

April 2015

NSSC This Month



U.S. Army Garrison Natick Public Affairs Office



Environmental
program
thrives at Natick

2013 Department of Defense Thomas Jefferson &
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Publisher's Note

John Harlow
USAG-Natick and NSSC Chief of Public Affairs



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NSSC This Month

General Greene Avenue



We are getting closer to the Kansas Street construction being finished.

Last fall, the Town of Natick Board of Selectmen voted unanimously to re-name Kansas Street to General Greene Avenue. It was the town's way to honor his service to our nation and the memory of a friend to many here at the Natick Soldier Systems Center.

The town will re-name the street in a ceremony on July 10 starting at 10:30 a.m. That also is NSSC's Organization Day. The date for the ceremony was picked because Org Day was General Greene's favorite day of the year. It was a chance to relax and enjoy the company of the people who are doing great things to protect our Soldiers.

The general's widow and children will be here for the ceremony.

After the street is officially re-named General Greene Avenue, there will be another ceremony to unveil a Soldiers Cross that will be placed on General Greene Avenue. Hanscom Federal Credit Union wanted to salute General Greene's service and memory and thought this would be a fitting tribute.

In coordinating this ceremony with the Town of Natick, Hanscom Federal Credit Union and the general's widow, the goal is for this to honor the memory of General Greene and to celebrate with his family and his Natick family.

You will receive more notices as the ceremony gets closer, but if you have the chance, take the time during Organization Day and walk down to the corner of Rte. 27 and participate in the street re-naming ceremony.

There were so many people who turned out in August when we had our service on post. It would mean a lot to the family to have the outpouring of support from the place that was General Greene's favorite assignment.

I know I am looking forward to July 10.

John Harlow
USAG-Natick and NSSC Chief of Public Affairs

NSSC This Month

NSSC

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About this newsletter

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Photos: Conrad Johnson (RDECOM)

Army science advisors review technology priorities

By Dan Lafontaine, RDECOM Public Affairs / ABERDEEN PROVING GROUND, Md. (March 26, 2015)

Army science advisors, from around the world, convened here, March 24-26, to discuss Soldiers' technology needs and priorities.

The Field Assistance in Science and Technology, or FAST, program's 30 advisors, both uniformed officers and Army civilians, are a link between Soldiers in the field and the [U.S. Army Research, Development and Engineering Command](#), or RDECOM's, thousands of subject matter experts.

[Brig. Gen. William Cole](#), RDECOM deputy commanding general, provided opening remarks for the annual FAST Program Review's three days of briefings and discussions.

"I appreciate you being out there. You are RDECOM's face to the field," Cole said. "There are a lot of folks who don't necessarily know what RDECOM is until they meet one of you."

Brig. Gen. William Cole, U.S. Army Research, Development and Engineering Command deputy commanding general, speaks during the annual Field Assistance in Science and Technology Program Review on Aberdeen Proving Ground, Md., March 24, 2015.

"We rely on you to represent the command and show what we can offer to the field commanders."

Joe Cowan, with the FAST team at RDECOM headquarters, said the program review's goals are to identify and discuss technology and capability gaps; learn about the latest ideas and efforts from other commands; and network with RDECOM subject matter experts.

FAST's footprint reaches five combatant commands, 10 Army service component commands and major commands, three Corps (I, III, XVIII) and three combat training centers. Science advisors provide supported commanders with access to RDECOM scientists and engineers.

An Army Reserve 20-member detachment augments the full-time FAST advisors during exercises and training rotations.

"We have some enthusiastic Reserve component officers from Detachment 8, who have provided great support to us. We're seeing that in overseas exercises in the Pacific and Atlantic," Cole said. "We can start expecting more Detachment 8 officers at the [combat training center] rotations and [Network Integration Evaluations]."

Check Presentation

Hanscom Federal Credit Union presented a \$1,500 check to the Natick Civilian Welfare Fund. HFCU supports military installations and organizations in New England.

Pictured from left, Jim Potter, HFCU senior vice president of Operations; LaVern Olmstead, Civilian Welfare Fund; Brig. Gen. William Cole, NSSC senior commander; Theresa Sowerbutts, CWF; Paul Marotta, HFCU chairman of the board; Kathy Ferent, CWF; Duane Young, CWF president; David Sprague, HFCU president and chief executive officer; and Lt. Col. Brian Greata, USAG-Natick commander.



Photos: John Harlow, USAG-Natick Public Affairs



Photos: Tim Higgs, IMCOM Public Affairs

Soldier Show coming to Natick

By John Harlow, USAG-Natick Public Affairs / NATICK, Mass. (April 22, 2015)

[Natick Soldier Systems Center](#), [Army Entertainment](#), and the [Town of Natick](#) have joined together to host the U.S. Army Soldier Show at Natick High School on May 22 at 6 p.m.

The free performance would be a perfect start to your Memorial Day weekend.

This year's production, "We Serve," explores elements of what it means to serve, in and out of uniform, as well as how our country, in return, serves those who do serve.

The Soldier Show is a high-energy, 60-minute, live musical production that showcases the talents of Soldiers who were selected by audition from active-duty, Reserve and National Guard Soldiers. These Soldiers have a passion for music, dance and performing, and they come from a wide range of military occupational skills.

The modern version of the U.S. Army Soldier Show originated in 1983 as an outgrowth of several shows existing in various Army commands, with Soldier talent selected from worldwide competition. The motto, mission and philosophy of the show – "Entertainment for the Soldier, by the Soldier" – were established during World War I by Sgt. Israel Beilin, a Russian immigrant better known as Sgt. [Irving Berlin](#). He conceived and directed the first Army Soldier Show.

