

### *Award Submittal Date Extended for First Annual Secretary of Defense Product Support Manager Award*

In a memorandum dated March 27, 2013, "Nomination Submittal Extension for the First Annual Secretary of Defense Product Support Manager (PSM) Award," Deputy Assistant Secretary of Defense for Materiel Readiness Sue Dryden has advised that "the award submittal date ... for the first annual Product Support Manager PSM Award Program is extended to May 16, 2013. The award will honor outstanding PSMs in two categories: Major Defense Acquisition Programs, Acquisition Categories (ACATs) ID or IC PSMs, and Major Weapon System/Other Weapon Systems, ACAT II and below. Each Service or Agency may submit one nomination per category. The criteria remain the same." View the award criteria published by Under Secretary of Defense for Acquisition, Technology and Logistics Frank Kendall at <http://www.dau.mil/homepage%20documents/USA001044-13.pdf>.

### **Nominations Now Open for 37th Army Acquisition Annual Awards**

*Teresa Mikulsky Purcell*

FT. BELVOIR, Va.—Nominations for individuals and teams are now being accepted for the U.S. Army Acquisition Annual Awards now through June 21. This year marks the 37th anniversary of the awards, which honor and recognize excellence among those military and civilian members of the Army Acquisition Workforce who go above and beyond what is expected to provide soldiers with the weapons and equipment they need to execute decisive, full-spectrum operations in support of their missions.

"These awards allow us the opportunity to highlight our many successes," said Assistant Secretary of the Army for Acquisition, Logistics, and Technology Heidi Shyu. "Our acquisition professionals continue to provide needed capabilities at best value to the soldier in the field, consistent with the department's Better Buying Power initiative. They balance affordability with requirements for agile, deployable, and technologically sophisticated equipment."

This year's theme is "Recognizing Acquisition Excellence." All managers are encouraged to submit nominations for the awards.

"These awards are the most prestigious in our field. They represent the professionalism, dedication, and innovation across our acquisition community," said Shyu. "Thanks to the determined support and hard work of our acquisition professionals, our Army remains the best-trained, best-equipped fighting force in the world."

The former Department of the Army Materiel Development and Readiness Command (now known as the Army Materiel Command) established the first acquisition award in November 1975. The original award, called the Annual Award for Project Management, was the predecessor to the

Project and Product Manager Award described below. The first recipient was Maj. Gen. Robert J. Baer, who received the recognition in the fall of 1976.

Today, the Army Acquisition Annual Awards are comprised of a total of 11 awards in the following five categories:

- The Army Acquisition Excellence (AAE) Awards recognize Army acquisition workforce individuals and teams whose performance and contributions set them apart from their peers. The awards directly reflect outstanding achievements in support of soldiers and the Army's Business Transformation efforts. The AAE awards include the Individual Sustained Achievement Award and three team awards, titled Equipping and Sustaining Our Soldier's Systems, Information Enabled Army, and Transforming the Way We Do Business. Submittal timeline: March 6 – May 3.
- The Secretary of the Army Award for Project and Product Manager (PM) and Acquisition Director of the Year applaud the PM and acquisition director whose outstanding contributions and achievements merit special recognition. Submittal timeline: March 13 – May 10.
- The ASA(ALT) Contracting Noncommissioned Officer (NCO) Award for Contracting Excellence applauds the ASA(ALT) Contracting NCO whose outstanding contributions and achievements merit special recognition. Submittal timeline: April 11 – June 6.
- The Director, Acquisition Career Management Award recognizes an acquisition workforce member who has demonstrated exemplary performance and has made significant, long-lasting contributions to the Army Acquisition Corps over the course of his or her career, either as a federal government employee or serving in the military. Submittal timeline: May 1 – June 21.
- The Army Life Cycle Logistician of the Year Award recognizes a military or civilian logistician who has made significant contributions to the field of life-cycle logistics as well

### ***To the DoD Total Acquisition Workforce – Well done!***

The Government Accountability Office has just released its annual report on defense acquisition, and for the first time in my memory notes the progress the department has made in controlling cost on our programs. This is a direct result of the work you have done and I want to thank you and congratulate you all on the progress we have made. As the GAO notes, concepts like “should cost” where every manager works to identify specific ways to reduce costs and then proactively attacks those targets are being applied successfully. We are requiring demonstrated performance before we make investment decisions. We are taking the time to negotiate sound business deals. While I want to applaud the progress we have made, I also want to acknowledge that our work is not done and in fact is becoming even more challenging. We are now swimming upstream against the inefficiencies that sequestration is imposing on us and the debilitating impact of the expectation of furloughs across our workforce. In this tough climate I will soon issue the implementing instructions for Better Buying Power 2.0, the next step in our effort to continuously improve the way we do business. Why now, you may well ask, with all the problems we are being forced to cope with? The answer is the same as it always has been and always will be—because our warfighters and the American taxpayer depend on us. Again congratulations on the progress you have made. We are getting better business deals—deals that treat industry fairly and deals that increase the value we receive for our resources. As those resources shrink, the Department is counting on us to do even more—and we will.

*Frank Kendall  
Under Secretary of Defense (AT&L)*

as achievements in improving the total life-cycle systems management process.

In addition to the Army awards, DoD has issued a call for nominations for the following two acquisition awards. Multiple awards will be presented to individuals and teams in each category for achievements that exemplify the established goals and objectives that further life-cycle cost reduction and acquisition excellence within DoD.

- The David Packard Excellence in Acquisition Award is given to DoD civilians and/or military organizations, groups, and teams that have made highly significant contributions or have demonstrated exemplary innovations and best practices in the defense acquisition process. Submittal timeline: March 28 - May 10.
- The Under Secretary of Defense for Acquisition, Technology, and Logistics Workforce Achievement Award recognizes excellent performance from military or civilian individuals in various acquisition workforce disciplines who are involved in procuring DoD products and services. Submittal timeline: March 28 - May 10.

