



NPS IN THE NEWS

Weekly Media Report – August 24-30, 2021

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EDUCATION:

[SMWDC Discusses Lethality and Showcases WTIs at SNA Waterfront Symposium](#)

(DVIDS 26 Aug 21) ... Mass Communication Specialist 2nd Class Devin Lowe

Naval Surface and Mine Warfighting Development Center (SMWDC) commander, Rear Adm. Christopher Alexander, and surface Warfare Tactics Instructors (WTIs) participated in the Surface Navy Association (SNA) Waterfront Symposium held onboard Naval Station San Diego Aug. 25-26...“Whenever we [WTIs] can go out and talk with the fleet about the WTI program, we try to make sure SWOs understand that being a WTI will provide them the tactical confidence and competence to be a successful leader,” said Lt. Meagan Barron, an AMW WTI. “Some people think the choice is to become a WTI, or to choose **Naval Postgraduate School** to complete postgraduate school – the fact is that SWOs who are selected for WTI can also complete their postgraduate degree with NPS through the WTI Scholar program, they don’t have to choose either or.”

RESEARCH:

[NPS Hosts 70th Annual Ordnance and Ballistics Working Group](#)

(NPS.edu 26 Aug 21) ... Mass Communication Specialist 2nd Class James Norket

(Navy.mil 26 Aug 21) ... Mass Communication Specialist 2nd Class James Norket

In partnership with the National Armaments Consortium, NPS hosted the 70th annual Ordnance and Ballistics Technology Working Group, Aug. 3-5, providing a unique opportunity for the discussion of research and new ideas at the classified level amongst government, industry and academic practitioners.

[Cognitive Lasers: Combining Artificial Intelligence with Laser Weapon Systems](#)

(Cimsec.org 24 Aug 21) ... Dr. Bonnie Johnson

The Navy is advancing rapidly with the development and integration of high energy laser (HEL) weapon systems onto ships to support the ship self-defense mission. HEL systems offer novel hard-kill and soft-kill engagement options with targeting accuracy and narrowly focused speed-of-light lasing with a relatively low cost per shot. HEL hard-kill engagements provide a more traditional weapon function of burning through the target to cause enough damage to render the threat useless. HEL soft-kill engagements offer “softer” options of blinding threat sensors and optics, rather than complete destruction... Graduate students at the **Naval Postgraduate School** (NPS) have been studying various aspects of the cognitive laser concept. A systems engineering capstone team developed Figures 3 and 4 as they developed a conceptual design of an automated decision aid to support laser weapon engagement decisions for a naval shipboard HEL system (Blickley et al, 2021). Figure 3 presents a context diagram illustrating how the decision aid might retrieve threat information and laser resource information from onboard sensors and weapons scheduling in order to develop engagement recommendations and provide these to HEL operators.



FACULTY:

[How the Taliban Turned Social Media Into a Tool for Control](#)

(New York Times 20 Aug 21) ... Paul Mozur

In the 1990s, they banned the internet. Now they use it to threaten and cajole the Afghan people, in a sign of how they might use technology to build power...“They recognized that to win the war, it had to be done through narratives and stories,” said **Thomas Johnson, a professor at the Naval Postgraduate School** in Monterey, Calif. “In urban areas all Afghans have smartphones, and I think it’s going to be very useful. They’re going to use social media to tell the Afghan people what they need to do.”

[NSWCPD’s Chief Engineer Lunch and Learn Focuses on Human System Integration](#)

(DVIDS 27 Aug 21) ... Brentan Debysingh

During the latest installment of virtual Lunch and Learn sessions, Naval Surface Warfare Center, Philadelphia Division (NSWCPD) Chief Engineer (CHENG) Scott Freedner welcomed the **Naval Postgraduate School’s (NPS) Michael O’Neil**, who spoke about Human System Integration (HSI) on July 15, 2021.

[How will the 'new' Taliban rule Afghanistan?](#)

(The New Arab 26 Aug 21) ... Sayed Jalal Shajjan

Analysis: Two decades of fighting and exile have seen the Taliban adapt both politically and diplomatically, but governance will be the insurgent group's real test...“While they were absolutely miserable administrators and had no idea how to govern other than through intimidation, through years of having shadow governors in many provinces they have gained some skills in governance and have an actual scheme of an organisation for administering Afghanistan,” **Thomas H. Johnson, a Research Professor of National Security Affairs at the Naval Postgraduate School**, told The New Arab.

ALUMNI:

[Arlington tech contractor names VP architect](#)

(Virginia Business 23 Aug 21) ... Katherine Schulte

Arlington-based national security technology contractor Two Six Technologies named Daniel J. “Rags” Ragsdale its vice president – architect on Aug. 4... He is a U.S. Military Academy graduate and holds a master of science degree in computer science from the **Naval Postgraduate School** and a doctorate in computer science from Texas A&M University.

[Christine Elow Named Acting Police Commissioner of Cambridge Police Department](#)

(Cambridge City 19 Aug 21)

City Manager Louis A. DePasquale has announced the appointment of Superintendent Christine Elow as Acting Commissioner of the Cambridge Police Department effective Saturday, August 21, 2021. Elow takes over for Commissioner Branville G. Bard, Jr., who accepted a new opportunity with the Johns Hopkins Institutions after leading the Department for the past four years... Elow has been with the Cambridge Police since joining as an officer in 1995 after serving in the U.S. Navy for four years. She served in the Patrol Division and oversaw the Professional Standards Unit, where she was responsible for receiving, processing, and investigating complaints made against members of the Department. She later served as Deputy Superintendent for Day Patrol and Community Services. In 2017, Elow was appointed Superintendent, making her the highest-ranking female officer in the history of the Department. She is a strong proponent of community-driven policing, juvenile justice issues, procedural justice, police training and innovative hiring practices. Elow holds a Bachelor of Science Degree in Criminal Justice Administration from Curry College and a Master's Degree from the **Naval Postgraduate School’s** Center for Homeland Defense and Security Program.

[Passion, Perseverance and a Talent for Business Led Geneva Honeyman to an Enriching Career at NSWC Dahlgren Division](#)

(NAVSEA 24 Aug 21)

Discovering a talent that aligns with a passion is a rewarding feat and can lead to an enriching career. For Geneva Honeyman, exploring her many talents meant pursuing different avenues before recognizing where her passion truly lay... Honeyman plans to expand on her expert knowledge and continue developing her talents within



contracts acquisitions. She is currently pursuing her master's degree in contracts management through the **Naval Postgraduate School**.

