military stakeholders who requested to be included on the distribution list for his thesis. In short, Capt. Barmpas was an exemplar of the warrior-scholars we celebrate at NPS.”

JIFX focuses on collaboration between government, the military, commercial industry, and academia to influence innovation, identifying and accelerating early-stage technology that addresses national and collective security challenges.

“In a lot of ways, our community is very inclusive,” said NPS Faculty Associate for Research Ashley Hobson. “So we see a lot of technologies that you wouldn't typically see at government events. And the reason why I think that's so important is because folks that are coming out here with experience and military backgrounds from tons of different paths are able to give lots of good feedback to the companies that might not get that feedback day to day or wherever they, you know, during their cycle just from the folks in their company.”

According to Richardson, the JIFX program's mission is to provide alternative methods for rapid technological development.

“We essentially focus in on bringing together two communities in a dialogue,” said Richardson. “The first community is men and women who have needs to conduct research primarily with emerging technologies, or related to emerging technologies, and their potential applications and security and defense related areas. That group includes academics from civilian universities. It includes national laboratory people. It includes NPS faculty and students. And the largest draw comes out of commercial industry.”

One first-time JIFX observer was NPS alumnus Dennis Danko, program manager for the Joint Prototyping and Experimentation Maritime (JPEM) program at Naval Surface Warfare Center (NSWC) Carderock Division in Bethesda, Md. According to Danko, JIFX offers a unique opportunity to leverage two established experimentation programs for a broad range of applications.

“I'll talk to them and I'll look at these technologies that JIFX is experimenting with on land, and I'll see if they have a maritime application,” said Danko. “I'll ask the question, ‘Will it work on a boat, on the water?’ And I'll take from what I learned at JIFX and try to apply it to the maritime world. The same thing happens back with JIFX – maybe they find something that is in the maritime domain but ask the question, ‘Will it work on land?’

“The idea would be, we would be on the water component. JIFX would run on the land component, looking at things from an all-domain perspective,” added Danko.

The collaboration with academia, industry and government that occurs at JIFX is a key instance of how NPS finds potential solutions to national defense and fleet challenges.

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FACULTY:

Sea Power and the Operational Level of War: Linking Means with Ends

(USNI 3 Apr 23) ... Captain Jeffrey E. Kline, U.S. Navy (Retired)

A fleet's composition (types of platforms, weapons, and technology) and capacity (numbers of ships, aircraft, weapons, sailors, and Marines) enable the choices for its employment and the strategic impacts it can achieve.

Previous American Sea Power Project authors have constructed solid arguments for the United States to maintain a strong Navy. Calling on the classic writings of Alfred T. Mahan and Sir Julian Corbett, they raise the central theme that sea power influences a nation's ability to secure trade, increase national wealth, ensure national security, and therefore catalyze national power.¹ These are the ultimate "ends" of a national strategy. The maritime "ways" (within the ends, ways, and means of a strategic construct) are the connective tissue—the "how"—between what a nation wants to achieve, and the ships, aircraft, weapons, and personnel required. Ends, ways, and means are symbiotic in nature, meaning a fleet's composition and capacity enable choices for its operational employment, and therefore directly impact the strategic objectives a nation can achieve in the maritime domain. Likewise, setting new national objectives will influence a nation's investments in fleet composition and capacity, which will open new choices for its employment.

Navy Captain and naval strategist Wayne Hughes wrote about four tasks of naval operations, three of which revolved around ensuring or threatening delivery of "goods and services." U.S. Naval Institute Photo Archive

Classic writers, including Mahan and Corbett, and more recent authors, such as Bernard Brodie, Frank Uhlig, and Wayne Hughes, all address the importance of sea power, but they also discuss the fleet's operational employment to influence the international stage in peacetime and war. Fundamental to their thinking is the ocean's advantage over other domains in moving combat power and commerce in terms of speed and capacity. Hughes captures this in his two great operational constants of maneuver and efficiency of movement.² Warships and merchants alike can move between 400 and 500 nautical miles a day, much faster than land forces. And, while not as fast as air transport, they have many times more lift capacity and self-sustaining combat power.

A cautionary note, however: Under current and projected budget levels, the U.S. Navy's practice of buying mostly expensive, multimission warships that take years to build—and in case of conflict, years to replace—generates a smaller fleet. This limits options to employ the fleet in both peace and war. Put another way, combat potential at any objective is a function of a ready force's capacity and capability, the logistics to deliver and sustain that force, time to deliver the force, and distance to the objective. Decisions on what, when, and where to place naval forces under these constraints are the essence of operational art. Naval leaders rarely get to pick the time and distance to meet operational demands, but investments in combat and logistics capabilities and capacities are choices the Department of Defense and Congress get to make, and current choices in these strategic "means" are limiting the operational options of the Navy and Marine Corps.

The following sections look at the classic operational "ways" of employing naval power. Each is followed by a brief assessment of the U.S. Navy's current force structure to accomplish these employment options, with highlights on constraints.

