Department of Defense Announces Research Equipment Awards

DEPARTMENT OF DEFENSE NEWS RELEASE (JUNE 3, 2013)

The Department of Defense today announced awards to 140 university researchers at 77 academic institutions to support the purchase of research instrumentation and equipment. The awards total $38.7 million and are being made under the Defense University Research Instrumentation Program.

The Defense University Research Instrumentation Program supports the purchase of state-of-the-art equipment that augments current infrastructure or develops new university capabilities to perform cutting edge defense research.

The awards announced today are the result of a merit competition and will be made by the Army Research Office and Office of Naval Research. The Air Force Office of Scientific Research awards will be announced at a later date.

The Defense University Research Instrumentation Program is highly competitive. The Army Research Office and Office of Naval Research solicited proposals from university investigators conducting science and engineering research of importance to DoD. This includes research that underpins advances in surface chemistry and physics; computing and networks; electronics and electro optics; neuroscience; fluid dynamics; robotics and autonomous systems; and ocean, environmental, and biological science and engineering. In response to the requests, the Army Research Office and Office of Naval Research collectively received more than 500 proposals requesting $188 million in support for research equipment. The most technically meritorious proposals were selected by DoD research offices' scientific and management staff.

The Defense University Research Instrumentation Program awards will range from $50,000 to $1.1 million, and average approximately $277,000. All awards are subject to the successful completion of negotiations between DoD research offices and the academic institutions.

The list of winning proposers may be obtained at http://www.defense.gov/news/FY2013DURIPWinners.pdf.

Cost-saving Pilot Programs to Support Warfighter Autonomy

AMERICAN FORCES PRESS SERVICE (JUNE 19, 2013)
Terri Moon Cronk

WASHINGTON—A call from the Defense Department to government labs for autonomous technology ideas that support the warfighter has been answered with seven initiatives. Chosen from more than 50 submissions, the selected ideas will be tested in the Autonomy Research Pilot Initiative, officials said.

"We believe autonomy and autonomous systems will be very important for how we operate in the future," said Al Shaffer, acting assistant secretary of defense for research and engineering. Autonomous systems are capable of functioning with little or no human input or supervision.

"If we had better autonomous systems for route clearance in Afghanistan, we could offload a lot of the dangerous missions that humans undertake with autonomous systems, so we have to make a big push in autonomy," Shaffer said.

The pilot research initiative's goal is to advance technologies that will result in autonomous systems that provide more capability to warfighters, lessen the cognitive load on operators and supervisors, and lower overall operational cost, explained Jennifer Elzea, a DoD spokeswoman.

"The potential cross-cutting advances of this initiative in multiple domains provide an exciting prospect for interoperability among the military services, and potentially [in] meeting future acquisitions requirements," she said. "The seven projects are at the fundamental cutting edge of the science of autonomy. The projects also integrate several scientific disciplines [such as] neurology [and] mimetics."

The seven projects are not looking at autonomous weapons systems, but rather are investigating autonomous systems for potential capabilities such as sensing and coordination among systems, Elzea noted.

The projects focus on cost savings to DoD, critical in a time of budget cuts, Shaffer said.

The program for the initiatives is estimated to cost about $45 million in a three-year period, which is not considered to be a lot of money for a government research program, DoD officials said.

"We are trying to—especially as we go through this tough budget period—incentivize our younger work force," Shaffer said. "Scientists work to solve problems, and what we are doing with this project is we've challenged our in-house researchers to come up with topics that will help us better understand how to do autonomous systems."

When the pilot initiatives are completed, DoD will have the intellectual property to generate a prototype or to provide to industry to produce the systems, officials said.