Undersea warfare analyst wins Society of Women Engineers 2021 Helen Martha Sternberg Award

(DVIDS 27 Aug 21)

Sierra Palmer, an undersea warfare analyst in the Naval Undersea Warfare Center (NUWC) Division Newport's Undersea Warfare Engineering and Analysis Department, has won the Society of Women Engineers 2021 Helen Martha Sternberg Award... Palmer, a resident of Tiverton, Rhode Island recently earned a graduate certificate in robotics engineering from the **Naval Postgraduate School** and plans to pursue a master's degree in defense and strategic studies at the Naval War College. Palmer was hired at Division Newport in July 2019, after graduating from Worcester Polytechnic Institute in Massachusetts with a bachelor's degree in robotics engineering.

UPCOMING NEWS & EVENTS:

September 6: Labor Day (Federal Holiday)

September 14: Summer Quarter Awards Ceremony

September 14-16: [Center for Executive Education SPEAR Workshop](#)

September 20: [WIC Workshop 2021: Hybrid Force 2045](#) (Registration Open)

September 24: [Summer Quarter Graduation Ceremony](#)

September 27-30: [Center for Executive Education LCSS Workshop](#)



RESEARCH:

NPS Hosts 70th Annual Ordnance and Ballistics Working Group

(NPS.edu 26 Aug 21) ... Mass Communication Specialist 2nd Class James Norket

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In partnership with the National Armaments Consortium, NPS hosted the 70th annual Ordnance and Ballistics Technology Working Group, Aug. 3-5, providing a unique opportunity for the discussion of research and new ideas at the classified level amongst government, industry and academic practitioners.

The Naval Postgraduate School (NPS), in partnership with the National Armaments Consortium (NAC), hosted the 70th annual Ordnance and Ballistics Technology Working Group, Aug. 3-5, combining top academic, industry and government leaders in a classified setting to discuss the latest innovations in explosives, warheads, and terminal ballistics.

The working group serves as a unique role for partners to discuss research and ideas at the classified level and is limited only to military and personnel from the Department of Defense and related agencies. The workshop consisted of seven different sessions on topics ranging from shaped charges to armor to additive manufacturing of warheads.

“It's really the only classified meeting where people in a relatively small field of ordnance, explosives, ballistics, and terminal effects can get together and share their research,” said James Miller, the Chair of the Working Group. “The fact that you can share classified details about test data with each other makes it really unique. Not only can we have the meetings and presentations, but the time we have together is invaluable.”

Department of Physics Chair Dr. Joe Hooper, the NPS coordinator for the conference, believes it is a crucial piece in the advancement of ordnance and ballistics.

“A lot of the information in this field isn't neatly summarized in a textbook or existing literature,” he said. “Much of it is more like tribal knowledge, and gets passed down and shared in meetings like this. Being able to do this in a fully classified setting at NPS is particularly beneficial.”

Although the event accomplishes multiple objectives, Miller stated the main goal was to make sure everyone was on the same page and working together.

“The primary goal is to highlight the research that's going on across all the services,” said Miller. “Unless you have a meeting like this, I don't really know what everyone else is working on, so having a chance to see their results, their analysis, their testing, it helps everybody get better and further the research. Because in the end, we're trying to develop weapons and get them to our war fighters as soon as possible.”

The event was cancelled last year due to COVID-19, but Hooper and Miller both agreed that this year made up for last, saying they had a record-number of participants and considered the event to be a “major success.”

[NPS Hosts 70th Annual Ordnance and Ballistics Working Group - Naval Postgraduate School](#)

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Cognitive Lasers: Combining Artificial Intelligence with Laser Weapon Systems

(Cimsec.org 24 Aug 21) ... Dr. Bonnie Johnson

The Navy is advancing rapidly with the development and integration of high energy laser (HEL) weapon systems onto ships to support the ship self-defense mission. HEL systems offer novel hard-kill and soft-kill engagement options with targeting accuracy and narrowly focused speed-of-light lasing with a relatively low cost per shot. HEL hard-kill engagements provide a more traditional weapon function of burning through the target to cause enough damage to render the threat useless. HEL soft-kill engagements offer “softer” options of blinding threat sensors and optics, rather than complete destruction.



HEL systems differ significantly from traditional kinetic shipboard weapon systems. Laser weapons concentrate a very highly focused beam of coherent energy on targets at a distance. They must have line of sight with the threat target. Although the laser beam travels at the speed of light, the beam must “dwell” on the target for a period of time long enough to induce soft or hard kill effects. Environmental and atmospheric effects can greatly affect laser beams, diminishing the amount of irradiance that makes it to the threat. Laser weapons require significant amounts of power, and when facing threat situations that require longer dwell times or multiple engagements, operators may need to make sure that sufficient power is available.

Operating laser weapons is a complex endeavor. Figure 1 identifies the many characteristics of HEL operations that lead to complexity in this decision space. At the outset, tactical operations for defensive missions have inherent complexity: threats are often unexpected and offer a very limited reaction time, situational awareness is often incomplete and uncertain, the environment is dynamic and changing rapidly, human operators can become overwhelmed with information, uncertainty, and decision options, and the consequences can be dire.

Laser weapon systems contribute additional complexity to the operator’s decision space. The operator must weigh many factors within the dynamic threat situation to choose a soft-kill or hard-kill option, select an effective target aimpoint, calculate the required laser power-in-the-bucket (amount of actual laser irradiance per area that makes it to the target) and calculate the required dwell time. The operator must consider environmental effects and must determine if enough power is available to support the engagement. The operator may also decide to use an existing kinetic weapon system instead of a HEL system depending on a comparative prediction of kill success.

During combat operations, a ship’s warfare operators will make critical kill chain (weapon engagement) decisions under highly time-critical and uncertain conditions. Figure 2 illustrates an example of a ship’s tactical operations picture in a situation involving UAV threats. In this scenario, the operators must weigh what is known about the threat with what the ship’s defensive weapon systems are capable of. In this example, the operators must predict and compare how successful the Sea Sparrow, the laser weapon system (LaWS), and the Phalanx CIWS will be against the threat UAVs. The threat’s proximity and incoming speed will dictate how much time the operators have to make these comparative predictions. In many cases, the human operators may be well-served with an automated decision support system that can quickly calculate preferred weapon options based on the situation, such as doctrine statements. The emerging capabilities of artificial intelligence can be leveraged to enable automated decision aids for laser weapons—thus creating a cognitive laser approach for laser weapon systems.