A Fleet's Operational 'Ways'

In his book *How Navies Fight*, Frank Uhlig categorizes the "ways" of naval warfare in five bins:³

- Strategic movement and support of armies and air forces
- Acquisition of advanced bases
- Landing forces on a hostile shore
- Conducting blockades
- Mastering the local sea

Captain Wayne Hughes described four tasks of naval operations:



- Ensuring the safety of friendly goods and services in the maritime domain
- Denying adversaries maneuver by the seas in war, and pirates in peace
- Delivering goods and services to the shore: from air strikes and amphibious operations to disaster assistance
- Preventing enemy delivery of goods and services 4

In short, a nation’s navy can influence the maritime domain by enabling its use for transportation and delivery of “goods”—commerce, Marines, or bombs—or denying its use to others. It can do this by defeating an enemy fleet; “bottling up” an enemy fleet through close and distant blockades; restricting an enemy fleet from obtaining general sea control by a “fleet in being”; taking critical shore territory for bases to control sea passage near that territory; and/or intercepting adversaries’ commercial trade and military logistics ships. In a competitive environment, these wartime missions may be demonstrated as deterrence measures, while constabulary duties are undertaken to ensure access to the maritime domain. Maritime security missions, such as fisheries enforcement, counterpiracy operations, counterterrorist operations, freedom of navigation, and humanitarian assistance/disaster relief, strengthen relations with allies and demonstrate commitment to important contested regions. These fleet activities—or ways—can be summarized in categories of fleet-on-fleet, fleet-vs.-shore, fleet-vs.-trade, and fleet in an era of maritime competition.

Fleet on Fleet

Prior to the Battle of Jutland (depicted here), the German High Seas Fleet constrained the Royal Navy Grand Fleet’s movement to the North Sea by acting as a fleet-in-being. Alamy

Using a fleet against another fleet to influence sea lines of communication is traditionally binned in three categories: decisive sea battle, blockade, and fleet-in-being. The battles of Midway, Tsushima, and Trafalgar are all classic examples of fleet-on-fleet sea battles denying adversaries’ operational plans or settling the dispute on which side had the sea’s advantage throughout the rest of the war. To these decisive battles, the cumulative effects of a series of individual battles across an extended campaign between fleets can be added. In conflicts such as World War II’s Battle of the Atlantic and the Guadalcanal Campaign’s sea battles, a series of individual engagements between portions of each fleet created the compounding effects for eventual victory. In these cumulative campaigns, a fleet’s resilience, responsiveness, and recovery abilities weigh as heavily as the ability to mass fires in a single engagement.

A blockade may constrain an adversary’s fleet or commerce and may be executed either close or at a distance. The English close blockade of Brest during the Napoleonic Wars is one example. This blockade’s primary purpose was to prevent the French fleet from supporting a British Isles invasion by confining French ships to their base. Bernard Brodie argues, however, that the last close blockade against a fleet was employed by the Japanese against the Russians at Port Arthur in 1905.⁵ Today, the advent of advanced mines, fast-attack craft, shore-based antiship missiles, and aerial bombing present too much risk to a close surface blockading fleet.⁶ This was recently demonstrated by Russia’s loss of the cruiser Moskva and hits on other Russian naval vessels in the Black Sea by shore-based Ukrainian forces. A robust undersea force may create close fleet blockade effects with less risk by employing submarine barrier patrols or advanced minefields—given sufficient inventories of both. The concept of exercising a distant fleet blockade, although less effective, is proposed by some as a maritime war strategy today.⁷ A distant blockade is executed by denying an adversary’s fleet and commercial ships access through geographic choke points or into trading ports.

The concept of a fleet-in-being as a maritime strategy has been a topic of considerable historical debate among naval strategists.⁸ In the late 1800s, Philip Colomb suggested that, by its existence, an inferior fleet may serve as a deterrent for a stronger fleet’s invasion designs.⁹ Sir Julian Corbett broadens this view to say any active fleet avoiding destruction will tie up an adversary’s maritime resources and constrain them from achieving complete command of the seas—that is, limiting options for invasion and intercepting commerce.¹⁰ Prior to the Battle of Jutland, the German High Seas Fleet constrained the Royal Navy Grand Fleet’s movement to the North Sea by acting as a fleet-in-being. Even proponents, however, admit that a fleet-in-being is a defensive strategy to place risk on a stronger opponent. The best

effect achievable through a fleet-in-being is anchoring an adversary's maritime power to gain relative superiority at some other objective and in another domain.

Analysis Of U.S. Naval Forces' Fleet-On-Fleet Capability

In a mid-Pacific decisive at-sea battle involving only the combatants' sea-based aircraft, ships, and submarines in a massive salvo exchange, the U.S. Navy would likely be the victor over the People's Liberation Army Navy (PLAN). But even in such conditions, it might be a pyrrhic victory as U.S. losses probably could not be reconstituted as rapidly as China's.