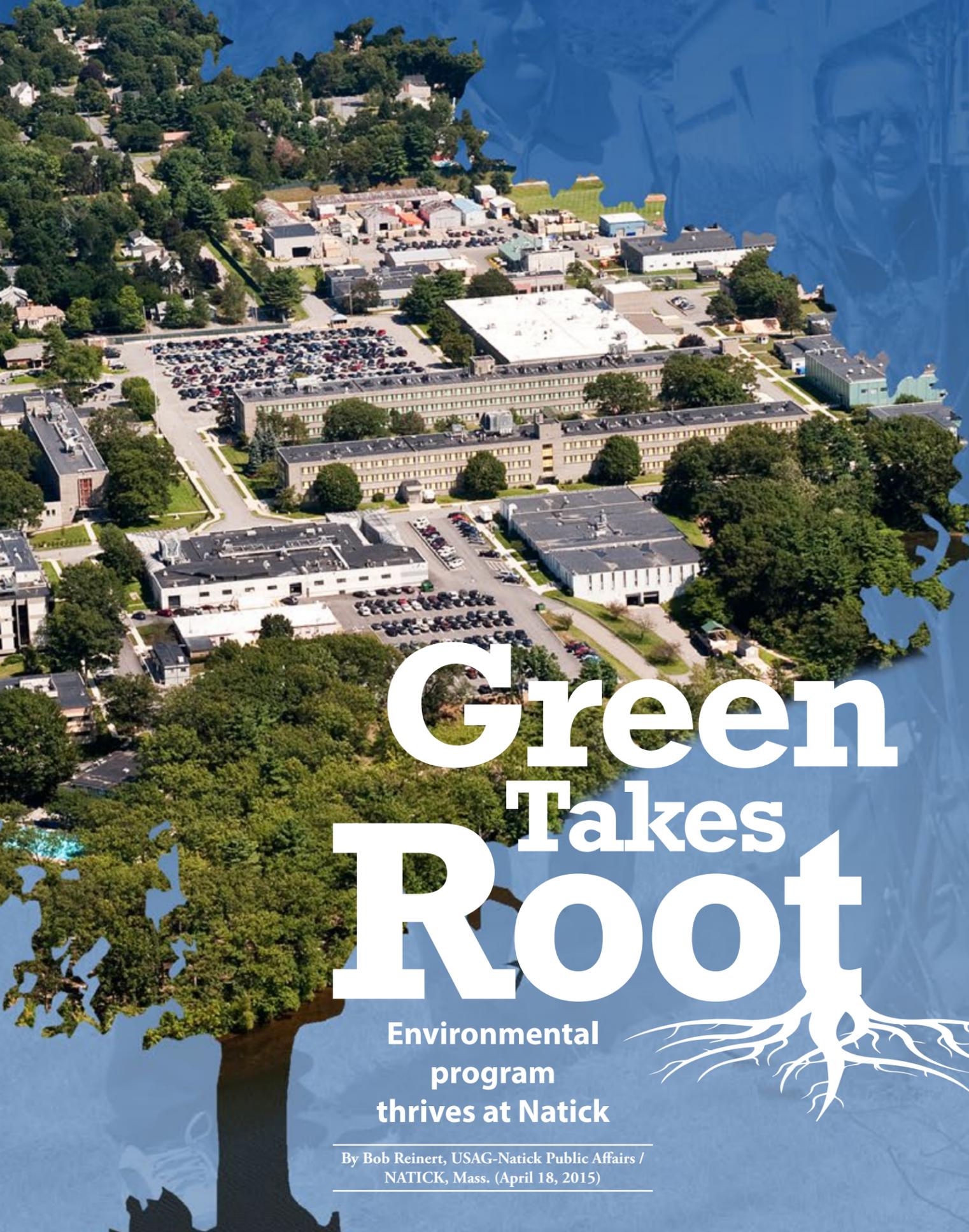
The Soldier Show was reinvented during World War II on Broadway under the title "This is the Army," which was written and directed and produced by Berlin. The cast and crew were members of the [U.S. Army Special Services Company No. 1](#). The 1943 film version featured a military cast starring Ronald Reagan, Gene Kelly and Joe Lewis.

The 2015 U.S. Army Soldier Show "We Serve" pays tribute to the 50th anniversary of the Battle of Ia Drang Valley, one of the bloodiest conflicts in the Vietnam War. The battle was documented in the book "We Were Soldiers Once ... And Young" by retired Lt. Gen. Hal Moore and reporter Joe Galloway. In 2002, director Randall Wallace depicted the first part of the battle in the movie "We Were Soldiers," starring Mel Gibson and Barry Pepper, playing the roles of Moore and Galloway, respectively.

The show also includes an introduction by Gibson. Stephenson helped Soldier Show artistic director Victor Hurtado persuade Gibson to add a taste of Hollywood to the Army Entertainment production.

Get your tickets now!

For Natick performance ticket information, contact the Natick Family and Morale, Welfare and Recreation office at (508) 233-4791 or visit <https://www.eventbrite.com/e/us-army-soldier-show-tickets-16676358437>.



Green Takes Root

Environmental program thrives at Natick

By Bob Reinert, USAG-Natick Public Affairs / NATICK, Mass. (April 18, 2015)

Given that the [Natick Soldier Systems Center](#) occupies a mere 78 acres on a peninsula tucked between [Lake Cochituate](#) and a residential area, you might not believe that the installation could have a robust environmental program underway.

Yet, the Army research and development center's six-person Environmental Office is addressing everything from groundwater cleanup to green procurement training.