The seven initiatives are:

—Exploiting Priming Effects in Autonomous Cognitive Systems: Develops machine perception that is relatable to the way a human perceives an environment. (Navy Center for Applied Research in Artificial Intelligence, Army Research Laboratory)

—Autonomous Squad Member: Integrates machine semantic understanding, reasoning and understanding, perception into a ground robotic system. (Army Research Laboratory, Naval Research Laboratory, Navy Center for Applied Research in Artificial Intelligence)

—Autonomy for Adaptive Collaborative Sensing: Develops intelligent intelligence, surveillance, and reconnaissance capability for sensing platforms to have capability to find and track targets. (Air Force Research Laboratory, Army Research Laboratory; Naval Research Laboratory)

—Realizing Autonomy via Intelligent Adaptive Hybrid Control: Develops flexible unmanned aerial vehicle operator interface, enabling the operator to "call a play" or manually control the system. (Air Force Research Laboratory, Space and Naval Warfare Systems Command, Naval Research Laboratory, Army Research Laboratory)

—Autonomy for Air Combat Missions, Mixed Human/Unmanned Aerial Vehicle Teams: Develops goal-directed reasoning, machine learning, and operator interaction techniques to enable management of multiple team UAVs. (Air Force Research Laboratory, Naval Research Laboratory, Naval Air Warfare Center, Army Research Laboratory)

—A Privileged Sensing Network-Revolutionizing Human-Autonomy Integration: Develops integrated human sensing capability to enable the human-machine team. (Army Research Laboratory, Army Tank Automotive Research Center, Air Force Research Laboratory)

—Autonomous Collective Defeat of Hard and Deeply Buried Targets: Develops small UAV teaming algorithms to enable systems to autonomously search a cave. (Air Force Research Laboratory, Army Research Laboratory, Defense Threat Reduction Agency)

Face of Defense: Researchers Develop Better Mountain Combat Boot

U.S. ARMY GARRISON NATICK (JUNE 21, 2013)
Bob Reinert

NATICK, Mass.—What it all comes down to is keeping soldiers' minds on their missions in Afghanistan, rather than on their feet.

That's how Ben Cooper views the development of the Hot Weather Mountain Combat Boot, at the U.S. Army's Natick Soldier Research, Development and Engineering Center here.

Development of the new boot began in early 2011, and Cooper thought it was so important that he got permission to continue working on the boot after leaving the Footwear Performance Laboratory to become a senior materials engineer for the Air Force, still located at Natick.

"Ben was so involved in the early phases of this and had been really running this project superbly, I thought that it was a good idea that he was able to continue on this project," said Bob Hall, the current Army footwear engineer for the boot.

"Obviously, in these fiscal times, being able to join together and work toward a common goal for the warfighter and for our country, I think, is the most important thing," Cooper said. "My supervisors have been very supportive about me taking time to help out and support the Army with this effort, and we're all happy to do it.

"The Air Force has been a team player in this," he continued. "It's a sister Service—one team, one fight."

Cooper and Hall are working with Program Executive Office Soldier and Product Manager Soldier Clothing and Individual Equipment to unveil phase two of the boot. Phase one—a lighter, more breathable version of the popular Mountain Combat Boot—has been issued to every soldier deploying to Afghanistan for the past year. As many as 200,000 pairs of the boots have been fielded with great success.

"[For] the amount of boots that are out there, we've had very, very few complaints," Hall said.

"Soldiers will give you honest feedback," Cooper said. "We haven't heard bad things. In this business, silence is a great thing."

Cooper pointed out that nothing like the HWMCB existed before soldiers in Afghanistan began asking for it two years ago.

"We were trying to develop and identify the salient characteristics of a Hot Weather Mountain Combat Boot," Cooper said. "Since it was a new item, it's not commercially available. We evaluated three different material solutions at that time from three different manufacturers."

Ben Cooper, left, and Bob Hall have been working on the development of phase two of the Hot Weather Mountain Combat Boot at the U.S. Army's Natick Soldier Research, Development and Engineering Center in Massachusetts. Courtesy photo

Using soldier feedback from phase one, which included requests for more breathability, Cooper and Hall confidently strode into phase two.