One might argue then that the United States should seek smaller engagements in key locations across a longer time horizon and geographic spectrum to find local advantage. This implies a cumulative and distributed strategy, which challenges the limited capacity of the current U.S. fleet's platforms, weapons, logistics support, and repair facilities.

Employing a distant blockade or bottling up an adversary's navy is sometimes proposed as a maritime strategy today. Restricting PLAN movements to within the first island chain by using U.S. Marines and special forces to provide targeting data for their own and longer-range missile platforms, while additional U.S. Navy ships simultaneously patrol key international straits and passages, is within current U.S. capabilities. This option, however, implies a long-term stalemate in which the waters inside the first island chain become a no-man's land and the strategic objective is to provide time for a peace agreement.¹¹ It also implies Taiwan cannot be defended by the current U.S. fleet alone. In addition, for such a campaign, rotational U.S. forces would be needed in numbers sufficient to sustain the level of risk desired against the Chinese fleet—which could play a fleet-in-being waiting game.

The U.S. Navy's current size and capabilities will allow it to serve as a fleet-in-being by restricting an adversary's actions within range of U.S. bases. This operational scheme can be employed to shape time and place of tactical engagements by using some fleet elements for deception, but force-wide it is a defensive strategy—and one that historically forecasts a nation's maritime power descendancy. It also is not a strategy that would deter Chinese military action inside the first island chain. The mere existence of U.S. naval forces in San Diego or even Hawaii will have little effect on Beijing's calculus towards Taiwan—those forces must credibly be able to deploy and fight in the western Pacific.

Fleet vs. Shore

The seven-month World War II battle for Guadalcanal is a superb example of fleets battling each other and shore forces to achieve advanced bases from which to further project maritime and air power. The July 1942 discovery of Japanese airfield construction on Guadalcanal refocused and accelerated the planning for Operation Watchtower. Watchtower's original objective was to obtain a base on Tulagi to protect the U.S.-Australia lifeline and be the genesis for a drive up the Solomons to Rabaul. Japanese airfield construction on Guadalcanal mirrored this strategy by threatening interdiction of U.S.-Australian logistics by Japanese bombers. As a result, Guadalcanal was added as an operational objective. On 7 August 1942, General Vandegrift's Marines landed on Guadalcanal and began a series of battles involving every combination of sea, shore, and air forces on Guadalcanal, Tulagi, Gavutu, and surrounding seas before U.S. forces obtained control of the area.¹² The follow-on Pacific battles, including Leyte and Okinawa, are further examples of fleets battling shore lodgments to establish forward basing. Given the geography of the first and second island chains, a war with China over Taiwan would require similar operations.¹³

Assessment: U.S. Naval Forces' Fleet-Vs.-Shore Capability

Forward-based forces that support fleet operations and influence the maritime littoral continue to be relevant. Aircraft and shore-based antiship cruise and ballistic missiles provide sea-denial capabilities while extending the fleet's reach in critical areas of the world. The U.S. Marine Corps' stand-in-forces concept reflects this objective. China's recent efforts to establish a political lodgment in the Solomon Islands, along U.S.-Australian sea lines of communication, reminds us that the "geography" in "geopolitical" is still strategically relevant.



Possessing a forward base, however, also carries the need to exercise some level of sea control to maintain its viability. In this way, forward bases and the fleet must be mutually supporting, both in their offensive missions and in logistics support. In addition, China's land-based bombers, submarines, and long-range land-based anti-ship and land-attack missiles place most U.S. naval power projection assets inside the first island chain at risk—in some cases beyond the first island chain. They also challenge U.S. forces' ability to maintain even temporal sea control east of the first island chain. In plain words, PLA capabilities challenge U.S. logistics lines to support forces in the first island chain. In a conflict, the current surface and aviation fleet may be consumed with traditional convoy protection and theater ASW providing at least temporal projection for mid- and western Pacific sea lines of communication. For these missions U.S. multimission combatant ships and carrier forces are well prepared. However, more distributed, lower-signature at-sea logistics capacity is needed to support them and Marine Corps stand-in forces.

Fleet vs. Trade

The German Navy used U-boats during both World Wars as part of its fleet-vs.- trade strategy. Here, a U.S. Navy TBF Avenger attacks a surfaced U-boat during the Battle of the Atlantic. Naval History and Heritage Command

Intercepting an adversary's merchant ships, naval logistics ships, and/or naval amphibious ships are ways of denying the maritime domain as a venue for the delivery of goods and services. The objective is to prevent an enemy from supporting military forces abroad or maintaining a wartime economy. During periods of increased tensions and war, these actions can be a fleet's contribution to a larger national strategy of disconnecting an adversary's economy from global trade. During the Civil War, the U.S. Navy's blockade against the Confederacy prevented trade with Europe (mostly cotton exports) and helped starve the Confederate economy of financial resources, thus denying it the ability to purchase weapons.