Each award has different criteria, submittal timelines, performance periods, and nomination procedures. For detailed information, nomination forms, and examples of winning nominations, visit the Acquisition Support Center website, or contact Stanley Eisenhower at 703-805-1096, Stanley.O.Eisenhower.Civ@mail.mil.

### **Carter Honors Defense Threat Reduction Agency**

*AMERICAN FORCES PRESS SERVICE (JAN. 26, 2013)*

*Cheryl Pellerin*

FORT BELVOIR, Va.—In an auditorium filled with nearly 400 Defense Threat Reduction Agency employees and other defense officials here, Deputy Defense Secretary Ashton B. Carter presented the Joint Meritorious Unit Award to agency representatives yesterday.

It was the fourth time DTRA received the award, and Carter called it a great testament to those who have served the organization, past and present.

“In all your work you have aggressively pursued the president’s vision for countering [weapons of mass destruction] around the world,” the deputy secretary told the audience. “You’ve kept WMD out of the hands of terrorists by locking down dangerous nuclear and biological materials, destroying legacy weapons, and developing technologies to prevent, defend against, and counter a WMD attack,” he added.

Joining Carter at the ceremony were Frank Kendall III, undersecretary of defense for Acquisition, Technology and Logistics; Andrew C. Weber, assistant secretary of defense for Nuclear, Chemical and Biological Defense Programs; and Kenneth A. Myers, director of DTRA and the U.S. Strategic Command Center for Combating Weapons of Mass Destruction.

DTRA's mission is to safeguard the nation and its allies from chemical, biological, radiological, nuclear, and high-yield explosive weapons of mass destruction by providing the capabilities needed to reduce, eliminate, and counter the threat such weapons pose and to mitigate their effect.

The Joint Meritorious Unit Award, established in 1981, is the only ribbon award granted by the Defense Department and is the organizational equivalent of the Defense Superior Service Medal.

It's presented in the name of the defense secretary, and Leon E. Panetta signed a congratulatory statement that appeared on the award certificates.

"DTRA distinguished itself by exceptionally meritorious service from October 2009 thru September 2011," he wrote, "by their exemplary performance of duty, the members of the Defense Threat Reduction Agency have brought great credit upon themselves and the Department of Defense."

During the ceremony, Carter described the work performed around the world by DTRA scientists and specialists, and the kind of work the nation will need from the agency in the years ahead.

In March 2011, DTRA directly supported the crisis response in Libya through Operations Odyssey Dawn and Unified Protector, he said.

DTRA staff worked with U.S. Africa Command and the Joint Staff to generate more than 100 targeting support products to assess the effects of striking WMD targets in Libya.

The products were used to determine how WMD sites would be addressed during the crisis, the deputy secretary added, and now the United States is working with the Libyan authorities to secure and destroy chemical weapons.

In the same month, nearly 7,000 miles away in Japan, a 9.0-magnitude earthquake generated a 70-foot tsunami, devastating communities along Japan's coast and causing one of the world's worst nuclear disasters.

"You responded immediately from both the United States and Japan in Operation Tomodachi," Carter said.

"The United States has had a permanent presence at Yokota Air Base for arms control purposes, and that provided on-scene capability with all the backup consequence management capability of this great agency," he added, noting that

a DTRA consequence management advisory team arrived in Japan within two days of the disaster.

There, DTRA experts provided technical assistance, modeling and simulation 24 hours a day, seven days a week, with rotational liaison, planning, and technical personnel on scene until the crisis was under control. They advised on radiation, monitoring, and safety issues, and with Navy experts modified a software model to visualize the extent and trajectory of contaminated water around the damaged nuclear power plants in Japan.

"Your effective response was facilitated by the close relationships you had built with U.S. Forces Japan, with Japan's own Self Defense Forces, with our State Department colleagues prior to the disaster," Carter said.

Several DTRA personnel provided direct assistance at the U.S. Embassy and the Japanese Ministry of Defense, he said, and the work continues today, strengthening the U.S.-Japan alliance and improving crisis response capability with U.S. partners and allies.

Describing other ways DTRA has fulfilled its core counter-WMD mission, Carter said the agency has become a premier government entity for research and a key partner for the Department of Homeland Security.

Specifically, he said, DTRA has continued to develop new capabilities to counter biological threats, including producing new candidate vaccines for deadly viral diseases like Ebola and Marburg.

DTRA personnel have played a technical role in New START Treaty negotiations, Carter added, and since the treaty entered into force DTRA teams have conducted 35 inspection missions at Russian strategic sites to verify weapon limits and locations.

"Going back all the way to the Manhattan Project, DTRA and its predecessors have performed a strong supporting role in preserving, protecting, understanding, and advising the department on our overall nuclear stockpile and on the continuing need for a safe, secure, and reliable nuclear deterrent for the United States," the deputy secretary said.

Today DTRA performs critical functions, among them helping the chairman of the Joint Chiefs of Staff, the Air Force, and the Navy conduct nuclear safety and security inspections; providing people, procedures, and tools to perform U.S. nuclear weapons stockpile accounting and tracking; and serving as the DoD executive agent for sustaining em-



Deputy Defense Secretary Ashton B. Carter presents the Joint Meritorious Unit Award to the Defense Threat Reduction Agency during a ceremony at Fort Belvoir, Va., Jan. 25, 2013. DoD photo by Erin Kirk-Cuomo

phasis on nuclear weapons training expertise, and response protocols, procedures, and practices for potential nuclear weapons accidents and incidents.

DTRA is also part of the 20-year-old Nunn-Lugar Cooperative Threat Reduction program, Carter said, and its contributions to preventing the spread of loose nukes in the former Soviet Union.

“And in the past two decades ... DTRA personnel—scientists, weapons specialists, inspectors, program managers, action officers, interpreters—have assisted former Soviet states in deactivating and properly disposing of over 13,000 warheads,” the deputy secretary said.