"We cherry-picked the very best features on each of the boots, and we provided that feedback to industry," Cooper said. "They responded and provided new solutions—updated solutions."

Three new styles are now being evaluated at the National Training Center, Fort Irwin, Calif., by units from the 2nd Brigade Combat Team, 4th Infantry Division, based at Fort Carson, Colo. Each boot is nearly a half-pound lighter than the original mountain boot.

"Due to Afghanistan's unique climate and environment, they needed a boot that not only would provide them ankle stability and traction and durability, but they also needed greater breathability," Cooper said. "It's a balancing act. We were constantly walking that fine line. I think that we have worked with industry tirelessly on trying to make sure that we accomplish exactly what the warfighter wants and needs."

Industry made the boots more breathable by including moisture-wicking linings, perforating the leather, and inserting textiles wherever possible between the leather and rubber, without compromising stability.

"It took some creative approaches to be able to do that," Cooper said. "If you're kicking rocks, and you're crawling, and you're in the prone position, you need to be able to not have this thing rip."

Cooper will travel to Fort Irwin at the end of June with Chris King, of the Operational Forces Interface Group at Natick, to collect data from soldiers on the 285 pairs of boots that had been issued to them.

"We're going to go meet them as soon as they get out of the box at NTC," Cooper said. "I think the phase one boots were fairly well received. We would expect to find more positive feedback. We're hopeful that we're going in the right direction."

The goal is a technical specification for a boot that could be supplied by any manufacturer. When it's achieved, it will be because of the collaborative atmosphere at Natick, Cooper said.

"I can walk down the hall and speak with the foremost expert in [fire-resistant] clothing and apparel," he said. "I can walk down the other end of the hall and talk to the foremost expert in cold-weather equipment, in mountaineering gear, in footwear.

"I think that's just part of the culture that is here, and I'm proud to be a part of that," Cooper continued. "We were able to leverage all the resources that we have available to us."

PEO Ammo Better Buying Power Nets More Than $6 Billion in Savings

U.S. ARMY MATERIEL COMMAND (July 12, 2013)
Audra Calloway

PICATINNY ARSENAL, N.J.—Since 2010, the Program Executive Office Ammunition at Picatinny has saved the Army more than $6 billion through better buying power initiatives aimed at strengthening buying power, improving industry productivity, and providing affordable military capabilities.

Launched in 2010, by the Defense Department, better buying power, or BBP, encompasses a set of fundamental acquisition principles to achieve greater efficiencies through affordability, cost control, and eliminating unproductive processes and bureaucracy, while promoting competition. The goal is to maximize the ability to deliver critical capabilities to service members as budgets shrink.

"The original premise of BBP was that defense budgets would be flat, neither increasing or decreasing, and that this focus on improving our buying power by improving our business practices was intended as a way to 'do more without more,'" explained Vince Dahmen, a cost analyst with the Program Executive Office for Ammunition.

"It is now three years later and the fiscal environment is even tougher than when better buying power was first launched," he said. "The need to get the most 'bang for the buck' is even more sharply felt, and appropriately senior leaders in OSD [Office of the Secretary of Defense] have not lost focus regarding BBP."

But achieving better buying power is not easy.

"A defense acquisition program has many stakeholders, many moving parts and requires the expertise of many different functional experts," Dahmen continued. "So first off, it requires as a prerequisite an acquisition team that is highly skilled and able to meet its primary mission, which is to ensure the acquisition program meets its cost, schedule, and performance requirements.

"To obtain better buying power the acquisition team has to be knowledgeable about how the decisions being made today affect future costs, and they must be willing to take on additional challenges and sometimes additional risks today in order to reduce costs," he said.

Most PEO Ammunition initiatives fall into the focus area of controlling costs throughout the product life cycle.