In World War II, both Germany and the United States employed submarine warfare to intercept and sink adversary merchant and logistics ships, challenging Allied and Japanese logistics respectively. At the start of the Russia-Ukraine War, the Russian Black Sea Fleet blockaded Ukrainian merchant ships, severely affecting the Ukrainian economy and denying their customers grain and other exports.¹⁴ By attacking or blockading trade, navies make physical contributions to national economic warfare.

Assessment: U.S. Naval Forces' Fleet-Vs.-Trade Capability

Similar to the fleet-vs.-fleet distant blockade option, U.S. naval forces have the capability to intercept adversaries' naval logistics and civilian trade vessels worldwide and deny critical seaways and port access. Such actions imply a long-term cumulative strategy to achieve a favorable peace settlement while lessening the risk to engaged naval forces. Fleet-vs.-trade is a longer-term strategy, designed to slowly choke the enemy's economy. It would require more ships than the U.S. Navy currently possesses. For example, 253 U.S. submarines and many minefields were used in the Pacific in World War II to engage the Japanese fleet, logistics, and trade.¹⁵ With less than a fifth that number of submarines for global operations today, and a truncated mining capability, the U.S. Navy's capacity to conduct trade interdiction operations is limited.

Fleet in an Era of Maritime Competition

The world's oceans are a maritime common and a common border among maritime nations. These domain features empower navies to contribute to the diplomatic and economic elements of national power as no other military service. Enforcing international norms; combating piracy and maritime terrorism; providing humanitarian assistance and disaster relief; sustaining forward presence; and acting as vehicles of diplomatic overtures are how navies are employed in a competitive era (short of war) for political ends. Navies can be a national signal of a helpful hand extended, or a fist displayed, and employed at whatever scale the nation desires and fleet architecture allows. With fewer than 300 ships in its Navy today, the United States must be very selective about when and where it engages and the commitments it makes. Ship count alone constrains the U.S. Navy's forward presence operations for engagement, assurance,



patrol, and deterrence, which brings us back to fleet composition, how it defines the options for fleet employment, and what can be done about it.

Shutting down trade can be an effective long-term strategy. Grain exports from the Black Sea halted for five months after the Russian invasion. Here, a bulk carrier enters the port of Odesa, Ukraine, in October 2022. Alamy

A Fleet at Risk?

Former Navy Secretary John Lehman’s January 2022 article warns us that the current U.S. naval force architecture is too small, procurement insufficient, and national will ill-informed to meet the demands of the current geo-political environment.¹⁶ Put in terms of distributed maritime operations, the U.S. carrier strike group–centric fleet architecture was not designed to distribute force in contested waters, which limits the ways in which the U.S. Navy can meet the national strategy in competition or war. This constrains strategic choices for engaging allies, deterring adversaries, and conducting war.

Options for fighting a close blockade are constrained by the number of ships, submarines, and mines in the fleet. A distant blockade option is limited by the number of combatants that are deployable and sustainable worldwide. Solutions to these problems call for either greater investment in U.S. naval forces (spending more to get more) or a new and novel force architecture featuring advanced smaller, cheaper, and more numerous platforms and weapons. The ability to disperse greater numbers of naval forces generates more options for force employment—in other words, more “ways” to use the fleet.

Bimodal Fleet

This is the rationale behind a bimodal fleet construct of a sea-control force and a sea-denial force to “buy back” operational employment options.¹⁷ Bimodal is not a “high-low” mix, but really two different naval forces. The first conducts forward presence and shaping, humanitarian assistance/disaster relief, and protection (or interdiction) of strategic sea lines of communication during times of conflict. The current surface and aviation force structure of multimission platforms represents the sea-control force capable of defending logistic lines. These expensive platforms are best employed in defense of the logistics lines that will sustain more forward forces, particularly in the initial phases of a conflict. The other fleet is a multidomain, manned and unmanned sea-denial fleet that will operate in highly contested littorals, critical sea passages, and inside an adversary’s weapons engagement zone. This fleet is composed of many, less expensive, but still lethal platforms.

The sea-denial force composition is based on independent, local reconnaissance strike networks that can exercise denial operations in specific regions, making it scalable and resilient. Picture distributed naval forces, stealthy manned and unmanned platforms connected in kill webs, with the ability to share targeting data and fire off other platforms’ targeting solutions. An unmanned aerial vehicle that detects an enemy surface contact and shares that firing solution with a Marine Corps NMESIS battery is an example.

A bimodal fleet delivers more kinetic and nonkinetic delivery platforms that use information and robotic technologies, thus expanding the ability to employ all operational “ways” in competition and war.¹⁸ The forward sea-denial fleet will be integrated with stand-in forces (both U.S. and allied) in conflict, and it will provide integration opportunities with maritime security partners in the competition phase. There are risks in moving to such a fleet construct too quickly, yet there is greater risk in continuing to make marginal changes to the existing U.S. fleet—including having too few operational employment options to have the desired strategic impact when and where needed.