“Ukraine, Kazakhstan, and Belarus [are] all denuclearized,” he added. “And DTRA assisted the Albanian government in becoming the first nation to completely eliminate a chemical weapons stockpile.”

DTRA is an important protection against the increasing sophistication of terrorist organizations and leaps in technology that reduce barriers to WMD acquisition, Carter said. The agency also increasingly works with other government agencies and international partners to build capacity for among other things countering the threat of biological and chemical weapons.

“So we find ourselves today at an inflection point in our thinking and our strategy, and wherever you look in that strategy you find a role for and a need for the work of DTRA,” the deputy secretary said.

And as DoD resources and global security interests shift, Carter added, “the department will continue to depend on you for the core intellectual, technical, and operational support to counter the threat of weapons of mass destruction.

### **Naval Research Laboratory Space Scientist Honored**

*AMERICAN FORCES PRESS SERVICE (FEB. 4, 2013)*

WASHINGTON—Naval Research Laboratory scientist George Carruthers received the 2011 National Medal of Technology and Innovation in a Feb. 1 ceremony at the White House.

The award is the nation’s highest honor for technology achievement, and is presented by the president to America’s leading innovators, officials said.

Carruthers’ geospace research is improving the ability to understand and forecast space weather, which can affect military and civilian space and communication systems.

“I am proud to honor these inspiring American innovators. They represent the ingenuity and imagination that has long

made this nation great—and they remind us of the enormous impact a few good ideas can have when these creative qualities are unleashed in an entrepreneurial environment,” President Barack Obama said in announcing the medal recipients.

Carruthers, who works in NRL’s space science division, grew up during the space race. His love for space science extended through his youth and eventually led him to pursue degrees in aeronautical, nuclear, and astronomical engineering from the University of Illinois.

“If there is one idea that sets this country apart, one idea that makes us different from every other nation on earth, it’s that here in America, success does not depend on where you were born or what your last name is,” Obama said during the ceremony.

“Success depends on the ideas that you can dream up, the possibilities that you envision, and the hard work, the blood, sweat, and tears you’re willing to put in to make them real,” the president added.

Carruthers began work at NRL in 1964, after receiving a fellowship in rocket astronomy from the National Science Foundation. Throughout his tenure, he has focused his attention on far ultraviolet observations of the earth’s upper atmosphere and of astronomical phenomena.

In 1969, Carruthers received a patent for his pioneering instrumentation, Image Converter for Detecting Electromagnetic Radiation Especially in Short Wave Lengths, which detected electromagnetic radiation.

In 1972, his Far Ultraviolet Camera Spectrograph, the first moon-based space observatory, was sent to the moon with the Apollo 16 mission. This 50-pound, gold-plated camera system allowed researchers to take readings of and understand objects and elements in space that are unrecognizable to the naked eye. It also gave scientists views of stars and solar systems thousands of miles away.

His camera still sits on the surface of the moon. A second version was sent on the 1974 Skylab space flight and was used to observe Halley’s Comet, among others.

Carruthers has been the principal investigator for numerous Defense Department and NASA-sponsored space instruments, including a 1986 rocket instrument that obtained ultraviolet images of Halley’s Comet. His experiment on the



George Carruthers, left, and William Conway, a project manager at the Naval Research Institute, examine the gold-plated Ultraviolet Camera/Spectrograph, which housed the first observatory operated by man from a fixed platform outside the earth. Apollo 16 astronauts placed the camera, invented by Carruthers, on the moon in April 1972.

U.S. Naval Research Laboratory photo

Defense Department’s Space Test Program Advanced Research and Global Observation Satellite captured an image of a Leonid shower meteor entering the Earth’s atmosphere, the first time an image of a meteor has been captured in the far ultraviolet from a space-borne camera.

The National Medal of Technology and Innovation was created by statute in 1980 and is administered for the White House by the Commerce Department’s Patent and Trademark Office. The award recognizes those who have made lasting contributions to America’s competitiveness and quality of life and helped strengthen the nation’s technological workforce. Nominees are selected by an independent committee representing the private and public sectors.

### **DoD Recognizes Training Headquarters Supply Analyst for Purchase Card Management Excellence**

NAVY NEWS SERVICE (MARCH 1, 2013)

Ed Barker

PENASCOLA, Fla.—The Naval Education and Training Command (NETC) announced March 1 the receipt of a Department of Defense (DoD) individual contribution award for their Government Purchase Card (GPC) Agency/Organization Program Coordinator (A/OPC).

Joseph Yudiski, NETC supply systems analyst, was one of two A/OPCs selected Navy-wide for the honor by LeAntha Sumpter, director of Program Development and Implementation for the office of the undersecretary of defense for acquisition, technology and logistics.

"The Bureau of Personnel's GPC program is among one of the most challenging programs across DoD due to its broad scope and limited field resources, including all of the Navy's ROTC [Reserve Officer Training Corps] units," said Sumpter. "As a result of his exceptional program oversight, outstanding internal controls, and aggressive pursuit of timely payments, the BUPERS [Bureau of Naval Personnel] achieved a zero percent delinquency rate and zero interest charges over the past 40 months."

Yudiski handles A/OPC GPC duties for both NETC and BUPERS—accounts that process nearly \$100 million in purchase card and convenience checks per fiscal year. Both accounts had zero discrepancies for more than three years.

"To handle such a large volume of transactions with zero discrepancies is an impressive feat," said Doug Ebner, the GPC program manager for the Naval Supply Systems Command. "Staying on top of policies and procedures while getting purchase card bills paid on time for every one of his 148 subordinate activities is extremely impressive and resulted in significant rebates for the Navy."

Yudiski credits his account managers at the local level for helping him to achieve the success recognized by DoD.

"My assistant program coordinator here at NETC headquarters and all of the unit program coordinators in the field work hard to ensure we are on top of all transactions and reconciliations," said Yudiski. "This award is a combined effort, and I couldn't have done it without them."

Yudiski's supervisor, Cmdr. Derek Webster, NETC staff supply/logistics officer credits the NETC/BUPERS GPC success to not only teamwork, but also Yudiski's knowledge and anticipating potential problem areas.