Combining Emerging Technologies: Laser Weapons and Artificial Intelligence

Two emerging technologies lead to the cognitive laser concept: laser weapon technology and artificial intelligence. The Navy has been researching laser technologies for decades and lasers have recently matured to the point where they are being integrated and tested on ships for operational use. In parallel with this evolution, there have been significant advances in artificial intelligence (AI)—particularly in the development of intelligent computer systems that can support complex decision-making. The marriage of these two emerging technologies is the genesis of the proposed cognitive laser concept.

Laser weapon systems and their use in the defense of naval ships presents a complex decision space for human tactical warfare operators that requires the assistance of AI to process, fuse, and make sense of large amounts of data and information in short timeframes, and to develop and evaluate effective courses of action involving complex systems (including laser weapons). The laser weapon kill chain requires the intuitive, adaptive, and creative cognitive skills of humans as well as the abilities of automated systems to rapidly fuse large amounts of disparate data, construct and assess vast permutations of options, predict performance, and deal with uncertainty. Automation, artificial intelligence, and machine learning can provide a human-machine teaming cognitive solution.

Cognitive Laser Concept

Graduate students at the **Naval Postgraduate School (NPS)** have been studying various aspects of the cognitive laser concept. A systems engineering capstone team developed Figures 3 and 4 as they



developed a conceptual design of an automated decision aid to support laser weapon engagement decisions for a naval shipboard HEL system (Blickley et al, 2021). Figure 3 presents a context diagram illustrating how the decision aid might retrieve threat information and laser resource information from onboard sensors and weapons scheduling in order to develop engagement recommendations and provide these to HEL operators.

The capstone team performed a functional analysis of the conceptual cognitive laser decision aid. Figure 4 contains a functional flow diagram from this analysis. It highlights some of the decision factors involved in determining whether or not to fire an HEL system: if there is sufficient time, if atmospheric conditions are favorable, if there is sufficient power, if the threat's material composition can be effectively lased, and if there are no deconfliction issues (if there is no risk of friendly fire in the path of the laser beam).

NPS SE thesis students are studying other aspects of the cognitive laser concept. One study is widening the scope of the problem beyond laser weapon system decisions (Carr 2021). This study is asking the broader question: how do warfare operators on ships make the determination of which weapon to select when they have kinetic weapons and laser weapons to choose from? For this higher-level kill chain function, the operator needs to be able to compare the predicted performance of the kinetic weapon with that of the laser weapon for a given threat scenario. The threat is not stationary—as it moves, the range between the weapon and target changes and therefore the amount of “atmosphere” that the laser beam must traverse changes. Real-time changes in the threat's proximity and kinematics continuously affect the projected performance of the two types of weapon systems differently. Weapon operators will be more familiar with when and how to engage a dynamic threat with kinetic weapons. They may be less familiar with the intricacies of engaging a dynamic threat with a laser weapon. The required laser's dwell time and power needs will change as the threat moves and maneuvers. The complexities of a projected performance prediction between the two different types of weapons warrants the use of AI and automated decision aids to support this complex decision space.

As threats advance in complexity, naval operators will need to use laser weapon systems in more sophisticated and complex operations. NPS is studying the use of laser weapons to defend against future swarms of drones (Taylor 2021). The study is first characterizing possible drone swarms—their configuration, the number of drones, and the types of drones. The study is exploring the capabilities of laser weapons to address the swarms—soft-kills, hard-kills, and engagement timelines to understand how many drones can be addressed in a given situation. The study is developing strategies to apply different engagement logic to different threat scenarios—a series of soft-kills, or strategic hard-kills, or combinations of lasing and using kinetic weapons, as examples. The rapid development of effective laser weapon engagement logic in such complex tactical situations will require a cognitive laser approach to aid laser operators.

Tactical energy management, as illustrated in Figure 5, is a cognitive laser concept for allowing laser weapon operators to understand and manage the dynamic energy resources during tactical operations. Laser weapons require significant amounts of energy when they are fired, and energy is a constrained resource on ships. This concept taps into the power sources on a ship to give laser operators insight into how much power is available and to determine how much power will be required to defeat specific threats as they are encountered.

Machine learning is an AI method that involves computers “learning” effective solutions or answers by training them using great amounts of data or scenarios. Recent research projects at NPS have been studying the use of machine learning approaches for determining the required dwell time based on the properties of the material composition of targets (Blickley et al 2021) and for target selection and engagement strategies against drone swarm threats (Edwards 2021). From the operator's perspective, a machine learning algorithm would enhance a real-time decision aid by providing an expert-level laser weapon system knowledge base as shown in Figure 6. As real-time sensor data provides information about the threat—its location (or locations for a swarm threat), kinematics, and characteristics, the decision aid can assess and predict the target type, location of components (fuselage, sensors, seekers, etc.), material composition and thickness. This information is compared with the machine learning



knowledge base which produces accurate recommendations for engagement strategy, aimpoint selection, and laser dwell time.

Laser weapon operations pose a friendly fire risk. Lethal laser beams can unintentionally harm nearby friendly forces (aircraft, ships, etc.) or civilian entities in the vicinity. Deconfliction planning is a critical function in the laser weapon kill chain to ensure that the “coast is clear” so that the path of the laser beam is free of friendly and civilian assets. NPS studies are developing concepts for ensuring and managing deconfliction for different military laser weapon applications (Kee et al. 2020, Clayton et al. 2021). In time-critical tactical operations, laser weapon operations will require a cognitive laser approach to ensure for proper deconfliction.

The realization of a cognitive laser requires advances in human-machine teaming research to ensure the effective and safe employment of AI methods. Several studies at NPS are researching different aspects of applying AI to the tactical domain. Jones et al (2020) studied the air and missile defense kill chain to show that human-machine teaming arrangements can adapt in response to the threat situation timeline. The threat will dictate how much time the operator has to react, and this can be incorporated into the design of AI-enabled automated decision aids. Burns et al (2021) are embarking on a research project to map specific AI methods to the specific functions of the kill chain. Tactical kill chains (including laser weapon kill chains) require a variety of cognitive skills and decisions. These include data fusion, assessment, knowledge discovery, addressing uncertainty, developing course-of-action alternatives, predicting system performance, weighing risks, and gaming second- and third-order strategies.