[Sea Power and the Operational Level of War: Linking Means with Ends | Proceedings - April 2023 Vol. 149/4/1,442 \(usni.org\)](#)

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US DoD Operational Energy Office Announces Funding for Ground-Breaking Hybrid Aircraft Project

(Hybrid Air Vehicles 6 Apr 23)

Hybrid Air Vehicles (HAV) in collaboration with U.S. defense personnel is set to revolutionize maritime logistics and communication, transforming the way the U.S. Navy and Marine Corps conduct operations across the Pacific and other contested and distributed environments.

Marine Corps Captains Ben Cohen and John Schmaltz, while students at the **Naval Postgraduate School (NPS)**, became interested in the defense applications of civilian hybrid aircraft like Airlander, the highly efficient aircraft currently under development by HAV, as a disruptive technology, and were introduced to HAV through the NPS alumni network. Their thesis, which serves as a guide to interaction and engagement for Department of Defense personnel to navigate the innovation ecosystem while assessing commercially developed, large-capacity transportation platforms, has been instrumental in the current work with HAV.

In the latest development of this work, the Operational Energy Capability Improvement Fund (OECIF) in the DOD's Operational Energy Office recently announced funding for the Zero Carbon Logistics Support Via Hybrid Aircraft project. This ground-breaking collaboration between the U.S. Indo-Pacific Command and HAV can enhance logistics, Intelligence, Surveillance and Reconnaissance (ISR) operations, and communications in the Pacific.

As a logistics officer, the challenges with Contested Logistics are at the forefront of my mind. After attending a highly productive working group with the INDOPACOM Logistics, Plans, and Exercises Division in November of 2022, we designed this research effort to be able to respond to many of the challenges identified by the cross-functional team. When we reach the second phase, we will be ready to support modeling, simulation, and analysis of the hybrid aircraft in use cases that are defined by any combatant commander, but with a particular eye to contested logistics challenges in INDOPACOM.

Capt. Ben Cohen
SoCal Tech Bridge, Director

The project leverages commercial innovation to adopt and adapt commercial sustainable aviation technology, change operational concepts, and address logistical capability gaps. The lack of existing infrastructure within INDOPACOM limits current asset flexibility for inter/intra-theater lift, where access to deep water ports and airfields to accommodate appropriate aircraft is limited. With no need for ports or runways, Airlander aircraft can land on any reasonably flat surface, providing much-needed mobility resilience and flexibility in support of distributed maritime operations and expeditionary warfighting.

Our Airlander hybrid aircraft represents a game-changing technology for ultra-low-emissions flight, that can also revolutionize the capabilities of the Department of Defense. Through our collaboration with Capt. Ben Cohen and through the research and development work with the **Naval Postgraduate School**, we are demonstrating how private investment and commercial innovation can be adapted to enhance logistics, intelligence, surveillance, and reconnaissance operations, and communications in the Pacific. The Zero Carbon Logistics Support Via Hybrid Aircraft project has the potential to transform the way the U.S. Navy and Marine Corps conduct operations in contested and distributed environments, providing them with an unparalleled advantage in the region.

Tom Grundy
Hybrid Air Vehicles, CEO

In August 2021, HAV and **NPS** signed a three-year Cooperative Research and Development Agreement (CRADA) that enabled Cohen and Schmaltz to explore the potential impact of civilian hybrid aircraft technologies and evaluate the potential to adapt Airlander for U.S. Marine Corps-led scenarios and multiple geographies as well as both logistics and mobility applications. The CRADA brings together HAV's industry expertise and knowledge of Airlander and **NPS** students' experience with the challenges of the modern battlefield and Expeditionary Advanced Basing Operations (EABO).

The students collaborated with HAV to gain a deeper understanding of hybrid aircraft technology and the commercialization process from prototype to production. Cohen and Schmaltz's research emphasized the importance of digital technology, particularly digital twins, and expanded the opportunities for DOD applications of hybrid aircraft technology.



NPS' Modeling Virtual Environments and Simulation (MOVES) Institute partnered with the Energy Academic Group to analyze the Airlander 10's potential for surface surveillance missions in the Arctic Ocean. The collaboration resulted in the development of a virtual reality view of defense-unique missions using hybrid aircraft.

The MOVES Institute is continuing this research, using the Airlander 10 concept for EABO and Littoral Operations in a Contested Environment (LOCE) modeling, which is crucial for ideating new concepts and examining how new technologies integrate with existing infrastructure. The MOVES Institute is planning to model other environments for HAV to showcase hybrid aircraft capabilities in both the civilian and defense sectors.