"Joe runs an extremely proactive program, not waiting until problems arise before stepping in," said Webster. "His intimate knowledge of the program allows him to stay ahead of and anticipate problems, solving them before they arise. Forty months without any discrepancies is an unprecedented record."

For more news and information about the Naval Education and Training Command, visit <https://www.netc.navy.mil>

or [www.navy.mil/local/cnet/](http://www.navy.mil/local/cnet/).

### **Face of Defense: Army Civilian Relishes Engineering Success**

*U.S. ARMY CORPS OF ENGINEERS (MARCH 5, 2013)*

*Karla Marshall*

KANDAHAR AIRFIELD, Afghanistan—Female electrical engineers are few in the U.S. Army Corps of Engineers. Shafak Pervez should know—she is one of them. She is also the kind of woman who thrives on new experiences that engage her mind and help other people.

For Pervez, a 34-year-old Corps of Engineers civilian employee, learning new things and staying busy is a priority.

"I get bored working on the same type of projects and was looking for something that would provide variety and freedom to move around. I love the type of work USACE does—we are everywhere!"

Born in Pakistan, Pervez was 12 when she and her family moved to California.

"I went to middle school and high school in West Sacramento," she said. "And then on to Sacramento State University, where I earned my electrical engineering degree."

Pervez said learning English was her first obstacle. Fortunately, she said, her education started in Pakistan.

"I had to take English beginning in the sixth grade." By the time Pervez moved to the United States, she had the basics.

"I knew the alphabet and some simple phrases. My mom helped a lot because she earned a master's degree in Pakistan and needed to know English for her degree."

Her mother also encouraged each of the family's five children to pursue medical degrees, but none did.

"Somehow, each of us chose a different path. I was good at science and math," said Pervez, who took an electronics course during her freshman year at high school.

"Taking the class was not my idea but I enjoyed it and stayed with it."

Pervez's electronics teacher became a trusted mentor, as did her high school guidance counselor.

"They are the reason I became an engineer." Pervez deployed to Kandahar Airfield from the Corps of Engineers' Los Angeles District.

"I am very blessed and have always been surrounded by people who have my best interest at heart," she said. "They were compassionate, but never hesitated to tell me what I needed to hear—even if I didn't want to listen."

Pervez said it's her mentors—some engineers, others not—who have been a constant in her adult life.

"I cannot remember a time when I didn't have a mentor to turn to. They are people I trust and can speak freely to regarding my personal and professional goals."

Pervez has achieved some significant goals, but is not yet finished, she said. During the last year, she passed her professional engineer exam and became a Leadership in Energy and Environmental Design (LEED) Accredited Professional.

"I am now pursuing an online master's degree in business administration when I'm not working."

At the Corps' Afghanistan Engineer District-South, Pervez reviews project designs and provides technical services to the district's field offices throughout south and west Afghanistan. She arrived in Afghanistan in June 2012, but this is not her first deployment.

"I deployed the first time in 2010 for one year and was the lead electrical engineer with the quality assurance branch," Pervez said. Although she did not deploy to fill that role, her work ethic, experience, and skill led to a recommendation for the job and ultimately an offer.

"How could I have said, 'No?' I got to teach Afghans electric fundamentals and safety, and performed construction site inspections and learned at the same time."

To Pervez, it's the challenges and accomplishments that drive her to success. Her current challenge is learning about high-voltage electrical systems so that she can be the best at her job.

"To my peers, I'm the subject matter expert, but there is so much that I do not know because high voltage is a specialized field and I have little experience in it."

Pervez acknowledges that it is difficult to admit she doesn't know some things and will have to get back to her coworkers with answers. But, she says, "When faced with something I



Shafak Pervez conducts electrical work at Kandahar Airfield in Kandahar Province, Afghanistan, March 2, 2013.

U.S. Army photo by Jasmine Chopra-Delgadillo

don't know, my first step is to acknowledge that I don't know it, and second is to go learn it."

That attitude is why Pervez embodies the 2013 National Women's History Month theme: "Women Inspiring Innovation Through Imagination: Celebrating Women in Science, Technology, Engineering and Mathematics."

"I like to focus on smaller groups—people who are around me," she explained. "Sometimes it means listening to a person, acknowledging their thoughts and ideas, and just letting them know that someone cares. Small things make a huge difference. I give of myself freely and often. I always make myself available to friends and anyone who may need my help."

It can be difficult for women in engineering career fields, Pervez acknowledged. Yet, she noted, persistence is the key to success.

"Don't ever give up!" she said. "Follow your heart. Ask a lot of questions, and if you still don't understand, ask again."

### **Quantum Sensing Using Laser-Cooled Atoms Shows Promise for Army Navigation, Detection**

U.S. ARMY RESEARCH LABORATORY (MARCH 20, 2013)

Jenna Brady

ADELPHI, Md.—U.S. Army Research Laboratory scientists in the Sensors and Electron Devices Directorate are currently exploring the field of quantum sensing and are discovering ways in which the Army can benefit from innovations that were once thought impossible.

According to Qudsia Quraishi, Ph.D., a physicist in the Sensors and Electron Devices Directorate, or SEDD, who is working at the forefront of quantum sensing research at ARL, classical physics can limit the performance of precision sensing technologies such as time-keeping, imaging, and navigation.

“Precision imaging is typically limited by the diffraction limit of light,” said Quraishi. “Precision navigation for vehicles or planes has limits ranging from thermal fluctuations to say, GPS-denied environments, and conventional inertial navigation systems have essentially reached a performance plateau,” Quraishi said.

Quraishi said that next generation systems for precision sensing involve quantum sensors, which are based on laser cooled atoms, and could potentially offer tremendous gains in performance.

Laser cooled atoms are small yet coherent, meaning that one can measure a change in gravity or magnetic field, are extremely precise, and are highly sensitive.