A wide variety of AI methods will be needed to support these kill chain functions. Cruz et al (2021) are studying the potential safety risks and failure modes that may be introduced as AI and automation is adopted in the tactical domain. Safety risks may be inherent to the AI systems and their decision recommendations, or they may come in the form of cyber vulnerabilities as AI is introduced into tactical systems, or they may arise from the interactions of humans with intelligent machines. Peh (2021) is taking a deep dive into the complex dynamics of trust between humans and AI systems by researching methods to engineer AI systems for tactical operations. Peh’s research mission is to engineer AI systems as tactical decision aids that are trustworthy and achieve an effective trust balance to avoid both over-trust (humans blindly trusting AI) and under-reliance (humans disregarding AI).

Conclusion

Two emerging technologies are pairing up to provide new capabilities for the warfighter of the future: laser weapons and AI. Laser weapons are becoming an operational reality for defending ships and fleets, but they also pose an operational challenge in the form of decision complexity. AI is the necessary companion that can tackle this decision complexity and support effective human-machine teaming to operate laser weapons effectively and safely. A cognitive laser solution marries these two emerging technologies. The cognitive laser concept opens a diverse and challenging field of research for innovations in the application of AI methods to both laser weapon operations and the military tactical domain in general.

Dr. Bonnie Johnson is a senior lecturer of systems engineering at the Naval Postgraduate School. She was previously a senior systems engineer in the defense industry from 1995–2011 working on naval and joint air and missile defense systems. A graduate of Virginia Tech with a bachelor of science in physics and a graduate of Johns Hopkins with a master of science degree in systems engineering, Dr. Johnson received her PhD in systems engineering from the Naval Postgraduate School.

[Cognitive Lasers: Combining Artificial Intelligence with Laser Weapon Systems | Center for International Maritime Security \(cimsec.org\)](#)

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FACULTY:

How the Taliban Turned Social Media Into a Tool for Control

(*New York Times* 20 Aug 21) ... Paul Mozur

In the 1990s, they banned the internet. Now they use it to threaten and cajole the Afghan people, in a sign of how they might use technology to build power.

In one video, a Taliban official reassured female health workers that they could keep their jobs. In another, militants told Sikhs, a minority religious group, that they were free and protected. Still others suggested a new lawfulness in Kabul, with Talib fighters holding looters and thieves at gunpoint.

The Taliban, who banned the internet the first time they controlled Afghanistan, have turned social media into a powerful tool to tame opposition and broadcast their messages. Now firmly in control of the country, they are using thousands of Twitter accounts — some official and others anonymous — to placate Afghanistan’s terrified but increasingly tech-savvy urban base.

The images of peace and stability projected by the Taliban contrast sharply with the scenes broadcast around the world of the chaotic American evacuation from the Kabul airport or footage of protesters being beaten and shot at. They demonstrate the digital powers the militants have honed over years of insurgency, offering a glimpse of how the Taliban could use those tools to rule Afghanistan, even as they cling to their fundamentalist religious tenets and violent proclivities.

Afghan social media may be a poor indicator of public sentiment. Many of the Taliban’s critics and supporters of the U.S.-backed government have gone underground. But already, with a social media campaign in recent weeks that may have helped encourage Afghan security forces to put down their weapons, the Taliban have shown that they can effectively sell their message.

“They recognized that to win the war, it had to be done through narratives and stories,” said Thomas Johnson, a professor at the **Naval Postgraduate School** in Monterey, Calif. “In urban areas all Afghans have smartphones, and I think it’s going to be very useful. They’re going to use social media to tell the Afghan people what they need to do.”

Online, the Taliban will now be targeted by some of the same tactics they used to cement their power, just as movements like the Arab Spring and others used social media to organize and rally. Afghanistan’s new communications tethers with the rest of the world will help the Taliban’s opponents expose any atrocities and drum up support for the resistance. Already, hashtags like #DonotChangeNationalFlag are spreading, with some combination of internal and external support.

The Taliban have responded to such calls — and to reports of crackdowns and reprisal killings by the victorious militants — with messages stressing a desire for peace and unity. The Taliban portray Americans and other foreigners as the primary cause of years of conflict — an idea that they have emphasized by using the startling images this week from the Kabul airport.

As shots of desperate refugees clinging to planes circulated, one of the best-known pro-Taliban influencers, Qari Saeed Khosty, struck a tone of doleful sympathy.

“I cried hard to see your situation. You, the friends of the occupation, we have similarly cried for you for 20 years. We told you that Tommy Ghani will never be loyal to you,” he wrote in a Twitter post, using slang for a person who adopts Western styles and customs to refer to Ashraf Ghani, the Afghan president who fled this week. “We have forgiven you, I swear to Allah. We are not for this situation. Please come back to your homes.”

Still, the Taliban — a group known during its 1996-2001 rule for public executions, sometimes by stoning — have largely kept their messages upbeat. Taliban citizen journalists ply the streets of newly captured cities with blue-capped microphones, offering videos of bland endorsement from residents.

“The Taliban don’t need to post content to remind the population they are brutal,” said Benjamin Jensen, a fellow at the Atlantic Council. “The population knows that. What they needed were images that showed they could govern and integrate the country.”

The Taliban have been able to post much of what they want online. Even as blocks on major social media platforms like Facebook and YouTube persist, dozens of new accounts have sprung up. The militants’ efforts have focused on Twitter, where the Taliban are not directly barred.



Some Taliban opponents have issued rallying cries. By contrast, others have fallen silent and scrubbed their accounts of material that could put them in danger. A female soccer player this week warned her former teammates to take photos down. Facebook and Twitter have said they would take steps to shield accounts.

A teacher at Nangarhar University in Jalalabad who requested anonymity said a large number of his students who had taken part in anti-Taliban campaigns had deactivated their social media accounts. The generation born after the Taliban's first regime toppled had a lifetime of digital evidence to conceal, he said.

The Afghanistan of today is a far cry from the place where the internet was banned in 2001. Under the U.S.-backed government, cell towers went up across the country. Mobile phone users jumped to more than 22 million in 2019 from just one million in 2005, according to Statista, a market research firm. Experts estimate that 70 percent of the population has access to a mobile phone.

Today, the Taliban would struggle to block messages from the outside, as China and Russia do, without time and outside help. In place of deletions and bans, they have flooded social media with their own messages.