"We continually work at it with limited resources," said John McHugh, U.S. Army Garrison-Natick's environmental chief, who has been here for 23 years. "We've done continuing improvements."

McHugh said he has seen great progress on environmental matters since arriving here in 1992 after the installation was identified as a "Superfund" site by the [Environmental Protection Agency](#) following a transformer rupture in the mid 1980s discharged PCBs into Lake Cochituate.

"A lot was happening at that time," McHugh said.

The cleanup included the removal of three PCB hot spots from Pegan Cove, which was completed in 2010.

"That came in as a very successful project," McHugh recalled. "That came in under budget and on time."

Natick also began treating its groundwater in 1998. That effort will continue until 2025.

"We've already treated 500 million gallons of water," McHugh said. "It runs 24/7."

As McHugh pointed out, some of that groundwater is reused by NSSC for such non-drinking purposes as fire flow, heating and cooling make-up water, watering lawns and commodes. As much as 30,000 of the 50,000 gallons treated each day are reused.

"Which is nice, because we don't pay for it," McHugh said. "It's about 40 percent of our water consumption, roughly."

For years, the Environmental Office has worked to rid the installation of mercury used in research and development. Also, all 5,500 chemicals used by researchers here are inventoried on a database that keeps track of their locations.

In a major project recently completed, Natick removed six 20,000-gallon underground tanks that once held No. 6 heating oil for a boiler plant that is no longer used.

"Once we removed (those), we removed a huge environmental liability," said Rich Valcourt, a Natick environmental engineer. "No longer ... do we have a fossil fuel in the ground. Getting rid of that was huge."

The nearby lake added urgency to the process, Valcourt said.

"The last thing we needed was to have an incident where the ... tanks rusted out somewhere, and then we were leaking fuel into the ground," Valcourt said. "Then you're talking an extremely large and expensive remediation."

At the same time that Natick was removing the oil tanks, two 2,000-gallon gasoline and diesel tanks at the central fuel point were also unearthed. They were replaced by a compartmentalized, above-ground storage tank and a new dispenser, which are far better for the environment.

"Because you can see leakage," said McHugh, "a lot of the significant testing is gone."

Single-stream recycling has been another success story at Natick.

"We've done well, because we're actually diverting over 50 percent of our waste stream from solid waste," said McHugh, noting that goal was reached in about five years. "We could do better. We're going to continue to work on changing people's attitudes."

"We've met the [\(Department of Defense\)](#) goals. A number of installations have not met

the DoD goals to divert 50 percent out of the solid-waste stream."

Natick reached the DoD goal with time to spare.

"We hit that a year early," said Lt. Col. Brian Greata, USAG-Natick garrison commander. "It was a 2015 goal. We hit 50 percent in 2014."

"There are recycling bins all over this post. There are only so many landfills."

According to Valcourt, [U.S. Army Public Health Command](#) will arrive soon to conduct a "solid waste characterization study."

"They will go through our waste and sort everything," said Valcourt, "and they'll be able to tell me how much is being recycled, how much is not being recycled, how much is biodegradable, how much is compostable. They're going to give a complete breakdown."

Natick has also begun recycling scrap metal, and the proceeds are placed in a Qualified Recycling Program, or QRP, account. The moneys can then be used to fund the QRP, pollution-prevention projects, or Family and Morale, Welfare and Recreation programs.

"We don't generate that much money; however, it's something," Valcourt said. "If it's one dollar that I can save the installation, and use it to do good things here ... then ... that's what we'll do."

According to Valcourt, the next big initiative for the Environmental Office is to support the "Zero Waste Cafeteria,"

"We're actually diverting over 50 percent of our waste stream from solid waste. We're going to continue to work on changing people's attitudes. We've met the (Department of Defense) goals. A number of installations have not met the DoD goals to divert 50 percent out of the solid-waste stream."

John McHugh, USAG-Natick environmental chief

a [Natick Soldier Research, Development and Engineering Center](#) Program Bootstrap Innovation Proposal that seeks to divert waste from landfills by using biodegradable plates and utensils and diverting food waste from landfills to composting facilities.

Greata said that food waste accounts for 21 percent of Natick's solid waste stream. "All that waste goes in the trash," Greata said. "It increases the solid waste that has to be picked up and taken out of here."

Continued p. 23



Photo illustration: Philip Fujitara, NSRDEC Strategic Communications

Made in the Producing, saving energy in the field

By Jane Benson, NSRDEC Public Affairs / NATICK, Mass. (March 27, 2015)

When it comes to energy conservation and energy production, Army researchers like Natick's Steve Tucker are working to ensure Soldiers have it made in the shade.

Tucker is a senior engineer at the U.S. Army [Natick Soldier Research, Development and Engineering Center](#), or NSRDEC, on the [Collective Protection Systems Team](#) and is the lead project officer for the "PowerShade." Natick's work is part of the Army's commitment to conserving fuel and water and reducing waste.

In addition to providing shade and protection from the sun, the PowerShade is a durable solar shade structure that contains photovoltaic modules that generate solar power. The medium variant of the Gen I PowerShade generates 1.8 kilowatts of peak electrical energy that can be used to support military base camp operations.

"Saving energy is a Natick-wide effort, part of a larger Army effort," Tucker said. "The Army right now is very concerned with energy use. The PowerShade is part of the trifecta, where we are looking at power, waste and water. The goal is to bring in conservation technologies where less energy is needed to heat or cool shelters, generate power from alternative energy to remove the need for more fuel, and investigate 'waste to energy' technologies, where we take things that normally would be thrown away, and we use them to create power. The Army is also looking at water purification, where local water is purified and used for camp operations."

tricity directly from the sun, produces zero emissions, and it requires no fuel and little to no maintenance.