In addition, quantum sensors rely upon a phenomenon not seen in conventional sensors, which is known as entanglement.

“Entanglement is a quantum phenomenon that links one quantum system to another in such a way that a measurement of one system affects the results of the other system, even if these systems are physically separated,” Quraishi said.

“These two quantum systems go through slightly different environments and interfering them with one another gives information about the environment of one path versus the other. Such atom interferometers can in theory provide orders of magnitude better performance than conventional technologies,” Quraishi said.

An atom interferometer is an interferometer based on exploiting the wave character of atoms, which is a quantum phenomenon.

One established method for navigation is a Sagnac interferometer, which uses coherent light, such as that emitted by a laser. A beam of light is split and the two beams then follow a trajectory in opposite directions to provide the reference for an inertial guidance system.

In the Army’s case, quantum sensors based on atomic systems are a major development that can benefit soldiers because the use of atoms in an interferometer leads to more accurate navigation and environmental sensing.

The specific areas within quantum sensing that ARL scientists are exploring include gyroscopes, magnetometry, gravity gradiometry, next generation compact sensors, and atomtronics.

Gyroscopes measure changes in rotation of a body and atom-base gyros can be useful in applications such as precision navigation and seismic detection. Importantly, atom-based navigation would not require GPS signals and hence could be used in GPS-denied environments.

Magnetometry is the measurement of magnetic fields, and when it comes to magnetometry and quantum sensing, laser cooled atoms can precisely measure magnetic fields, useful for biomagnetic imaging and studies of condensed matter systems.

Gravity gradiometry is the study and measurement of variations in the acceleration due to gravity. Gravity gradiometers that are based on laser cooled atoms are able to more accurately and precisely detect changes in gravity that can be useful for detection of underground bunkers or natural resources and for geophysics, for example.

Another application of these quantum sensors is in the measurement of time.

Atomic clocks have revolutionized time keeping. In fact, they have gained global attention especially since the 2012 Nobel Prize for Physics was awarded to David Wineland and Serge Haroche for their work on quantum systems that has helped to lay the foundation for quantum devices, including quantum computers, and the next generation of atomic clocks.

Wineland in particular has used cooled ions to develop optical atomic clocks that are the most accurate clocks in the world.



Qudsia Quraishi, Ph.D., undergraduate student Matt Bahnsen, and Patricia Lee, Ph.D, are part of a group of researchers at U.S. Army Research Laboratory who are exploring the field of quantum sensing. U.S. Army Research Laboratory photo

Scientists are working to make it possible for soldiers to carry miniature atomic clocks that will assist with time synchronization and position of tactical operations, such as directing missiles after they have been launched in GPS-denied environments.

“However, quantum sensors typically involve large experimental setups and sensitive, costly equipment that requires a dedicated team to operate,” Quraishi said.

The first step on the path to a field-ready device is an integrated and compact setup, and atom-chips are an excellent platform for compact sensors.

Atoms confined on atom-chips are a robust and cost-effective system. Modern approaches to quantum sensors now include smaller, integrated devices like the atom-chip setup at ARL.

ARL scientists’ work involves demonstrating quantum sensing in this small-scale platform, which includes atom-chips, and focuses on quantum sensing for a long-term vision of devices that can be placed in vehicles or carried by individual soldiers.

The first and only cold atom setup for ARL, which has seen great interest from major universities all over the world, is located at ARL’s Adelphi Laboratory Center, where all ARL exploration of quantum sensing is currently done in-house by physicists in the Cold Atom Optics Group, including Quraishi.

Though atom-chips are an attractive platform, additional work needs to be done to execute the long-term program vision, as the size and complexity of the system often directly corresponds to its measurement sensitivity.

“The first goal would be to create a table top compact sensor that could be used for Army installations or in tanks and planes, and the long-term goal would be for soldiers to be able to carry compact sensors in their backpacks for precise navigation in GPS-denied environments,” Quraishi said.

ARL scientists are also exploring the field of atomtronics, and according to Quraishi, atomtronics is basically taking what you can do with electronics and doing them with atoms.

Atomtronic devices are still in their infancy, but could be used in future applications such as ultra-cold atomtronic circuits to be used with quantum computers.

Ultra-cold atomtronic circuits would allow for the more coherent, quick, and secure exchange and flow of information.

Just like with the classic computer though, scientists cannot imagine all of the possibilities of the quantum computer, which is still very much in its infancy as well.

There is much to be explored on what Quraishi calls the “quantum horizon,” and those explorations could be vital to our soldiers on the battlefield and have the potential to forever change the way they execute their missions.

### **Fire-resistant Ghillie Suit, Enhanced Rocket Fuze Win DoD Awards**

*ARMY NEWS SERVICE (March 25, 2013)*

*Dan Lafontaine*

ABERDEEN PROVING GROUND, Md.—U.S. Army program managers earned Department of Defense acquisition awards recently for rapidly fielding a fire-resistant ghillie suit and an enhanced fuze rocket warhead.

After two soldiers from the Army’s 11th Armored Cavalry Regiment burned to death when their camouflaged sniper gear caught on fire in Iraq, an urgent requirement for a fire-resistant suit was issued.

Neal Nguyen, the product manager for Soldier Clothing and Individual Equipment under Program Executive Office Soldier, known as PEO Soldier, answered the request in 2010 with the help of the Defense Acquisition Challenge, or DAC program. He was named the DAC Program Manager of the Year for 2012 for his work on the ghillie suit as well as a uniform repair patch kit and enhanced combat vehicle crewman coverall.

“It’s a privilege to serve the Army and provide much-needed protective equipment to the warfighter,” Nguyen said. “The flame-resistant ghillie suit accessory kit and flame-resistant base uniform will improve the safety of those forward operators and keep the Army on the leading edge of capability and lethality.

“The Comparative Technology Office allows us the ability to lean forward and fast track capability and protection to our soldiers who volunteer to be in harm’s way.”