NPS serves as a critical tech scouting platform and plays a vital role in driving innovation for the Department of the Navy and the Department of Defense, allowing warrior scholars like Cohen and Schmaltz to connect with industry leaders and leverage cutting-edge commercial technologies for national security challenges. The collaborative agreement between NPS and HAV is a prime example of how ground-breaking projects can start with NPS students and ultimately provide unparalleled capabilities to the U.S. Department of Defense.

[HAV \(hybridairvehicles.com\)](http://HAV.hybridairvehicles.com)

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ALUMNI:

Rear Adm. James Downey Tapped by Biden to Lead Naval Sea Systems Command

(Executive Gov 23 Mar 23) ... Regina Garcia

Rear Adm. James Downey, program executive officer for aircraft carriers at the U.S. Navy since June 2019, has been nominated by President Biden to serve as the next commander of Naval Sea Systems Command, Defense Secretary Lloyd Austin announced Wednesday.

In line with his nomination, Downey would be promoted to the rank of vice admiral. He would lead the Navy's largest systems command upon congressional approval.

Downey currently leads the office that supports the design, construction, delivery, system integration and life cycle management of aircraft carriers.

The State University of New York alum previously served as deputy commander for surface warfare at NAVSEA and commanded the Navy Regional Maintenance Center as his initial flag assignment.

Commissioned in 1987, Downey holds a master's degree in computer science from **Naval Postgraduate School** in Monterey, California.

[Rear Adm. James Downey Tapped by Biden to Lead Naval Sea Systems Command \(executivegov.com\)](http://executivegov.com)

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Women's History Month | Edwards' Flight Test Engineer Aims to Inspire

(AeroTech News 27 Mar 23) ... Larry Grooms

Girls from elementary, middle and high schools possibly unaware of the heroic contributions made by women in the advancement of aeronautics, have a new best friend and role model who lives just around the Aerospace Valley corner.

Jessica Peterson, a civilian flight test engineer and 412th Operations Group Technical Director, is taking on increasingly prominent roles as the face and voice encouraging and advocating to and for young women the nation needs in all aspects of aerospace activity.

Answering to call-sign "Sting," and generally appearing in a flight suit she wears in the backseat or right-hand seat of whatever aircraft she's evaluating, the lady projects serious professionalism.



Jessica Peterson was part of the 412th Operations Group team that attended the California Aeronautical University Aviation Career Day in Bakersfield, Calif., Feb. 3, 2023. (Air Force photograph)

Quoted as saying, “As a local, I’m passionate about reaching out to our community. The early exposure I got to engineering in middle school and high school still influences my career today.”

Having addressed more than 250 students at Antelope Valley College in 2022, Peterson recalled that she, like them, “was a local kid who went to Quartz Hill Elementary, Joe Walker Middle School and Quartz Hill High, and never dreamed back then of becoming a flight test engineer who flew at twice the speed of sound and at altitudes 9 /12 miles above ground level.”

No, she didn’t start out to be an engineer. She first thought of becoming a patents attorney, but an internship in a law office changed her mind. Drawn to mechanical engineering, she earned a BS degree at Cal Poly University San Luis Obispo, and a MS degree from the **Naval Postgraduate School** in Monterey. A civilian employee of the Defense Department, she wasn’t in the Air Force. She well remembers her first flight in 2014, “and I was airsick.”

She later learned to fly in civil aviation. Peterson says a big obstacle to be overcome in encouraging young women to pursue career studies in aerospace and technologies are lingering fears about gender barriers and prejudices, most of which no longer exist. Belief in your capabilities is the key to success for young women in pursuing an aerospace career, she advises. She says the need for young women in aerospace careers clearly outweighs any obstacles.

Although dedicated to student outreach as a personal mission, Jessica “Sting” Peterson’s roles and activities grew more numerous and formal in the post-COVID year public comeback of 2022-23 as Edwards AFB presented the largest Science, Technology, Engineering & Math Show in history, and special presentations and events for all during the four-day return of the Edwards Flight Test Center Air Show and Open House.

Leading up to the long week of activity, Peterson’s history of connecting to schools brought her aboard the base Public Affairs team activities, including planning and coordination of a special STEM flyover of six regional schools. Peterson was quoted as saying, “I reached out to schools to provide in-person presentations on Flight Test and Engineering. The goal was to connect students to the airplanes and aircrew they saw at the STEM outreach flyover and airshow.”

The flyover route reached the California communities of Edwards, Boron, Helendale, Victorville, Hesperia, El Mirage, Lake Los Angeles, Palmdale, Quartz Hill, Lancaster, Rosamond, Tehachapi, Mojave and California City with dedicated points at schools ranging from kindergarten to college.

Jessica said, “In order to ‘Break Tomorrow’s Barriers Today’, the theme of the AV Airshow, we need the next generation of scientists, engineers, pilots, and manufacturers excited and ready to take on the challenge. My intent was to encourage STEM education and awareness of STEM careers,” she added.

Peterson worked with the 412th Test Wing public affairs office to create recorded content on the base website that featured an interactive STEM toolkit for students to view prior to the flyover.