"I think this is due to the nature of the ammo portfolio. There are many conventional ammo programs that are in full rate production whose designs have not changed in years, sometimes decades," Dahmen noted. "These programs are prime candidates for engineering changes to simplify designs and reduce unit costs. There are some very innovative proposals out there now to update old designs with the potential to save a lot of money in the future."

"A critical component of PEO Ammunition's BBP process is employing a project management mindset to cost-saving initiatives," said Dahmen. "The initiatives themselves run the gamut from basic efficiencies of office administration to highly complex plans for the optimization of acquisition programs and processes.

"At PEO Ammo, we have found a peer review forum extremely effective for implementing BBP," Dahmen continued. "On a quarterly basis [the commanding general] meets with all of the PMs [project managers] to review ongoing initiatives. It has become a terrific forum for sharing ideas, successes, and lessons learned. Often a cost-saving idea presented by one PM office can have application in another PM office. This is one case where stealing ideas is absolutely encouraged.

"Another important point is that the PMs who are taking on additional challenges to achieve better buying power get recognition from the PEO in the company of their peers," Dahmen added. "I think that becomes a powerful motivator for others to also take on challenges."

The Program Executive Office Ammunition has 41 open BBP initiatives and has completed 54.

Example Initiatives

Ammunition Cross-Leveling Event

Each year, the military services exchange ammunition stocks that have accumulated beyond their requirement. This seemingly simple arrangement is a win-win for the Services and the taxpayer. Not only is the cost of buying new ammunition avoided, but also the storage cost and potentially the demilitarization cost associated with excess ammunition.

To achieve better buying power, Picatinny's Program Executive Office Ammunition selected several programs for engineering changes this year. Husky vehicles, which detect explosive threats, were just some examples of this initiative as the Program Executive Office provided them with ground penetrating radar, deep buried metallic detection, and semi-autonomous control. U.S. Army photo

The fiscal year 2013 "cross-leveling" avoided an estimated $121 million of ammunition procurement costs across the Services.

Husky Mounted Detection System Program Restructure

PEO Ammo will provide ground penetrating radar, deep buried metallic detection, and semi-autonomous control of Husky vehicles used in route clearance missions for detecting and marking explosive threats. Systems with only the ground penetrating radar capability were fielded under a Joint Urgent Operational Needs Statement, or JUONS, to support Operation Enduring Freedom. By capturing numerous lessons learned from operations in Afghanistan with the JUONS systems, the PM and the Maneuver Support Center of Excellence optimized the requirements and restructured the program.

The restructured program reduces the procurement objective, leverages the JUONS systems, and will use a training surrogate system. The restructured program will meet the warfighter's needs and achieve an estimated $84 million savings and more than $1 billion of cost avoidance over the life cycle of the Husky Mounted Detection System.

40 mm Practice Grenades

The PEO Ammunition anticipates reducing the cost of 40 mm target practice grenades substantially by eliminating the fuze and energetics associated with the flash/bang signature.

The overall complexity of the high velocity 40mm practice grenade will be reduced from 39 parts to 10 parts. The new round will still meet the user's requirement for training effectiveness during day/night training and using thermal sights.

In addition to a potential savings of up to $42 million per year, the improved round would eliminate the serious problem of unexploded grenades with the current design that can be left on practice ranges.

DARPA-Funded Robot Designed for Disaster Relief Tasks

AMERICAN FORCES PRESS SERVICE (JULY 12, 2013)
Cheryl Pellerin

WASHINGTON—One of the most-advanced humanoid robots ever built was introduced to the public yesterday in Waltham, Mass.

The 6-foot 2-inches tall, 330-pound Atlas robot, built by Boston Dynamics, is funded by the Defense Advanced Research Projects Agency and it's designed to help humankind deal with future disasters.

That's the goal of the ongoing DARPA Robotics Challenge, or DRC. The DRC seeks to enable groundbreaking research and development in hardware and software to help robots perform the most hazardous jobs in human-supervised humanitarian assistance and disaster-relief operations, to reduce casualties, avoid more destruction, and save lives.