The reduced logistical burden and reduced footprint that the PowerShade provides to warfighters are beneficial not only in terms of consumption but also in terms of safety. Eliminating the need for fuel deliveries reduces danger and vulnerability associated with such deliveries.

"A remote or austere environment is where everything is the most expensive," Tucker said. "It's where you have to transport your fuel the furthest. It's where security is the most risky because you may be deep in enemy territory. It's difficult to get supplies in. Sometimes you can't just drive them in, and you are forced to airdrop them in. Something that is self-sustaining like the PowerShade helps toward the goal of becoming "net zero," where we make as much energy on-site as we use. You can also minimize your footprint and your presence as far as your bringing people in and bringing supplies ... Bottom Line? An austere environment, where logistics is the most expensive and challenging, is where alternative energy really shines."

Typically, the PowerShade is placed over a shelter that is used for the billeting of Soldiers. It reduces the power demand from the environmental control unit, or ECU, so

less power is needed to cool or heat the shelter. The saved power can then be used to support other camp operations.

"So, by producing the power, you are actually harvesting the sun to enable energy-efficient camp operations, such as lighting or powering of convenience loads like a laptop, or a battery charger," he said. "LED lighting is very energy efficient, and we can support that with the power

produced by the PowerShade. We can also take the energy from the sun, and we can recharge a battery for a Soldier's radio with it. Then we can take the power from that same battery later on when we need it, or we can use another application Natick developed and invert to make AC power like you would typically use from a wall socket."

Tucker has traveled extensively to train Soldiers to set up, tear down, and use the PowerShade. He helped oversee the use of the Gen I PowerShade under austere, remote conditions at [Camp Lemonnier](#) in Djibouti, located in the Horn of Africa. He is also supporting an ongoing research effort by the [U.S. Army Construction Research Laboratory](#), or CERL, and the [United States Military Academy](#) at West Point to investigate the use of Super Insulated Panel, or SIP, structures as a more energy-efficient alternative to the wooden buildings known as "B-Huts." Soldiers are familiar with B-Huts from base camps in Southwest Asia.

"The idea behind bringing the PowerShade to West Point is to get that base camp net-zero effect, where they make as much power as they use," Tucker said.

A more powerful version of the original Gen I PowerShade is currently being developed. The Gen II PowerShade will use about the same deployed footprint as the Gen I PowerShade, but will be capable of producing about twice the power of the Gen I unit, further advancing the goal of achieving net-zero energy for base camps.

"The Gen II produces more power at less cost per watt than the Gen I," he said. "The Gen II is a slightly larger unit and has a 10-year rated lifespan versus a three-year (lifespan) for the Gen I."

Currently, the Gen I PowerShade is being used in Guam for a demonstration, and the Gen II unit is set up at Fort Leonard Wood in Missouri as part of the Sustainability Logistics Basing Science and Technology Objective.

Both the Gen I and Gen II PowerShades mean that Soldiers don't have to commit time to refueling or maintaining equipment.

"Anything that allows Soldiers to focus more on warfighting and spend less time on maintenance and other base camp tasks is beneficial to getting their mission done and them home sooner," Tucker said.

Shade

The PowerShade has several qualities that make it particularly useful to warfighters in remote, austere locations. The energy generated by the PowerShade is clean, quiet, sustainable and renewable. It generates elec-



Arrive Intact

New airdrop system could save cargo loads

By Bob Reinert, USAG-Natick Public Affairs / NATICK, Mass. (April 2, 2015)

It's great to be able to airdrop cargo to Soldiers in isolated areas. It's even better if the load arrives intact.

With the decades-old M-1 and M-2 cargo parachute release systems currently in the Army and Air Force inventories, that sometimes can be a hit-or-miss proposition. The Advanced Cargo Parachute Release System, or ACPRS, now being developed by [Product Manager Force Sustainment Systems](#) at [Natick Soldier Systems Center](#), could change that.

"So that's really the impetus for this whole system is better reliability and taking care of the equipment that gets on the ground," said Scott Martin, an equipment specialist with PM FSS Cargo Aerial Delivery. "All it takes is just one airdrop load to roll over and destroy it, and that's what would happen with the old M-1 and M-2. It would hit the ground, it wouldn't release, and the wind would catch the parachute and would roll the load over and destroy the load."

PM FSS began looking at several systems in 2010 and settled on the ACPRS, which can accommodate loads ranging from 200 to 42,000 pounds. One or two systems can be used with between one and eight parachutes, depending on load size.

Instead of the mechanical timer employed by the old systems, the ACPRS uses an electro-mechanical system that automatically disengages the parachutes when the load hits the ground.

"There's actually a battery in it, and it uses a pressure sensor, a barometer and some other accelerometers to figure out what's going on in space," Martin said. "It has a motor that releases the parachute, so it's much more reliable."

"A lot of the worry is how the Soldiers work and deal with these things. It's pretty darned simple. There's very little that the Soldiers have to do with it."

According to Martin, partnerships with the Rhode Island Air National Guard, Rhode Island National Guard, Connecticut Air National Guard, and New York Air National Guard have aided in the ACPRS development.

"We're very lucky to have three C-130 units within our neighborhood, between Rhode Island, Connecticut and New York," Martin said. "This is an opportunity for us to use our equipment – see how it works – while they're being exposed to new equipment, and (it) prepares them better for when they go out and do training."

It wasn't love at first sight for the Rhode Island Air National Guard, however.

"Initially, there was some hesitation for the new (system) from the older generation," said Master Sgt. Kyle C. Gurnon of the RIANG. "This attitude quickly changed once people got their hands on it. After academic and hands-on training, the group was impressed by the simplicity of the ACPRS."