The Taliban were quick to view the internet as a new tool of propaganda, an extension of written messages and guerrilla radio stations. They grew accustomed to restoring websites after hosting services dropped them, and they often experimented, using techniques like text-message blasts. One report showed how they used trending hashtags to intimidate voters during a 2019 election.

To gain foreign acceptance in recent weeks, Taliban leaders put out messages in English and livestreamed press events. Their official website, Al-Emarah, publishes in English, Pashto, Dari, Urdu and Arabic.

The Taliban are building on lessons learned during the summer offensive that swept the group into power, said one member of the Taliban social media committee, who asked for anonymity because he was not authorized to speak.

Who are the Taliban? The Taliban arose in 1994 amid the turmoil that came after the withdrawal of Soviet forces from Afghanistan in 1989. They used brutal public punishments, including floggings, amputations and mass executions, to enforce their rules. Here's more on their origin story and their record as rulers.

Who are the Taliban leaders? These are the top leaders of the Taliban, men who have spent years on the run, in hiding, in jail and dodging American drones. Little is known about them or how they plan to govern, including whether they will be as tolerant as they claim to be.

How did the Taliban gain control? See how the Taliban retook power in Afghanistan in a few months, and read about how their strategy enabled them to do so.

What happens to the women of Afghanistan? The last time the Taliban were in power, they barred women and girls from taking most jobs or going to school. Afghan women have made many gains since the Taliban were toppled, but now they fear that ground may be lost. Taliban officials are trying to reassure women that things will be different, but there are signs that, at least in some areas, they have begun to reimpose the old order.

What does their victory mean for terrorist groups? The United States invaded Afghanistan 20 years ago in response to terrorism, and many worry that Al Qaeda and other radical groups will again find safe haven there.

Fast and clever messaging was a key part of the offensive, he said, pointing out that the Taliban trained and equipped soldiers with microphones and smartphones to report from the front lines as their forces swept into new territory. The messaging, a mix of amnesty offers and intimidation that was designed to create the sense of an inevitable victory, may have helped hasten a process of coercion and persuasion that led to many of the best-defended cities falling without fighting.

"Smartphones have been a very successful Taliban weapon," said Abdul Sayed, an independent researcher who focuses on the group's social media tactics. "They all have a special love for smartphones now."



last week, when Taliban forces took the key city of Herat, they distributed images and videos of militia leaders posing with Ismail Khan, a well-known local commander and Taliban opponent, showing him unrestrained and appearing at ease.

The message was clear, Mr. Sayed said: “If we can treat Ismail Khan, a top enemy, with such respect, there will not be danger for anyone.”

In Kabul, many Taliban-trained journalists have been busy on the streets, often holding a microphone with the logo of the group’s propaganda site. In one video posted to the Twitter account of the Taliban spokesman Zabiullah Mujahid, a reporter interviews residents in Kabul’s Shahr-e Naw area. When he asks a young boy about the takeover of the capital, the boy responds, “We are happy and have been living in peace.”

While some have responded positively to the messaging, the digital transfer of power has sent a shock across Afghanistan’s best-connected cities. Many of the voices that would once argue back against Taliban posts have gone silent for fear of retribution. Digital rights groups have said many people with ties to the former government or the United States have closed social media profiles, left chat groups and deleted old messages.

When Mr. Mujahid announced a news conference in a widely used WhatsApp journalist group this week, some members dropped out of the chat. One, who worked for foreign media and who asked for anonymity, fearing retaliation, said journalists who had written critically about the Taliban were worried about a backlash.

Even so, social media carried some signs of resistance. On Tuesday, a video of a small group of women protesting in Kabul in the presence of Taliban fighters was shared widely. The next day, videos of an incident in Jalalabad, in which the Taliban opened fire on a group of youths who had removed the militants’ flag and replaced it with that of the fallen Afghan government, went viral.

The Nangarhar University teacher said he didn’t believe the new generation that grew up in Kabul under the ousted government would easily accept the Taliban’s rule, and he expected new waves of online resistance before long.

“I fear that the Taliban will restrict social media soon because of it,” he said.

[How the Taliban Turned Social Media Into a Tool for Control - The New York Times \(nytimes.com\)](https://www.nytimes.com/2021/08/24/afghanistan/taliban-social-media.html)

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NSWCPD’s Chief Engineer Lunch and Learn Focuses on Human System Integration

(DVIDS 27 Aug 21) ... Brentan Debysingh

During the latest installment of virtual Lunch and Learn sessions, Naval Surface Warfare Center, Philadelphia Division (NSWCPD) Chief Engineer (CHENG) Scott Freedner welcomed the **Naval Postgraduate School’s** (NPS) Michael O’Neil, who spoke about Human System Integration (HSI) on July 15, 2021.

NPS describes HSI as follows: “HSI acknowledges that the human is a critical component in any complex system. It is an interdisciplinary approach that makes explicit the underlying tradeoffs across the HSI domains, facilitating optimization of total system performance in both materiel and non-materiel solutions to address the capability needs of organizations.”

After a brief introduction by Freedner, O’Neil explained the integral role HSI plays in combining humans and technology in the design of an application. Drawing upon materials from the NPS’s HSI program, O’Neil introduced and explained HSI concepts to the audience, and shared examples within military platforms.

“Both humans and technology have contributions they can make to a given system, but each has limitations as well. In the best case, the strengths of one party offset the weaknesses of the other,” explained O’Neil. “The end state we’re looking for in the acquisition process is to close functional gaps between humans and technology that could affect performance and safety. If we’ve done our work well, we will have a system where both parties work in harmony.”



HSI tries to achieve this by focusing on an essential question: What tradeoff decisions are being made in the design process relative to humans, and do they get us the results we want in the end?

O'Neil highlighted the challenges of incorporating HSI in some recent examples:

“On vehicles designed to protect soldiers from roadside bombs, a lot of time was spent on engineering passenger seats to mitigate the shockwave from an explosive blast,” said O'Neil. “But if the seats are not designed to comfortably accommodate soldiers of different sizes dressed in full battle kit, then we can end up losing the blast mitigating effects we are seeking ... or worse, the seats won't be used.”

He continued, “Another tradeoff of making blast-resistant vehicles is that there typically aren't many entries and exits, which can be useful for blast resistance, but can inhibit the crew's ability to exit the vehicle quickly if attacked. When the vehicle is hit with an IED, the occupants may survive the blast, but these vehicles often roll over, and passengers may be trapped and unable to escape.”