The challenge was launched in October 2012 and will end after the final robot trial in December 2014, when teams will compete for a $2 million grant from DARPA.

The first challenge event was virtual—designed for those who didn't have their own robots or hardware experience—and produced seven winners who designed their own software to run virtual robots through a series of tasks in a DARPA real-time open-source simulator.

The winning teams each received an Atlas robot, which will be programmed with their software. Then the teams will compete with each other and with other robots in the next event. They also will receive DARPA funding and ongoing technical support from Atlas developer Boston Dynamics.

In December, the second event and first live competition—open to the public—will be held at the Homestead-Miami Speedway in Homestead, Fla.

"The Virtual Robotics Challenge was a proving ground for teams' ability to create software to control a robot in a hypothetical scenario," DARPA Program Manager Dr. Gill Pratt said in a statement.

"The DRC simulator tasks were fairly accurate representations of real-world causes and effects, but the experience wasn't quite the same as handling an actual, physical robot," said Pratt , adding, "Now these seven teams will see if their simulation-honed algorithms can run a real machine in real environments, and we expect all the teams will be further refining their algorithms using both simulation and experimentation."

That software and the actions of a human operator through a control unit will guide each robot's suite of sensors, actuators, joints, and limbs.

The Atlas robot can make a range of natural movements and has an on-board, real-time control computer. The Atlas also boasts a hydraulic pump and thermal management, two arms, two legs, a torso and a head, 28 hydraulically actuated joints, a Carnegie Robotics sensor head with LIDAR and stereo sensors, and two sets of hands—one provided by iRobot and one by the Department of Energy's Sandia National Laboratory.

The term, LIDAR, taken from the combination of the words light and radar, is a sensing technology that employs laser beams to measure distances.

During a recent media roundtable, Pratt said DARPA wants to employ the Robotics Challenge to prove that robots can be compatible in environments engineered for people—opening doors, climbing stairs, and moving around—even in environments degraded by some sort of disaster.

DARPA also wants to demonstrate that robots can be made to use tools designed for people, from screwdrivers to fire trucks, and that robots can be supervised by people who aren't trained to operate robots.

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Another DARPA advance involving robotics is the level of communication between people and robots.

In the past, Pratt said, robots, particularly robots for explosive ordnance disposal, have been operated with human supervision at the motion level.

"A person will tell a robot to go a centimeter forward or a centimeter to the left or tell the arm to move forward to grasp and do things like that," he explained.

But the DARPA Robotics Challenge is set up so communications are degraded, as they might be in a disaster, to the extent that such "teleoperation" won't be a practical way to communicate with the machines, Pratt said.

"Instead," he added, "what's going to be necessary is for the teams to give task-level commands to the robot. Things like, open the door, go up the stairs, turn the handle. What that will require is for the robot itself to use [its own] perceptual processing … to understand what it is looking at and then to use behavior controls to execute the task while watching what the effect of the task is."

The kinds of robots used today in disaster scenarios are derived from robots developed for explosive ordnance disposal tasks, Pratt said.

"They tend to be pretty small machines," he added. "They have treads in most cases and they're mainly used for in-

spection, so they help give situational awareness to first responders ... but they don't do anything to really affect the disaster."

The hope is to develop machines that can intervene and help make a disaster less severe, Pratt said, adding that a good example occurred during the Fukushima Daiichi nuclear disaster following the Tōhoku earthquake and tsunami in March 2011.

"During the first 24 hours if it had been possible to vent the reactors, then the explosions would not have occurred and the disasters would have been much less severe," he explained.

"Human beings, in fact, tried to do it but had to turn around and go back because their radiation dosimeters read too high," Pratt said. "That was a perfect place where, if we could have sent a machine in quickly during the first day, the disaster would have been much less destructive."