Gurnon called the ACPRS "a great replacement to the M-1/M-2, and I think it will mitigate malfunctions due to timer block assembly failure. Further, I think the lack of unit level maintenance on the ACPRS will save man-hours, as I was told that you ship the unit back to the manufacturer if it fails the built-in-test. The longest part of rigging it is charging it."

"I can't wait to see nothing but ACPRS in the system."

The ACPRS sailed through testing. For now, the system is in use only at [Little Rock Air Force Base](#), Ark., and at the [U.S. Army Quartermaster School](#) at Fort Lee, Va. The next step is fielding the system throughout the services.

"I think within the next year it will be available in the supply system," Martin said.

Though the ACPRS costs about three times as much – about \$5,000 apiece – as the systems it's designed to replace, Martin brought that into perspective.

"If you save one load, you've paid for it how many times over?" Martin said. "I don't think it's going to be a stretch to say that loads will be saved by using this."

"I think it's just going to quietly take over, and people are not going to notice. I think that might be the true measure of success."





Photo illustration: Philip Fujawa, NSRDEC Strategic Communications

Better Fit

3-D shape database improves clothing, equipment

By Jane Benson, NSRDEC Public Affairs / NATICK, Mass. (April 17, 2015)

A new database at the [U.S. Army Natick Soldier Research, Development and Engineering Center](#), or NSRDEC, is a perfect fit for America's Soldiers.

The ANSUR II 3-D Shape Database uses three-dimensional shapes and contour data to improve the fit of clothing and equipment for warfighters. It incorporates the latest Army anthropometric survey data and 3-D whole body scans, providing a searchable platform for the data and the 3-D shapes.

The center completed the latest comprehensive anthropometric survey of Soldiers, called [ANSUR II](#), in 2012. The previous survey was completed in 1988. The 2012 survey set out to address changes in Army personnel body size and shape, and the resulting data showed that Soldiers have increased in overall body girth since 1988. The new study also set out to document the sizing needs of the increasing number of women serving in the military.

The 2012 data collection included 3-D scans of the head, foot and entire body. This innovation provided geometric and morphological data on military personnel that could not be obtained through traditional body measurement techniques.

Dr. Peng Li, a computer scientist on NSRDEC's anthropology team, is working on a novel approach to use all of the 3-D scan information to define common shapes for items, such as body armor and helmets. Scans provide contour information that is essential for proper fit.

"Peng has been working on tools to make the body scans more accessible and more usable," said Steve Paquette, a research anthropologist and team leader for NSRDEC's anthropology team.

"We developed our own shape descriptor and query method for 3-D body scans," Li said. "It will help determine different shapes for body armor and protection and gear for heads and faces."

"The anthropology team's primary mission is to maintain 'the' data base on Soldier body size," Paquette said. "This has been true since Natick opened. Most of the data over the years have been traditional measurements that you take with calipers and tape measures. With the 2012 study, we also took body scans, and it's those 3-D scans that Peng has been working with. He is actually developing tools for searching 3-D shapes.

"Say if you want to search for someone with a narrow head, or a wide head, Peng has been working on a shape searching tool. We not only collect data on Soldiers, we also develop tools to better use the data."

"The ANSUR II 3-D Shape Database is an integrated database that provides access to both traditional measurements and 3-D scans collected in ANSUR II survey," Li said. "It allows a user to search or query body dimensions and shapes, and to download search results in spreadsheet and 3-D surface files."

The goal was to acquire data from males and females to help Army engineers, scientists and designers develop equipment, clothing, shelters, kitchens, airplane cockpits, and vehicle crew stations that best serve the dimensions of the Soldier. The study included 7,435 men and 3,922 women.

Based on their access to data of body measurements and their ability to analyze the data, Paquette's anthropology team, which includes Li, a computer scientist, and Brian Corner, a 3-D morphologist, played a key role in the design of female body armor.

Women's body dimensions are very different from their male counterparts, and they need equipment designed for them specifically. Smaller versions of items developed for males do not fit female Soldiers properly. Team members devised eight new sizes based on the female anatomy data. They provided statistics based on those theoretical sizes.

"We worked with team leader Annette LaFleur and the design, pattern and prototype team, and they started making patterns based on that data," Paquette said. "Then we took those patterns and got prototypes made of those patterns. And then we put armor on actual women and tested it. Sometimes, you need to adjust the sizes or add an additional size."

Peng's work with 3-D shapes will help researchers to better use the shape data to solve problems of sizing and human interface.

"We work closely with human factors and biomechanics," Paquette said. "It's not just what size they are, but how the human interfaces with the environment or work station. Can they reach? Can they see? Anthropometry is just one piece of the whole picture."

3-D shape data has become an integral part of the product design process.

"First, the database allows the designers to more easily check population distribution with multiple range restriction," Li said. "For example, a designer can check how many subjects in the database fit into a box in three or five dimension ranges such as chest circumference, waist circumference and stature. Secondly, the designers can also look at a real 3-D shape of those subjects. Finally, if a user has advanced CAD [computer-aided design] systems, she or he can transfer 3-D whole body data to a CAD system as a model to be fit with a product's prototype design."

The shapes captured by the scanner help with the design of items where close, accurate fit plays an important role in providing optimum protection, as is the case with body armor, helmets and goggles.

"Comfort, performance, safety and fit - that's what it's all about," Paquette said. "If it doesn't fit right, you don't even want to wear it."