Matthew West, a junior hydra project engineer with the U.S. Army Research, Development and Engineering Command’s Armament Research, or RDECOM, Development and Engineering Center, earned the Foreign Comparative Testing, or FCT, PM of the Year for 2012.

The enhanced fuze FCT project’s goal was to qualify and field a cockpit-settable fuze version of the multipurpose penetrator M282 warhead for U.S. Special Operations Command’s, or SOCOM, use on helicopters, West said. A now-retired senior hydra team leader started the project, and West took over for him.

“Over a 20-year period, the branch that I work in has completed multiple successful FCT programs based on the Carl Gustav recoilless rifle weapon system,” West said. “The FCT office, along with my branch chief’s knowledge of the SOCOM FCT program office, gave me support and guidance when taking on this task. I am grateful for the opportunity to provide this capability to the warfighter.”

RDECOM manages the DAC and FCT programs for the Army, and the Office of the Secretary of Defense Comparative Technology Office oversees the programs.

Earl Wyatt, deputy assistant secretary of defense for rapid fielding, and RDECOM Director Dale Ormond presented Nguyen and West with their awards at the Pentagon, March 20.

U.S. Air Force Col. Rodney F. Todaro, director of the Office of the Secretary of Defense, or OSD, Comparative Technology Office, lauded their work in support of the warfighter.

“Mr. West’s accomplishments stood out among a very strong field of candidates,” Todaro said. “The 70mm enhanced fuze project will greatly increase the capabilities of our 70mm rockets while avoiding development, acquisition, and sustainment costs—exactly what the FCT program is supposed to do.

“Mr. Nguyen’s project met a critical need in minimum time while improving capability. Significant cost savings were achieved by avoiding a large, new development program.”

### **Defense Acquisition Challenge**

The DAC program was created in 2003 in response to a Congressional mandate that the DoD initiate a program that was innovative, flexible, competitive, and affordable to integrate mature technologies into the acquisition cycle, said William “Randy” Everett, with RDECOM’s Global Technology Integration team. The program allows U.S. vendors to



A 1st Battalion, 175th Infantry's soldier practices camouflage, cover and concealment with the fire-resistant ghillie suit during training at Fort A.P. Hill, Va., in November 2012.

U.S. Army photo

submit mature technology proposals for evaluation by the PEOs.

With a focus on small business, the DAC program has been a vehicle for small domestic vendors to transition their products to the acquisition cycle. It was funded through fiscal year 2012.

In response to requests for snipers' ghillie suits, Source One, a small business in Florida, submitted a response. PEO Soldier sponsored the proposal.

Nguyen took on the project and collaborated with RDECOM and Source One to deliver the ghillie suit as quickly as possible. PEO Soldier received \$185,000 to purchase suits for testing. Nguyen oversaw testing and evaluation.

The project was completed in 10 months—a record time. The fire-resistant ghillie suit is now being fielded at the U.S. Army Sniper School at Fort Benning, Ga., at the U.S. Marine Corps Scout Sniper School at Marine Corps Base Quantico, Va., and at the Special Operations Target Interdiction Course at Fort Bragg, N.C.

"It is unknown how many soldiers and Marines may be saved by this, but if even one life is saved, it is money well spent," Everett said.

Since beginning, the DAC program has saved an estimated \$375 million in DoD research and development by avoiding manufacturing, procurement, and life cycle support costs. Additionally, more than 2,000 proposals have been evaluated and 130 projects have been funded from 35 states and the District of Columbia.

More than 70 percent of the awarded projects have been to American small- and medium-sized businesses, and more than 25 percent to non-traditional defense companies. Twenty-three projects have been deployed to Operation Enduring Freedom and Operation Iraqi Freedom.

#### **Foreign Comparative Testing**

FCT's mission is to find and evaluate "here and now" solutions to meet the operational needs of American service members so that soldiers have the technology they need to remain dominant on the battlefield and return home safely, regardless of the origin of that technology, Everett said. OSD

has leveraged new and evolving technology through FCT since 1980.

The program encourages international cooperation and helps reduce overall DoD acquisition costs by funding the testing of foreign non-developmental items, commercial-off-the-shelf items, or those items in a late state of the development process that demonstrate the potential to satisfy the U.S. military's needs.

The program has brought U.S. forces the benefit of 105 items that were tested and deployed in the last 12 years. They include enhanced body armor from Germany; a mine-clearing system from Denmark; and a bunker-busting, multi-purpose rocket warhead from Norway. Other examples include advances in lightweight body armor and lighter, longer lasting rechargeable batteries.

For West's FCT project, he said the enhanced fuze warhead provides a capability to dial in a delay for a rocket warhead, allowing users to select where to detonate the round. Pilots had this capability 20 years ago, but it suffered from poor reliability and safety risks.

Users can engage all targets with one rocket, whether under light brush cover, in a vehicle, inside a structure or out in the open, West said. This reduces the number of rounds the user needs to fly with, which can also reduce weight.

### **Defense Logistics Agency Works to Up Engagement with Small Businesses, Meet Contract Goals**

*DEFENSE LOGISTICS AGENCY NEWS CENTER (MARCH 26, 2013)  
Sara Moore*

Small businesses are an important part of the Defense Logistics Agency's industrial base, and the agency, in line with Defense Department guidance, is working to increase its engagement with small businesses and meet specific goals for contract awards.

As part of that effort, DLA Acquisition and the DLA Office of Small Business Programs jointly host regular coordination meetings with leaders from the DLA field activities and the agency's headquarters. These Small Business Friday meetings, held every other week, include participation from every field activity and senior leaders in DLA Acquisition and the DLA Office of Small Business Programs. Running these meetings as a partnership is important because it ensures all employees and leaders are kept in the loop, said Amy Sajda, director of the DLA Office for Small Business Programs.

"The goal is to engage both the small business and acquisition communities simultaneously to increase awareness of

any issues that may have an impact on achieving our small-business goals," Sajda said. "This meeting brings the key players together that move the needle for DLA."