DARPA's Atlas robot, developed by Boston Dynamics, is 6 feet 2 inches tall and weighs 330 pounds.
DARPA courtesy photo

U.S.-Australia System Promotes Logistics Interoperability

AMERICAN FORCES PRESS SERVICE (JULY 17, 2013)
Donna Miles

WASHINGTON—A new logistics tracking system between the United States and Australia will help to ensure faster, more coordinated responses to humanitarian crises and other contingencies while laying the foundation for closer cooperation across the Asia-Pacific region, the senior U.S. Pacific Command logistics director reported.

Pacom, through its U.S. Army Pacific component and the Australian defense force, launched the Pacific Radio Frequency Identification System in April, Air Force Brig. Gen. Mark M. McLeod reported during a telephone interview from the command headquarters at Camp H.M. Smith, Hawaii.

The system incorporates technologies commercial retailers have come to rely on to track their goods from the manufacturer to warehouses and into buyers' hands, McLeod explained.

It also leverages capabilities NATO introduced about three years ago with the standup of a network exchange hub that promotes information sharing about supply shipments bound for the International Security Assistance Force in Afghanistan.

The NATO system uses radio-frequency identification to automatically locate and track shipments through ISAF-member supply chains. Nations connected to a routing hub in Luxembourg transmit logistics data to other users, giving the entire supply chain real-time visibility on the shipments. The Pacific Radio Frequency Identification system introduces this capability into the Pacom theater to support rotational U.S. Marine Corps forces in Darwin, Australia, and expanded military-to-military cooperation across the region, McLeod said.

The Defense Department has long used barcode technology to monitor the flow of everything from washers and nuts for a particular aircraft to armored vehicles, he explained. This gives logisticians the ability to track shipments throughout the transportation process and keep tabs on inventory stocks.

The new system takes this effort a step further. It uses radio frequency identification technology to "read" barcode information on both U.S. and Australian military equipment and

The new Pacific Radio Frequency Identification system provides improved logistical interoperability between the U.S. and Australian militaries, improving the tracking of equipment and supplies for the Marine Rotational Force-Darwin and U.S.-Australian exercises and missions. Here, Marine Corps Lance Cpl. Isaac Hernandez, an assault rifleman with Marine Rotational Force Darwin, sights in on his target during a squad-attack exercise in Australia, May 22, 2013.

U.S. Marine Corps photo by Sgt. Sarah Fiocco

supplies. Australian RFID readers recognize the barcodes affixed to U.S. shipments flowing through Australia, then automatically transmit the information to the NATO routing hub. U.S. logisticians can then monitor the flow of equipment or shipments through delivery.

"It gives everybody near-real-time access," McLeod said. "When an individual supply-line item passes along a tracking device, it is automatically read up into a database and distributed. There is literally just a matter of seconds involved in the transmission of the information to everyone's servers about where their equipment is."

The new logistics partnership saves the United States the cost of deploying and installing its own RFID systems in Australia at an estimated cost of about $560,000 over the next five years, McLeod said.

"This is a big win for U.S. and Australian forces operating in the Pacific, McLeod said. "This is 'Pacific Rebalance' in action."

With a U.S. defense strategy focused heavily on the Asia-Pacific region and expanded U.S. engagement across the theater, the system supports closer U.S.-Australian interoperability during exercises, humanitarian assistance and disaster relief missions and other contingencies, he said.

The system also provides a framework that could be expanded in the future to include more regional allies and partners, he said. "This is another example of how partner-nation logistics cooperation effectively and efficiently expands military reach and capability in the Asia-Pacific region," the general added.

Historically, the military has struggled with two primary obstacles to logistics-information technology: incompatible

systems that made sharing difficult, and security protocols that limited what information could be shared, and with whom.

The since-dissolved U.S. Forces Command came up with an initial logistics information-sharing system about seven years ago, McLeod said. It required users from one country to e-mail information to their partner-nation counterparts, who downloaded the file and uploaded it onto their own system.