Meet Less

TRADOC commander says time wasted

By David Vergun, Army News Service / FORT LEAVENWORTH, Kan. (April 3, 2015)

One of the most precious commodities a Soldier has is time, and a lot of time is wasted in person-to-person exchanges and group meetings, [Gen. David C. Perkins](#) said.

Perkins, who serves as commander of [U.S. Army Training and Doctrine Command](#), along with other Army leaders, met with and heard the opinions of 84 majors during Colloquium 2015, here, March 30.

The topic of wasted time at meetings came as an aside after Maj. James Gibson told Perkins that it is a challenge for the Army to support Soldiers' self development with limited resources.

Perkins agreed with Gibson's thoughts that self development is one of the most essential components of leader development and that it is also "one of the most underutilized domains we have."

But Perkins also said that it does not take much in the way of resources to self develop. There are basically two ways a Soldier can self develop, Perkins said. One of those is reading up on areas of expertise. The second way is though face-to-face meetings with leaders, peers, subordinates or subject matter experts.

But today, Perkins said, too much time is spent in individual or group meetings, where discussions take place on things that are already known or on topics that can easily be accessed online.

"There are some things you can only get face-to-face," Perkins said. "For other things, you don't need it. So when you do a face-to-face [meeting], don't talk about things readily available to you in writing. We're very bad about that. We waste a lot of time."

Perkins said that one of the biggest impediments to an officer's self development is an officer's lack of a self-development strategy. He also said that self development must be an active personal quest - it cannot happen passively.

"Becoming informed is a proactive sport," he said. "You can't just sit there in the office and say, 'inform me.' You have to go out and do it. People complain that 'no one is self developing me.' What about the word 'self' don't you understand? You've got to come up with a personal strategy. It takes great discipline to do that. Usually the biggest problem is, people don't have discipline, and they don't have a plan. It's a missed opportunity."

[Lt. Gen. Bob Brown](#), commander of the [Combined Arms Center](#), said he agreed that self development is a critical component of leader development. But he disagreed that it's the single most important element.

"You learn and develop most in the operational domain," by interacting with others, he said. "You can learn from both the good and bad leadership you're exposed to."

Brown said that although self development does not take much in the way of resources, the Army could do a much better job with the resources it does provide.

He said there is a lot of information available to Soldiers for use in self development. But that information is not all in one place, so it is not readily accessible. "In many areas we're resource-rich and knowledge-poor. Folks don't know where to go."

The Army Training Network, or ATN, is a good start, Brown said. But that resource does not yet consolidate every type of knowledge necessary for self development. Additionally, the ATN requires a Common Access Card, or CAC, making it difficult for Soldiers to access on their personal devices.

Maj. Phil Hensel said the last 14 years of warfare provided officers at even the most junior level a chance to interact with joint, multinational and interagency partners. As opportunities to do that become more limited, he said the Army should assign Soldiers to other services or agencies, possibly as part of an exchange program.

Even an exchange on a small scale would "permeate knowledge throughout the force," he said.

One of the problems is that the year-group structure with its time-in-service limits on promotions forces Soldiers to move between what are considered required assignments, with little time for broadening through outside-the-Army assignments.

Perkins said Hensel hit the nail on the head with the problem of not having more in the way of an exchange-type program. It is difficult to manage talent when the "timeline is what everyone talks about," Perkins said.

Unfortunately, he said, year groups are set in law by the Defense Officer Personnel Management Act of 1980.

"If we could, we'd probably not manage you by year groups," Perkins said. "We'd manage you by where you are in your leader development process. We're looking hard at other options. We're working hard to change the law."

Soldiers should not suffer negative consequence for taking longer for their leader development process and broadening experiences, he offered. Soldiers should be able to do the jobs they normally do, plus train with industry or go to graduate school, for instance, between those other assignments.

Perkins said that [Human Resources Command](#) is already challenged to manage more than a million Soldiers on a known timeline. A new management model would make it even more difficult for them, he said. "But I think that's where we have to go."

Gen. David C. Perkins, commander of U.S. Army Training and Doctrine Command, makes a point during Colloquium 2015 on Fort Leavenworth, Kan., March 30, 2015.

"There are some things you can only get face-to-face. For other things, you don't need it. So when you do a face-to-face [meeting], don't talk about things readily available to you in writing. We're very bad about that. We waste a lot of time."

Gen. David C. Perkins, TRADOC commander



Photo: David Vergun, Army News Service



Design Challenge

Students participate in Air Force Research Laboratory event at Natick

By Tazanyia L. Mouton, USAG-Natick Public Affairs / NATICK, Mass. (April 21, 2015)

More than 150 students from 17 colleges and universities and three service academies were on hand at the [Natick Soldier Systems Center](#) April 13-17, as they partook in the 2015 [Air Force Research Laboratory](#) University and Service Academy Design Challenge.

The AFRL is a scientific research organization operated by the [U.S. Air Force Materiel Command](#) dedicated to leading the discovery, development and integration of affordable aerospace warfighting technologies.

The laboratory, formed in 1997, has conducted numerous experiments and technical demonstrations in conjunction with a wide range of agencies to include the [Department of Defense](#).

The AFRL design challenge makes great efforts to deliver creative solutions to challenging problems, and presents an exciting opportunity for students to exercise their talents and contribute to our nation's defense.

This year's challenge asked students to design and prototype a heat stress prevention kit that could safely, rapidly and effectively remove undesired heat away from body exteriors during special operations in hot and humid environments.

The biggest constraint students had to work with was the fact that in hot environments, it is often difficult for the warfighter to wear heavy protective equipment.

The challenge also called for the kit to be rapidly deployable, self contained, and portable.

In September, students were given their mission, and they have had the last seven months to develop their ideas and create their prototypes.