This direct interaction between all employees and leaders involved in DLA's small business efforts allows everyone to be informed about DLA's progress toward its small-business goals and aware of any potential problems, said Karen Maskew, policy branch chief in DLA Acquisition Policy.

"We are maintaining focus on this issue and finding out up front and early if there are any review surprises," Maskew said. "We need to keep the importance of contracting with small business in front of the workforce."

The review surprises Maskew referred to are large purchases that may be coming up and are going to large businesses instead of small businesses. These purchases going away from small businesses can skew the overall percentage of the agency's business going to small businesses, which affects DLA's progress toward its goals, she said. Being aware of these large purchases in advance helps acquisition professionals counter the effects they may have on the small-business goals, she said.

DLA's goal is for 32 percent of its business to be conducted with small businesses, Maskew said. That includes all the socio-economic categories within the small-business area, such as women-owned and service-disabled-veteran-owned small businesses, she said. To meet that goal, each primary-level field activity has individual goals for percentages of business done with small businesses. These biweekly meetings give leaders an opportunity to check on each activity's progress toward its goal.

"It's a collaborative process," Maskew said. "We have involvement from DLA Acquisition leadership, executives, contracting officers, and small-business representatives."

Working with small businesses is very important for DLA, because such companies have always provided quality services and parts for the military, Sajda said. Small businesses also serve as the "lifeblood of America's economy," with two out of three new jobs created coming from small businesses, said Chris Young, deputy director of the Office of Small Business Programs. With new fiscal restraints due to sequestration, Young said, small businesses will face challenges, so it is crucial for DLA leaders to keep a finger on the pulse of the small-business efforts, which is what these meetings help accomplish.



Soldiers in the U.S. Army 20th Support Command (CBRNE) demonstrate the capabilities of a Chemical, Biological, Radiological, Nuclear, and Explosives Response Team and a mobile Chemical Biological Laboratory during a recent visit by Under Secretary of the Army Joseph W. Westphal.

U.S. Army photo

At every meeting, each field activity is required to report on its progress toward its individual small-business goals, challenges and review surprises, actions to improve small-business numbers, and its status on contracts below the simplified acquisition threshold of \$150,000. All contracts below this threshold, down to the micro-purchase level, are supposed to go to small businesses, Maskew said, so monitoring the field activities' progress in this area is important. The Small Business Fridays have yielded a lot of improvements so far, Maskew said, because they increased accountability among acquisition professionals and they give everyone a chance to collaborate. This collaboration and discussion lead to creative problem-solving and improved practices to promote small-business efforts, she said.

"We're constantly looking for best practices, whether they are internal or external to DLA," she said. "This collaborative forum allows us to identify practices that have yielded results and can be applied agencywide."

Another purpose of the Small Business Friday meetings is to acknowledge best practices and positive accomplishments from the field activities. This creates the foundation

for employee recognition and generates positive momentum across the enterprise, Young said.

"It's our goal to reinvigorate the workforce's enthusiasm to support small businesses through recognition of DLA personnel who support small business," she said. "With the implementation of the Fiscal 2013 Small Business Improvement and Marketing Plan, it is one of our critical focus areas. It will be fantastic to recognize great people doing great things for small business at DLA."

Small Business Fridays are one of many initiatives that were outlined in the DLA Fiscal 2013 Small Business Improvement and Marketing Plan, a joint publication of DLA Acquisition and the DLA Office of Small Business Programs. This document details both offices' commitment to improving DLA's engagement with small businesses and describes the agency's plan to achieve this goal. The initiatives include: execution of a multifaceted outreach campaign to increase small business awareness across DLA, identification of the challenges of doing business with DLA and breaking down barriers, creating excitement among the workforce about

supporting small businesses, evaluating external touch points for improvement and updating, continued monitoring and oversight of DLA's progress against the small business performance metrics, and DLA Acquisition initiatives to facilitate small-business goal achievement.

### **Team CBRNE Leverages Technology to Advance, Protect Warfighters**

*ARMY NEWS SERVICE (MARCH 28, 2013)*

*Cicely R. Livingston • Army Lt. Col. Rob Manning*

ABERDEEN PROVING GROUND, Md.—As the premier national resource for chemical and biological defense, Team CBRNE provides state-of-the-art science, technology, engineering, product development, and delivery solutions to support the warfighter. CBRNE stands for Chemical, Biological, Radiological, Nuclear and Explosives.

Under Secretary of the Army Joseph W. Westphal, Ph.D., met with Team CBRNE's experienced soldiers, scientists, engineers, and technicians to see firsthand how they develop and refine technologies to support service members, inter-agency partners, through coordination with private industry and academia.

"I want to first relate to all of the [Team CBRNE] employees how grateful we are for everything they do. What they do is critical for national security," Westphal said as he received updates on ongoing initiatives.

Aberdeen Proving Ground's Team CBRNE is comprised of the Edgewood Chemical Biological Center, or ECBC, the Joint Program Executive Office for Chemical and Biological Defense, the Defense Threat Reduction Agency – Joint Science and Technology Office, the 20th Support Command (CBRNE), the Chemical Materials Activity, Program Executive Office–Assembled Chemical Weapons Alternative, the U.S. Army Medical Research Institute of Chemical Defense, and the U.S. Army Public Health Command.

"Team CBRNE provides national countering weapons of mass destruction contributions through a highly skilled workforce with expertise in research and technology, systems development, test and evaluation, and field operations," noted Carmen Spencer, the Joint Program Executive Officer for Chemical and Biological Defense.

During the visit, Westphal received a capabilities demonstration from the 20th Support Command's CBRNE Response Team, or CRT, and Mobile Chemical Biological laboratory. These unique assets showcased how threat characterization and field confirmation of samples are conducted in an overseas contingency environment. Additionally, Team CBRNE

provided Westphal with capability briefs as he conducted a walk through of the various static displays and engaged with soldiers and employees.