O'Neil highlighted the development of the F119 engine (used in the USAF F-22) as a successful implementation of HSI. The vendor in this case heavily prioritized gathering input from Department of Defense (DoD) maintainers on the developing design and then incorporating this feedback to help make tradeoffs in the design process. They invested millions in building a full-scale mockup very early in the design, which gave them unique insight on how to make maintenance more efficient. Access to common maintenance components was improved, unnecessary steps were reduced or eliminated, and the variety of tools needed for maintenance was reduced. These efficiencies in turn reduced the manpower required for maintenance. In the end, the engine was selected over an alternative with higher thrust rating because of its edge in maintainability and potential for life-cycle savings.

“The true power of HSI is that if it's done early, it can have a tremendous effect on shaping a more effective, efficient and safe system,” noted O'Neil. “That's what the warfighter deserves: the best system we can give them.”

After his presentation, O'Neil answered numerous questions from the audience about HSI historical and future breakthroughs, the difference between systems engineering and HSI, and how to consider human variability when selecting test audiences.

Freedner added that, “HSI is a competency we are looking to develop in Philadelphia in the near future and make it a part of everything we do.”

More details on the HSI program at NPS are available at [https://nps.edu/web/dl/cert_hsi].

NSWCPD employs approximately 2,700 civilian engineers, scientists, technicians, and support personnel. The NSWCPD team does the research and development, test and evaluation, acquisition support, and in-service and logistics engineering for the non-nuclear machinery, ship machinery systems, and related equipment and material for Navy surface ships and submarines. NSWCPD is also the lead organization providing cybersecurity for all ship systems.

[DVIDS - News - NSWCPD's Chief Engineer Lunch and Learn Focuses on Human System Integration \(dvidshub.net\)](#)

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How will the 'new' Taliban rule Afghanistan?

(The New Arab 26 Aug 21) ... Sayed Jalal Shajjan

Analysis: Two decades of fighting and exile have seen the Taliban adapt both politically and diplomatically, but governance will be the insurgent group's real test.

On the 15th of August, the Taliban swept into Afghanistan's capital after President Ashraf Ghani fled the country and left the gates to Kabul wide open for the militants to enter.

A few hours later, the Taliban posed for photos behind Ghani's desk at the presidential palace.

The Taliban's surge into Kabul marked its second successful venture since the group's birth in 1995, when the Islamist group banned music, television, and cinema while forbidding girls over the age of 10 from attending school.



This time around, Taliban fighters armed with seized US-supplied weapons posed for selfies and published video clips of their victory on social media.

"We have to recognise that there is abundant political continuity in the Taliban from the last time they were in power"

In the late 1990s, a woman walking outside without a legitimate male companion would likely have faced lashes from Taliban fighters. Now, its fighters and leaders appeared in interviews with female reporters as soon as they entered Kabul.

Recently, the Taliban's new governor for Kandahar, Yousef Wafa, said that "no one will be threatened for [their] beard, hair, and listening to music. Religious clerics will guide them away from sins gently".

The Taliban's spokesperson in Doha, meanwhile, shared a photo on his Twitter account of young girls going to school.

However, most observers remain wary. Reports have emerged of Taliban fighters going door-to-door searching for former employees of the Afghan government and Western countries, with evidence of arrests, killings, and intimidation, including of the Hazara minority.

Days after their triumph in Kabul, female journalists were barred from returning to their jobs.

While there is cautious optimism that the Taliban may have changed, many fear their behaviour could take a turn at any time.

A new Taliban in the making

Two decades of fighting the Afghan government and its international partners, and years of negotiations with the US, have made the Taliban movement resolute in its cause.

Despite losing its founder Mullah Omar and other influential leaders in the past two decades, many of the old guard still holds sway.

"We have to recognise that there is abundant political continuity in the Taliban from the last time they were in power," Asfandiyar Mir, a South Asia security scholar affiliated with Stanford's CISAC, told The New Arab.

"Yes, there are some new leaders, but the political echelon of the Taliban today has many important leaders from the 1990s."

The Taliban ideology has largely remained the same as when it reigned over most of the country from the mid-1990s. Since the start of negotiations with the US, the Taliban delegation has not divulged much about the type of governance system the movement sought.

"The core values of the Taliban remain the same: They are very committed to their Islamic Emirate; see their leader as more than a political leader, a supreme religious leader; reject elections and centre their favoured school of Islamic theology in their political vision for the country," South Asia expert Asfandiyar Mir told TNA.

In July, when the Taliban took control of Spin Boldak in Kandahar in southern Afghanistan, rights groups say its fighters committed grave atrocities.

Hundreds of residents were detained and accused of working with the government, with some killed, despite announcements that they would be safe under the Taliban.

When the Taliban faced tough resistance in Lashkar Gah in southwestern Afghanistan, a Taliban affiliated Twitter account wrote, "the amnesty announced should be revoked for the remaining besieged slaves in Lashkar Gah and one by one they should be executed in revenge of the common people of Lashkar Gah".

"Running the whole bureaucratic structure left behind by the Afghan republic is an enormous task. There is also the challenge of funding the government"

Taliban spokesperson Suhail Shaheen has rejected reports of revenge killings.

However, the group seems to have modified its behaviour since capturing Kandahar and Helmand provinces. In Herat, for example, after capturing 75-year-old commander Ismail Khan many were surprised by the Taliban's political maturity in dealing with the resistance leader and others in the province.



The real test

Most people are apprehensive about how the Taliban will rule, with governance one of the biggest challenges they face once the dust of their victory has settled.

“While they were absolutely miserable administrators and had no idea how to govern other than through intimidation, through years of having shadow governors in many provinces they have gained some skills in governance and have an actual scheme of an organisation for administering Afghanistan,” Thomas H. Johnson, a Research Professor of National Security Affairs at the Naval Postgraduate School, told The New Arab.

By capturing Kabul, the Taliban gained a lot militarily. Millions of dollars worth of sophisticated military equipment enhanced their capability on the battleground.

However, as Afghanistan grapples with drought, Covid-19, growing poverty, unemployment and an empty government treasury, the group’s ability to govern and effectively administrate will be severely tested.

“As an insurgency, their shadow government used to provide services, so they have some experience. But running the whole bureaucratic structure left behind by the Afghan republic is an enormous task. There is also the challenge of funding the government,” Mir added.

Furthermore, the recent evacuation of thousands of Afghans puts forward another conundrum for the Taliban; a brain drain to the West. The majority of Afghans with modern administrative know-how and who “formed the backbone of the Afghan state over the last two decades are looking to leave the country - which will create a major capacity gap,” Mir added.