Due to the nature of this year's challenge, it was only fitting that students' prototypes would be tested in the [U.S. Army Natick Soldier Research, Development and Engineering Center's](#) Doriot Climatic Chambers.

The chambers are a one-of-a-kind facility that can reproduce environmental conditions that occur anywhere in the world, producing tropic wind with temperatures as high as 165 degrees, and arctic wind with temperatures as low as minus 70 degrees.

The chambers can also simulate rain up to four inches per hour and wind up to 40 miles per hour.

Through these extreme conditions, testing of physical properties of military equipment, as well as testing of physiology and adaptations of human subjects, can be performed here.

Josh Osborne, an aerospace engineer and AFRL Design Competition program manager, said the challenge is unique because it can present a solution to a real-world need for Air Force Special Operations.

"The overall purpose is to get a system (or) an idea together to solve the problem," said Osborne. "At the same time, grow the future engineers that are ready to graduate and get them interested."

Osborne added that the students also had to consider the dimensions of the system.

"When a special operations person takes something with them, they have to think, 'Would I leave a (Meal, Ready-to-Eat) behind to take this?' So it has to be important enough for them to bring it to begin with, so weight and size is a big thing," said Osborne.

After several months of working on their innovations, the challengers tested their prototypes in the chambers.

Test subjects donned the students' prototypes and walked on a treadmill for one hour at an approximate pace of three miles per hour with temperatures nearing 100 degrees Fahrenheit with 40-percent relative humidity.

Osborne said throughout the test, subjects' heart rates and skin temperatures were monitored.

Cadet Ioannis Wallingford, a senior at the U.S. Military Academy at West Point, said he's proud of the work his team has done.

"It feels great; it's something that actually touches me pretty deep," Wallingford said.

Wallingford explained that during cadet basic training, a classmate of his died due to a heat-related incident.

"I chose this capstone because this is something that would have decreased the risk for an incident like that to happen," Wallingford said.

Wallingford described his teams' prototype as sophisticated but also simple.

"Our system uses a passive system combined with an active system because we realized our passive system alone would not produce the cooling capacity required," said Wallingford. "It creates a synergistic effect between the two."

The winning university team of the AFRL challenge was not only awarded a symbolic "Wright Brothers" trophy, but the potential for a \$100,000 grant to further develop their innovative idea.

The service academies were in a separate competition amongst themselves, where they had a chance to win bragging rights for the next year, as well as a trophy of their own.

Students also "win" by experiencing solutions to real-world problems, while getting an opportunity to contribute to products that could potentially help save the lives of our nation's warfighters.

If you would like to learn more about the AFRL University and Service Academy Design Challenge, you can visit <http://www.africhallenge.com/>.



Photo: C. Todd Lopez, Army News Service

Clifford A. Surrett Sr., an engineering technician with the Night Vision and Electronic Sensors Directorate on Fort Belvoir, Va., discusses night-vision devices with students in the most recent orientation and reach-back training iteration, April 17.

RDECOM program puts Army scientists with Soldiers

Shoulder-to-Shoulder

By C. Todd Lopez, Army News Service / WASHINGTON (April 21, 2015)

For 30 years now, the Army has embedded scientists and technology experts in the field - to ensure the exchange of new technology and the feedback it yields - moves efficiently between the researchers who develop it and the Soldiers who use it.

Since the summer of 1985, Army science and technology advisors, part of the [U.S. Army Research, Development and Engineering Command](#), or RDECOM, have provided for their assigned commands easy access to the technologies and bright minds that are available within Army research, development and engineering centers.

As a result, problems that can be solved with technology can be solved more quickly, and commanders can instead concentrate on their mission.

"They are senior engineers and scientists that RDECOM embeds ... to provide reach-back to the Army enterprise, in terms of research and development," said James Gibson, director of the Field Assistance in Science and Technology Directorate at RDECOM, of the command's science and technology, or S&T, advisors. "If the combatant command has an operational issue that they think might have a technological solution, then the science advisor would engage on that."

Gibson said that the Army has always provided similar reach-back for fielded programs or programs of record. But the S&T advisor program increased that capability.

"What was absent was a reach-back to the science and technology community," Gibson said. "Our senior commanders recognized that and asked Army Materiel Command what they could do to position people forward to assist on those issues."

"They are senior engineers and scientists that RDECOM embeds ... to provide reach-back to the Army enterprise, in terms of research and development."

James Gibson, director of the Field Assistance in Science and Technology Directorate at RDECOM

When it stood up, the S&T advisor program initially covered just South Korea and Germany, Gibson said. Today the program has expanded to provide advisors to the senior staff at combat training centers, major commands, combatant commands, and corps commands. In 2003, RDECOM even started provided specialized teams of S&T advisors to the Iraq and Afghanistan theaters.

The advisors, mostly senior scientists, physicists, computer scientists and engineers, are

already RDECOM employees. As part of the S&T advisor program, they are assigned for two-to-three year advisor roles. Gibson said the Army now has about 25 S&T advisors deployed worldwide, half officer and half senior Army civilian.

ORIENTATION AND REACH-BACK TRAINING

While S&T advisors are already experts in some scientific field, they must be prepared to provide to commanders input and advice on the wide array of areas of research and capability offered by RDECOM. To prepare the advisors for their role, RDECOM puts them through a three-week orientation and reach-back training program, ORBT. Two iterations of the course happen each year.

"Each one of them comes to us with some level of specialty in their background," Gibson said. "What we are trying to do over this three-week program is broaden their horizons so they become exposed to the total enterprise of RDECOM. Part of this training is to position them to be somewhat conversant in other fields they may not be familiar with."