"It's a testament to our Army, and all of you, that you are willing to deal with this [chemical] threat. Thank you for your service and thank your spouses and family members for their support," Westphal said as he addressed the CRT soldiers.

After the demonstration, Westphal toured ECBC's research facilities, including a site that is being renovated to support Joint Rapid Prototyping as well as displays of current and past projects. Westphal reinforced the importance of Team CBRNE's role in national defense and the immeasurable contributions of Army scientists and engineers to protect soldiers, and society in general, against chemical, biological, radiological, nuclear, and explosive threats.

Westphal's visit with Team CBRNE builds on recent meetings with soldiers and civilians at the National Ground Intelligence Center, the Defense Threat Reduction Agency, and the U.S. Army Nuclear and Combating Weapons of Mass Destruction Field Operating Agency. Each of these organizations provided Westphal with greater situational awareness to better advise the Secretary of the Army and prioritize Army resources.

### **NSRDEC Patents Help Army into 'Top 100 Global Innovators'**

*NATICK SOLDIER RESEARCH, DEVELOPMENT AND ENGINEERING CENTER PUBLIC AFFAIRS (MARCH 29, 2013)*

*Alexandra Foran*

NATICK, Mass.—The U.S. Army and Navy were named among Thomson Reuters' Top 100 Global Innovators for 2012. This is the first time any government agency has ever made this list.

Leaders are chosen using a propriety program based on metrics regarding each company's multiple innovative patents.

The Natick Soldier Research, Development and Engineering Center patented 20 different technological advancements for the Army, and that was in fiscal year 2012 alone.

NSRDEC's patent contributions in 2012 included ideas such as portable chemical sterilization and the polymerization of natural compounds, among others. Quality of life has already improved for deployed soldiers through the portable chemical sterilization patents, while the polymerization of natural compounds may make food last longer, create better flame-retardant material, and possibly develop a cancer-fighting drug.



Christopher Doona and other researchers at Natick Soldier Research, Development and Engineering Center were awarded a total of 20 patents in 2012, helping the Army make Thomson Reuters' Top 100 Global Innovators.

U.S. Army Natick Soldier Research, Development and Engineering Center photo

Christopher Doona, a civilian senior research chemist, researches novel technologies in order to create more hygienic and safer working environments for soldiers in places such as medical facilities, kitchens, and showers.

"[For us] it's kind of fascinating to see our research being more applied, patented, and licensed to industry," Doona said. "Actually, industry is already marketing a commercial product based on our inventions."

Doona's patents transitioned into products such as the Portable Chemical Sterilizer and Disinfectant-sprayer for Foods and environmentally friendly sanitation, both of which are lightweight, portable, and generate gaseous chlorine dioxide safely in minutes to sterilize certain specific surfaces at their point-of-use.

Doona and his team have been recognized with Department of the Army Research and Development Achievement Awards and Federal Laboratory Consortium Awards for Excellence in Technology Transfer for this research with practical benefit to military and civilian consumers.

Nicole Favreau Farhadi and Ferdinando Bruno, both civilian research chemists, looked at a naturally occurring compound known as hydroxytyrosol, one of the most potent antioxidants found in olive oil, and enzymatically polymerized it; this chemical process basically means the compound is reacted to form a long chain of repeating units.

"As you make this polymer chain longer, it becomes a more potent antioxidant than what you actually find in nature," said Favreau. When this process is used for food applications, limiting or eliminating oxygen in this manner will make food last longer. Polymerization in this way is incredibly important because it is relatively simple, now that the process has been formulated, which means polymerizing on a mass scale is feasible.

Their team reported two patents: "the homo- and co-polymerization of hydroxytyrosol for possible application as an antioxidant for food, maybe even cancer drugs," said Bruno.

Both chemists noted that they often find industry and academic partners who are willing to collaborate with them to advance their research and development.

"We have seen a lot of outside interest for many other potential applications," Bruno said.

A 2012 U.S. Department of Commerce report stated: "Innovation is the key driver of competitiveness, wage and job growth, and long-term economic growth."

NSRDEC is doing as much as it can to innovate and continue to create quality technology for soldiers.

### **Robins AFB Earns AFMC's 2012 Facility Energy Excellence Award**

*AIR FORCE MATERIEL COMMAND PUBLIC AFFAIRS (MARCH 29, 2013)*

WRIGHT-PATTERSON AIR FORCE BASE, Ohio—Gen. Janet Wolfenbarger, Air Force Materiel Command commander, announced March 26, 2013, that Robins Air Force Base, Ga., won first place in the command's 2012 Facility Energy Excellence Award. Hill AFB, Utah, won second place, and Hanscom AFB, Mass., received third place.

The Facility Energy Excellence Award provides an objective assessment of the installations' energy programs and recognizes efforts in promoting energy reduction, changing the energy culture, and recognizing the performance of the installation facility energy managers. Culture change was weighted at 80 percent, recognizing that the key to energy conservation truly resides in each individual's actions and in active leadership at all levels across the enterprise. Energy reduction was weighted at 15 percent, and water reduction

was weighted at 5 percent; these categories capture actual, tangible gains made in energy conservation. The award acknowledges outstanding accomplishments from January 2012 through December 2012.

The cultural change component included energy program leadership, action plans, energy investments, and energy awareness. "Culture change" continues to be one of three pillars of the Air Force vision to "make energy a consideration in all we do." The other pillars are "reduce demand" and "increase supply."

Energy reduction was assessed by measuring the actual reduction in energy and water intensity as reported to the Air Force Civil Engineer Center, and compared with the previous year's consumption.

"Each of these installations built a robust Energy Management Program focused on energy reduction and energy culture," said Col. Jeff Todd, AFMC deputy director of Communications, Installations and Mission Support. "Their efforts display great achievements in energy reduction and promotion of cultural change at the installation level and subsequently the MAJCOM.

"This competition is about conserving energy, reducing demand, and changing culture," he said, "which results in the reduction of our energy footprint while also helping to improve our energy security posture. Together, let's continue to make energy conservation a consideration in all we do."