More than a week after the Taliban took control of Afghanistan, the banking system is completely shut and money wiring systems such as Western Union and the Hawala system are down.

The purchasing power of most people has diminished as most have run out of cash. How the Taliban would finance their administration is another dilemma that the militant group is faced with.

“For their insurgency, the Taliban have drawn on funds from the informal economy and donations from both inside Afghanistan and Pakistan. Running a government would require a lot more funds than them, including through international aid agencies and government,” Mir said.

Recently, the US announced that it had frozen assets of \$9.5 billion belonging to the Afghanistan Central Bank. Although the Taliban has few financial resources to govern, “China may aid them financially”, expects Thomas Johnson.

But to access aid and financial resources and recognition from other countries, the Taliban “possibly may moderate some of the draconian policies and behaviour,” he added.

Diplomatic maturity

In the last 20 years, especially since the beginning of negotiations with the US and having access to an international stage, the Taliban have adapted both diplomatically and politically.

The deadline set by the Biden administration to withdraw US forces certainly helped them to buy opposing figures within the Afghan government.

"The core values of the Taliban remain the same: They are very committed to their Islamic Emirate; see their leader as more than a political leader...reject elections and centre their favoured school of Islamic theology in their political vision"

“They are also able to navigate internal politics of the country effectively. Over the last year, they have demonstrated that they can divide their rivals, court some and side-line others to forge ahead,” Asfandyar Mir said.

Diplomatically, the Taliban has also been given a platform on the international stage to develop relations with neighbouring countries.

With China, for example, the Taliban has refused to condemn the persecution of Uighur Muslims in Xinjiang, instead assuring Beijing that they would not provide sanctuary to Uighur militants in the territory under its control.

But in negotiating relations internationally, such as accommodating to China’s Xinjiang policies, the Taliban may leave itself open to charges of hypocrisy and internal disagreement as it seeks to establish an Islamic Emirate based on Sharia law.



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ALUMNI:

Arlington tech contractor names VP architect

(Virginia Business 23 Aug 21) ... Katherine Schulte

Arlington-based national security technology contractor Two Six Technologies named Daniel J. “Rags” Ragsdale its vice president – architect on Aug. 4.

“I’m beyond excited to have the opportunity to work closely with the deeply passionate and well-respected experts who comprise the Two Six Technologies team,” Ragsdale said in a statement. “I’m very confident that collectively we will accelerate the delivery of leap-ahead capabilities, which will be instrumental in addressing the increasing array of threats to U.S. national security interests.”

Ragsdale was most recently the U.S. Department of Defense’s acting director of defense research and engineering for modernization, where he helped with development and disruptive integration of advanced technologies. He has also been the DOD’s principal director for cyber.

Before his return to the DOD in 2019, Ragsdale was the founding director of Texas A&M Cybersecurity Center, where he led cybersecurity research and educational activities. He previously served as a Defense Advanced Research Projects Agency (DARPA) program manager, where he managed a \$175 million portfolio of research and development programs.

“I’m thrilled to announce the addition of an accomplished military, DOD and DARPA veteran like ‘Rags’ to our leadership team,” Two Six Technologies CEO Joe Logue said in a statement. “‘Rags’ reputation goes before him.”

Ragsdale is a retired U.S. Army colonel. He served in the Army for 30 years and served almost 15 years at the U.S. Military Academy at West Point, including as its vice dean for education.

He is a U.S. Military Academy graduate and holds a master of science degree in computer science from the **Naval Postgraduate School** and a doctorate in computer science from Texas A&M University.

Two Six Technologies has more than 300 employees and a technical presence in more than 40 countries.

[Arlington tech contractor names VP architect | Virginia Business](#)

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Christine Elow Named Acting Police Commissioner of Cambridge Police Department

(Cambridge City 19 Aug 21)

City Manager Louis A. DePasquale has announced the appointment of Superintendent Christine Elow as Acting Commissioner of the Cambridge Police Department effective Saturday, August 21, 2021. Elow takes over for Commissioner Branville G. Bard, Jr., who accepted a new opportunity with the Johns Hopkins Institutions after leading the Department for the past four years.

City Manager DePasquale said, “I am pleased to appoint Superintendent Elow as Acting Police Commissioner. Growing up in Cambridge and spending her entire career with the Cambridge Police Department, Christine has demonstrated strong leadership and a fervent commitment to the safety and betterment of our community. She cares deeply about this City and procedural justice. I am proud to have her serve as the Acting Police Commissioner.”

Elow has been with the Cambridge Police since joining as an officer in 1995 after serving in the U.S. Navy for four years. She served in the Patrol Division and oversaw the Professional Standards Unit, where she was responsible for receiving, processing, and investigating complaints made against members of the Department. She later served as Deputy Superintendent for Day Patrol and Community Services. In

2017, Elow was appointed Superintendent, making her the highest-ranking female officer in the history of the Department. She is a strong proponent of community-driven policing, juvenile justice issues, procedural justice, police training and innovative hiring practices. Elow holds a Bachelor of Science Degree in Criminal Justice Administration from Curry College and a Master's Degree from the **Naval Postgraduate School's** Center for Homeland Defense and Security Program.

Elow said, "It is a once in a lifetime opportunity to lead a police department in the City I grew up in and love dearly. I am truly honored to have the opportunity to serve in this role and plan on doing everything I can to help the Department advance its mission and serve as the model for policing in Massachusetts and the country."

In addition to Elow being appointed as Acting Commissioner, Deputy Superintendent Robert Lowe will be appointed Acting Superintendent of the Support Services Division. Lowe, who also grew up in Cambridge and joined the Cambridge Police Department in 2001, was most recently the Commanding Officer for the Family and Social Justice Section. Acting Superintendent Lowe joins Superintendent Leonard DiPietro as part of the Department's senior leadership team.

"I want to congratulate Acting Commissioner Elow and Acting Superintendent Lowe on their appointments. Their dedication to building public trust and longstanding roots in the community make them excellent choices to fill these roles during this transition," said Mayor Sumbul Siddiqui.

"Cambridge PD is a nationally recognized agency and there is no one more prepared to lead it moving forward than Christine Elow," said Commissioner Bard. "Superintendent Elow and Deputy Superintendent Lowe have been valuable members of my Command Staff and are highly regarded within the community. They are proven leaders who have earned these appointments and I have complete confidence in their abilities to help lead the Department going forward."