“I wanted to be able to speak at all 50-plus schools, but since that wasn’t feasible we created a page and recorded content to reach all the schools participating in the STEM outreach flyover,” said Peterson.

The website features videos of several of the men and women of the EAFB Test mission, to teach students how they use STEM in their careers and how they ended up in the Aerospace Valley.

The website also includes videos aimed at elementary, middle, and high school levels explaining flight test engineering, STEM opportunities, Automatic Collision Avoidance Technology flight test, and the 75th anniversary of Supersonic Flight with Edwards AFB’s unique role in the breaking of the sound barrier in 1945.

Brig. Gen. Matthew Higer, commander of the 412th Test Wing, commented after the Air Show and STEM event, “I’m so deeply humbled by the inspirational investment I witnessed by all the key players and volunteers that made the last 6 days happen; an investment that clearly resonated with kids ages 3 to 13, for they are the STEM future of our Nation;”

Now Technical Director of the 412th Operations Group at Edwards, and Flight Test Engineer Instructor at the U.S. Air Force Test Pilot School, she delivered a gripping narrative about her life’s journey and the fulfillment that comes from developing new technologies that save the lives of pilots, aircrews and passengers.



She described in detail the challenges and risks faced by team members with whom she worked in developing and conducting the flight-testing of two computer systems at Edwards. One, the Automatic Ground Collision Avoidance System (GCAS), was designed to prevent an aircraft from crashing to the ground when the pilot is unconscious. The other, the Automatic Collision Avoidance Technology (ACAT) is designed to prevent midair collisions between military aircraft.

Reminding the audience of her talk's title, "Flight Test Engineering and Saving Lives," Peterson reported that since the ground avoidance system was installed in the F-16 fighter aircraft, lives of the pilots and their aircraft were saved, and newer fighters, including the F-22 and F-35 have the systems designed-in. She personally knows of a dozen fighter pilots who are alive and well today because the ground avoidance system worked.

The challenge in testing, she said, comes with fundamental rules that the systems must do no harm to the pilot, don't interfere with the pilot doing the job, and still prevent a collision. Added to those rules are processes to be avoided, among them what flight test pilots call, "The Mad Scientist." In other words, don't trust the system to be flawless.

And then there's the need for patience. She said, for example, it took two years of testing to plan for a five-second maneuvering window of opportunity to save the pilot and the plane. In another instance, the automatic system gives a stricken pilot a vital extra three seconds to survive what was previously fatal.

More recently, on Feb. 3, 2023, Peterson traveled to the California Aeronautical University in Bakersfield, Calif., for their Aviation Career Day. At CAU, hundreds of local area students got the chance to experience being a test pilot and flight test engineer with an inspiration through aviation from the team.

"This is their career fair," said Peterson. "Around 700 students came through, mainly high school students, that wanted to learn about aviation and the opportunities in aviation. They came to learn more about CAU and local aviation opportunities including ours."

[Women's History Month | Edwards' flight test engineer aims to inspire - Aerotech News & Review](#)

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Resolve Marine Forms Government Relations Department

(Marine Link 27 Mar 23)

Marine salvage, rescue, emergency response and specialized services company Resolve Marine announced the formation of a government relations department

Retired Navy Capt. Gregg Baumann has been appointed government program manager to lead the effort from the Washington D.C. area. In this newly created role, Baumann is responsible for developing strategy and objectives to grow the company's government services business, with a primary focus on the United States and Canada. He will also oversee government business development and project mobilization and de-mobilization, personnel supervision, vessel operations, salvage and diving operations and logistics.

Baumann brings decades of experience in both the naval and maritime industries. Having served as naval diving officer and the U.S. Navy's Director of Ocean Engineering, Supervisor of Salvage and Diving, he led numerous national and international maritime salvage disaster responses during his military career. After retiring from the military, he joined CACI Inc. as a Senior Program Manager in the Training and Warfighter Readiness group, leading their Foreign Military Sales. He then joined Thales Defense and Security as Director of Program Management for Systems Solutions where he oversaw the management and manufacture of domestic and international defense products. Baumann graduated from Clarkson University with a Bachelor of Science degree in chemical engineering and holds a Master of Science degree in mechanical engineering from the **Naval Postgraduate School**.

[Resolve Marine Forms Government Relations Department \(marinelink.com\)](#)

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USS Shoup Holds Change of Command

(DVIDS 29 Mar 23) ... Ensign Jayla Darby

The Arleigh Burke-class destroyer USS Shoup (DDG 86) held a change of command ceremony, Nov. 23.

In the ceremony, CDR Dale R. Tourtelotte relieved CDR Victor J. Boza, as USS Shoup's Commanding Officer (CO).

"Team SHOUP, it's been amazing working with you the last 21 months. There's no crew I'd rather be with on this journey, taking this ship over the horizon and into a new Fleet and a new homeport. I'm truly excited for the opportunity and privilege to sail and fight with you."