"It was a clunky way of transmitting information, and not in real time," McLeod said. "It depended on how much manpower and how much time you had, so it wasn't an effective or efficient way of sharing information."

The United States and Australia previously attempted to share logistics information using a direct link between their systems, but got bogged down by servers that had trouble talking to each other and accreditation processes that were slow and cumbersome.

They abandoned the project in early 2011 in favor of the current one that leverages NATO capabilities.

"The system is fully operational right now," McLeod said. "It was turned on in early April, and it is up and running."

McLeod emphasized the importance of logistics information-sharing, particularly during the U.S. pivot to the Asia-Pacific region. "Knowing the times and dates when things are going to arrive empowers all the processes that we have in military logistics," he said. "Efficient and integrated international supply chains aren't just important to Wal-Mart. They are critical enablers for warfighters as well."

This capability will be particularly valuable, he said, in the event that nations need to work together to respond to a natural disaster such as the Operation Tomodachi in Japan. "We are looking more and more toward our partners and our partner capacity to integrate with us and be more fully interoperable," he said. "This is one of those empowering enabler technologies that allow us to do that."

Kehler Lauds Capability, Credibility of Nuclear Enterprise

AMERICAN FORCES PRESS SERVICE (JULY 24, 2013)
Donna Miles

WASHINGTON—Sweeping improvements across the U.S. nuclear enterprise since a 2007 incident have increased the focus on the nuclear mission and raised the bar in terms of standards and performance, the commander of U.S. Strategic Command told reporters today.

"In general, I feel much more comfortable today with the level of attention," Air Force Gen. C. Robert Kehler said during a Defense Writers Group breakfast roundtable. "I am very confident in the capability and credibility of the forces. And I am very, very confident in our ability to continue our deterrence mission."

Kehler was deputy commander of Stratcom during the August 2007 "Bent Spear" incident in which nuclear-equipped missiles were mistakenly transported nearly 1,500 miles on the wing of a B-52 Stratofortress bomber.

Revelation of the incident—defense officials emphasized at the time that the weapons were never unsecured and never at risk of detonating—led to personnel dismissals, organizational changes, and heightened performance requirements.

"A lot has changed in the last six to seven years," Kehler said. "A lot has changed organizationally, … in terms of the intensity of the focus on the nuclear part of our mission, … [and] in terms of the assessment and evaluation that we put on the units that are involved in all of this.

"And as we say, perfection is really the standard when we talk about nuclear weapons," he said.

Among the changes was the Air Force's standup of Global Strike Command, with a singular focus on the nuclear mission and the standards applied to those involved, he said. The Navy underwent its own top-to-bottom review of its nuclear operations and activities.

The increased focus on nuclear-related units and activities has paid off in better performance levels, Kehler reported.

The general recalled his own experience with these "hard looks" during his earlier years within the nuclear force. "These are not easy evaluations to pass," he said. "And they have gotten harder."

Stratcom's nuclear deterrence mission remains critical to the United States, Kehler noted, injected with a renewed focus and sense of urgency by the president's 2010 Nuclear Posture Review and the national defense strategy.

"We recognize the Cold War has been over for 20 years," he said, but he noted President Barack Obama's pledge to maintain a "credible deterrent force" for both the United States and its allies and partners.

That deterrent is based on the triad of ballistic missile submarines, intercontinental ballistic missiles, nuclear-capable heavy bombers and the associated aerial tankers, and the assured warning and command-and-control system that interconnects them.

Kehler called modernization of the nuclear enterprise "essential."

"We find ourselves in the position today where most of the platforms and virtually all of the weapons are well over 20 years old, and, in some cases, substantially over 20 years old," he said.

"Life extensions are due on the weapons, [and] modernization is due on the platforms ... and the nuclear command-and control system," said Kehler, noting that some of these efforts already have been deferred for almost 10 years.