[Christine Elow Named Acting Police Commissioner of Cambridge Police Department - City of Cambridge, MA \(cambridgema.gov\)](http://cambridgema.gov)

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Passion, Perseverance and a Talent for Business Led Geneva Honeyman to an Enriching Career at NSWC Dahlgren Division

(NAVSEA 24 Aug 21)

Discovering a talent that aligns with a passion is a rewarding feat and can lead to an enriching career. For Geneva Honeyman, exploring her many talents meant pursuing different avenues before recognizing where her passion truly lay.

When asked about her early career aspirations, Honeyman fondly recalls her childhood interest in veterinary medicine, and a special knack for science and mathematics projects, which eventually led to the field of forensics. "I really enjoyed the science behind forensics but didn't want to be that close to crime," Honeyman said in a recent conversation. "I wanted to find an area of study that I would be passionate about."

When Honeyman enrolled at the University of Mary Washington she initially planned on majoring in psychology, but several impactful business and accounting courses convinced her to pivot to a business major. A chance encounter with visitors from the Naval Surface Warfare Center Dahlgren Division (NSWCDD) in those classes changed the course of her professional trajectory.

During Honeyman's junior year, "contract officers from Dahlgren came to speak to the business department students," she recounted. The objective for the visit was to introduce students to "contract acquisitions and discuss the Naval Acquisitions Development Program (NADP), an internship program for postgraduates," according to Honeyman. By offering contract-specific classes through the university, NSWCDD presented students with an opportunity to learn about contract acquisitions and earn certifications in contracting.

"It just clicked for me," said Honeyman. "After taking these classes, I immediately knew this was what I wanted to do. I wanted to work as a contract specialist for the Department of Defense."



Honeyman applied for the internship program after graduating, and through perseverance and determination, was selected into the program. Within a couple of months, she began her three-year internship, which led to a full-time position at NSWCCD.

“Working as a contract specialist is such a great opportunity for me. I really enjoy what I do, learning new requirements and engaging with the people I work with,” said Honeyman. “Being part of the workforce at Dahlgren really feels like home, especially working with the team that I do.” As a naval contract specialist at Dahlgren, Honeyman expressed her enthusiasm and dedication to supporting the warfighter and the Navy.

Honeyman attributes her continued success in her field to her mentor, senior contract officers and department leadership. As a mentor herself, she dedicates time to provide guidance to interns and opportunities to learn and grow in the contracts acquisitions field. “Going through the internship program and having a mentor encouraged me to grow in my skills in communicating with technical customers, achieving expectations, document review processes and becoming more proficient in contracts writing systems,” she said. “It was a great environment to learn and grow, and I wanted to do the same in return.”

Honeyman plans to expand on her expert knowledge and continue developing her talents within contracts acquisitions. She is currently pursuing her master’s degree in contracts management through the **Naval Postgraduate School**.

[Passion, Perseverance and a Talent for Business Led Geneva Honeyman to an Enriching Career at NSWC Dahlgren Division > Naval Sea Systems Command > Saved News Module \(navy.mil\)](#)

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Undersea warfare analyst wins Society of Women Engineers 2021 Helen Martha Sternberg Award

(DVIDS 27 Aug 21)

Sierra Palmer, an undersea warfare analyst in the Naval Undersea Warfare Center (NUWC) Division Newport’s Undersea Warfare Engineering and Analysis Department, has won the Society of Women Engineers 2021 Helen Martha Sternberg Award.

The award is given annually to a female mathematician, computer scientist or computer engineer who has been working at NUWC Division Newport between six months and two years. Candidates for this award must show significant progress in her major area of study and plan on attaining a graduate degree.

Palmer, a resident of Tiverton, Rhode Island recently earned a graduate certificate in robotics engineering from the **Naval Postgraduate School** and plans to pursue a master’s degree in defense and strategic studies at the Naval War College. Palmer was hired at Division Newport in July 2019, after graduating from Worcester Polytechnic Institute in Massachusetts with a bachelor’s degree in robotics engineering.

Her initial assignment was investigating a concept of employment for underwater vehicles that could be used as a data mule. With support and direction from a senior warfare analyst, she began to explore this uncharted area of undersea warfare. Her research into expanding unmanned undersea vehicle missions led to the development of a concept of employment for unmanned systems for subsea and seabed warfare.

In her brief tenure at Division Newport, Palmer has significantly contributed to two major underway events. The first was when she supported the Saturn Underway project, an unprecedented innovative approach that matched technological capability to tactical impact. A cross-functional Division Newport team researched technology areas, interviewed subject matter experts, and leveraged commercial and classified research for each technology and capability pairing. Her participation helped the principal investigator achieve the Navy-warfighter goal of providing the resource sponsor, program office and senior leadership with greater insight into the core tasks required for undersea warfare system of systems and the associated program scope necessary for such systems to be successful.



Following the success of Saturn Underway, Palmer demonstrated tremendous initiative and confidence in leading Titan Underway, a follow-on war-gaming event to explore critical aspects of seabed warfare.

The award recognizes that Palmer's efforts deliver results that are extraordinary for a new professional and more commensurate with an experienced journeyman.

Palmer has "cultivated an aptitude for innovative decision-making and problem-solving that instills confidence in her customers and allows her to execute near- and far-term strategic planning in a dynamic multivariate paradigm," the award states. "She is dynamic multi-tasker who sees challenges as opportunity."

Amanda Rock of Division Newport's Sensors and Sonar Systems Department, representing the New England Shoreline Section of the Society of Women Engineers, presented the award to Palmer in a ceremony that was part of the command's Annual Awards ceremony held July 15.

NUWC Division Newport is a shore command of the U.S. Navy within the Naval Sea Systems Command, which engineers, builds and supports America's fleet of ships and combat systems. NUWC Newport provides research, development, test and evaluation, engineering and fleet support for submarines, autonomous underwater systems, undersea offensive and defensive weapons systems, and countermeasures associated with undersea warfare.

NUWC Newport is the oldest warfare center in the country, tracing its heritage to the Naval Torpedo Station established on Goat Island in Newport Harbor in 1869. Commanded by Capt. Chad Hennings, NUWC Newport maintains major detachments in West Palm Beach, Florida, and Andros Island in the Bahamas, as well as test facilities at Seneca Lake and Fisher's Island, New York, Leesburg, Florida, and Dodge Pond, Connecticut.

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