After serving as the ship's Executive Officer, CDR Tourtelotte assumed command as CO and led the crew of Shoup during a homeport shift from San Diego, Ca. to Yokosuka, Japan.

Boza's next assignment is USS Abraham Lincoln (CVN 72).

His previous sea-duty assignments include USS Vicksburg (CG 69); USS Abraham Lincoln (CVN 72); USS Carney (DDG 64); USS Harry S Truman (CVN 75).

His assignments ashore include Instructor duty at Naval Nuclear Power Training Command and Surface Warfare Officer's School as the International Training Director and Academic Director for Fleet Training.

Tourtelotte is a native of Orange, Texas.

His previous sea-duty assignments include USS Forrest Sherman (DDG 98); USS Sterett (DDG 104); USS Independence (LCS 2); USS Gabrielle Giffords (LCS 10). He served as CO of USS Hurricane (PC 3) homeported in Manama, Bahrain.

Ashore, CDR Tourtelotte was a student at the Naval Postgraduate School earning a Master of Science degree in Modeling Virtual Environments and Simulation.

LCDR Timothy Winters, a native of Fairfield Maine, assumed duties as Shoup's new Executive Officer upon arrival in her new homeport of Yokosuka, Japan. His previous assignments include U.S. States Seventh Fleet Staff (N-31) embarked in USS Blue Ridge (LCC 19), USS Vicksburg (CG 69), USS Fitzgerald (DDG 62), USS Wayne E. Meyer (DDG 108), USS Guardian (MCM-5), and USS Saipan (LHA-2)

Ashore he served on the SECNAV's Staff, Surface Warfare Officer's School (N-72), and was a student at the **Naval Postgraduate School** earning a Master of Business in Financial Management.

"The Officers and Crew of Shoup are excited to be in Japan; for many this is their first time out of the United States. They have worked hard through the ship's two year modernization and follow-on training to get to this point. They are ready to deploy today -- at the peak of warfighting readiness, and could plug into any assigned mission in a matter of hours."

USS Shoup is at Commander Fleet Activities Yokosuka in Japan for a Homeport Shift.

Arleigh-Burke Destroyers, such as USS Shoup, project power and maintain presence by serving as the cornerstone of the Destroyer Squadron and Carrier Strike Group.

USS Shoup has supported major humanitarian-assistance and combat operations in which the United States has been involved.

USS Shoup is named for Medal of Honor recipient General David M. Shoup, the 22nd Commandant of the Marine Corps.

The ship's motto is "Victoria per Perseverantiam Venit" or "Through Perseverance Comes Victory."

Four Marines were awarded Medals of Honor for their heroism at Tarawa. Colonel David Shoup was the only one of them to survive to wear it.

[DVIDS - News - USS Shoup Holds Change of Command \(dvidshub.net\)](https://dvidshub.net/news/29-mar-23/uss-shoup-holds-change-of-command)

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Artemis II Mission Astronauts Have Central Coast Connection

(KSBW 5 Apr 23) ... Paul Dudley

NASA has announced the crew for the upcoming Artemis II mission and KSBW got a chance to talk to one of the astronauts with ties to the Central Coast.

When Artemis II takes off for their historic lunar fly-by in November 2024, the Orion Spacecraft will be piloted by Victor Glover, a graduate of California Polytechnic State University, San Luis Obispo and the **Naval Postgraduate School**.

"Both of those places are very special to me. I met my wife at Cal Poly. My oldest daughter is at Cal Poly right now. And my time in Monterey; I was a distance learning student, so hybrid. I had some time on campus at the beginning, in the middle and at the end," said Glover. "I would love to get back there and continue to work with the folks in Monterey and the Navy Postgraduate School."

Glover is a navy fighter pilot with 3,000 hours in 40 aircraft. He was recently part of the Space-X crew that went to the space station for six months.

"I was the pilot of that Space-X crew Dragon that we named Resilience," said Glover. "And so that experience is great and definitely relevant to this."

This mission will be the first crewed moon mission in 50 years but that isn't the only first.

"We've got a Canadian space agency astronaut, Jeremy Hansen, the first non-American, the first Canadian to go beyond low earth orbit, to go to the moon. That's amazing," said Glover. "We've got the first woman and the first person of color. While we want to celebrate the faces on our crew poster, we really need to think about the makeup of our country and how beautiful it is that our current astronaut corps represents this country."

The next few months will be all about doing interviews, training and running tests on the spacecraft to make sure it is ready for the mission. In the meantime, Glover has this message for all those on the Central Coast who helped him along the way.

"Thank you for the support," said Glover. "I loved my time there and thanks again and enjoy that beautiful Central Coast."

In addition to Glover, the mission commander, Reid Wiseman, also attended **Naval Postgraduate School**.

[Artemis II mission astronauts have Central Coast connection \(ksbw.com\)](https://ksbw.com)

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