Asked about morale within the nuclear force, Kehler said it's generally good. "It is not an easy job," he added, noting the intellectual intensity of the nuclear mission.

Kehler visited the Global Strike Command headquarters at Barksdale Air Force Base, La., earlier this month, to emphasize the importance of that mission to the men and women charged with carrying it out every day.

"The skills that we have for the nuclear-deterrence mission will be needed as far into the future as I can see," he said. "As long as we have nuclear weapons, it's our job to deter nuclear attack with a safe, secure, and effective force. That's what we're here for."

Breaking Barriers: 4 Soldiers Set to Become Army's First Female Abrams Tank Maintainers

ARMY NEWS SERVICE (JULY 31, 2013)
Nick Duke

FORT BENNING, Ga.—Four female soldiers will make history Aug. 1, as they will become the first females in the Army to obtain the 91A M1 Abrams Tank System Maintainer military occupational specialty.

Pfc. Emma Briggs, Pfc. Anita Ramirez, Pvt. Erika Leroy, and Pvt. Kaitlin Killsnight are all set to graduate from the 91A course conducted by E Company, 3rd Battalion, 81st Armor Regiment, 194th Armored Brigade.

Both Briggs and Leroy said they did not know they were going to be the first female Abrams Tank System Maintainers until they arrived at Fort Benning.

"I didn't know I was going to be one of the first females until I got to basic training, and one of the drill sergeants mentioned it to me and told me how hard it was going to be," said Leroy, a San Diego, Calif., native.

Briggs, from Cincinnati, Ohio, said she had no prior mechanical experience before coming to the course, but that she was eager to learn.

"When I first joined, it was kind of a process of elimination," she said. "I was given a lot of choices, anywhere from a human resources job to other types of desk and supply jobs. I have no mechanic background, but I was excited to learn. It's awesome to be a female and know some of these things, and maybe I'll be able to translate this into some kind of car mechanics or even go into that field in the future."

Briggs and Leroy attended basic training together, where they formed a friendship that both said has been beneficial to them throughout the 91A training.

Leroy said watching Briggs complete tasks helped to make her more confident.

"I didn't know how to act or how to handle the stress of knowing that you're going to be picking up a 110-pound part, but watching her do it made me believe that I could do it," Leroy said.

Both Briggs and Leroy also said that they were able to lean on Killsnight and Ramirez when times got tough.

"We've all become very close and we have a very good relationship," Briggs said. "We are very good at working together, and that has really helped us all because sometimes it takes a team of females to get on the tank and take care of it since you have heavy equipment and heavy stuff on the tank."

Not only will the four soldiers be the first females to obtain the military occupational specialty, or MOS, but Briggs will be the distinguished honor graduate.

Staff Sgt. Jahi Foster, one of the 91A instructors, said Briggs' willpower was what set her apart from the rest of the class.

"She had a lot of self-motivation and she came in with the same attitude every day," Foster said.

"A lot of the students have problems and they've been here for months dealing with things, but she always came out with the same hard-charging, ready-to-go attitude every day."

From left: Pvt. Kaitlin Killsnight, Pfc. Emma Briggs, and Pvt. Erika Leroy work on an Abrams tank simulator at Fort Benning, Ga. Along with Pfc. Anita Ramirez, the soldiers are set to make history, Aug. 1, 2013, when they become the first females to graduate from the 91A Abrams tank maintainers' course.

U.S. Army photo by Patrick A. Albright

Briggs said she had no idea she was going to be the honor graduate until the class was put through an obstacle course.

"My sergeants were kind of helping to motivate me during it by saying things like 'Come on, distinguished honor graduate,' so the whole company knew the same time I did," she said. "I had no idea."

With the course at an end, the four must now prepare for the responsibility of working on Abrams tanks in a real-world setting.

"It's a lot of responsibility to take in, but I'm pretty confident," Leroy said. "I know my material, and hopefully I'll be able to come back here and show more females that they can do this and give them someone to relate to."