The five new S&T advisors undergoing the most recent iteration of ORBT spent the last day of their first week of training, April 17, at the Night Vision and Electronic Sensors Directorate, or NVESD, on Fort Belvoir, Virginia. There, students were exposed to the variety of night-vision equipment technology within the RDECOM domain.

By the end of the ORBT, the five new S&T advisors will have visited and learned about RDECOM capabilities in Huntsville, Alabama; Natick, Massachusetts; Rockaway, New Jersey; and Aberdeen Proving Ground, Maryland.

TRANSLATOR

After spending time learning about night vision goggles at the NVESD facility on Fort Belvoir, Lt. Col. Marc Meeker, a science and technology advisor assigned in South Korea for two months now already, explained how in his new role he serves as a kind of translator between the engineers and researchers of RDECOM and the Soldiers in the command he advises - [U.S. Forces Korea](#).

"I'm somebody who speaks the language of engineers and who speaks the language of Soldiers and helps to get needs and requirements from the Soldier back to the engineers," Meeker said. "I can also help to get neat ideas and solutions to these problems back down to the Soldier as fast as possible. A lot of times the Soldiers and engineers don't necessarily speak the same language."

Meeker said that while conflict has now drawn down in Iraq and Afghanistan, there still hasn't been a formal peace declared between South Korea and North Korea. Because of the standing conflict, Soldiers stationed there must always be ready - and that

and working though this ORBT program to learn about the portfolio of products that the RDECs have under RDECOM."

Meeker said mastering the array of RDECOM capability is important "so when Soldiers tell you they have a certain problem set, you know what is available out there or you know who to reach back to in order to get information about what the latest and greatest is."

With a background in mechanical engineering, and having served as both an Army ordnance officer and within the acquisition community, Meeker said that his Army career has led him to his role as an S&T advisor.

"From the ordnance arena, I was on the receiving end of a lot of the neat technologies that got pushed out to the field," he said. "Then when I worked [for] the program manager for crew-served weapons as the sniper assistant program manager, I got to help push a lot of those systems out and help with the fielding of the M110 sniper rifle - the same in program manager-maneuver ammunition's systems, when I was working in medium caliber. Now, of course, I am looking at the newest technologies that we are doing research and development on. I am trying to get prototypes out into the field. They get moved to the program management offices for development if the technology is good."

"Show me how you are actually using this equipment. Maybe I'll see something that isn't working right that you didn't pick up on."

Andrew M. Margules,
RDECOM Science and Technology advisor

means having the best technology available. Meeker said as an S&T advisor he provides a link between those Soldiers, the technology they need, and the technology they haven't even thought about yet.

"There is always a need for technology in [Korea]," Meeker said. "Bringing the new technology out there, even prototypes to have them tested, is what I intend to do. I am very much looking forward to getting some of this technology into the hands of Soldiers

COLD IN ALASKA IS NOT SIMULATED

Andrew M. Margules, a science and technology advisor, assigned to Joint Base Elmendorf-Richardson, Alaska, is participating in the ORBT alongside Meeker. Margules has been an S&T advisor in Alaska for six months now already.

Margules said a goal of his tenure, as an S&T advisor to [U.S. Army Alaska](#), or USARAK, is to increase the collaboration between

the command and the Army's research and development community. He said there are advantages to working with Soldiers stationed in Alaska.

"I think a lot of times [the RDECs] reach out to CONUS units because they are easier or closer," he said. "But I think USARAK and other U.S. Pacific Command units have unique opportunities to evaluate equipment in non-traditional environments - though relative environments and real environments. It's not a simulated experiment, where we are going to bring something into a cold chamber and test it out. We can actually bring it to the Arctic and test it outside and get that good data for you."

Margules said he likes working in RDECOM labs, but that being out in the field among Soldiers has been a new experience for him that he has enjoyed.

"I actually go out in the field with these guys ... and actually participate with them in what I can," Margules said. "In February we were doing some exercises through the FAST office - we were bringing up some kit to test out. We were walking through the woods with the Soldiers. We were in the squad, with them, walking. And every time they had a complaint - they'd ask 'where's the science guy?' And I was running up in my snow shoes right behind the guys asking what's going on. 'Show me the actual problem you're having right now,' I'd say. That they know I'm there - it's important to me. And it's important that they know I take their concern back with me."

As an S&T advisor for RDECOM stationed in Alaska, Margules expects to work with not just senior leaders but with those junior Soldiers as well. And in fulfillment of his role as an ambassador for RDECOM to units around the world, he hopes to make their operations easier by ensuring the equipment and technology they use is the best possible. He said he does that best standing shoulder-to-shoulder with the Soldiers.

"Show me how you are actually using this equipment," he said. "Maybe I'll see something that isn't working right that you didn't pick up on. And you'll maybe see something not working right that I didn't know about. And together we'll take those two pieces and make it even better, through RDECOM."

A delegation of 17 Turkish scientists, engineers and military officers toured U.S. military research and development centers March 16-31, to examine American science and technology practices to advance their own R&D enterprise.

The group visited the [U.S. Army Research Laboratory's](#) Rodman Materials Research Laboratory here March 27. They were given a [U.S. Army Research, Development and Engineering Command](#) overview by [Brig. Gen. William E. Cole](#), RDECOM deputy commanding general.

Dr. John M. Pellegrino, director of ARL's Computational and Information Sciences Directorate and Chief Information Officer, discussed the ARL workforce, the lab's Open Campus initiative and some intricacies of government-industry relations.

"You have to build the ecosystem," Pellegrino said, addressing the leadership support, collaborative mechanisms and sharing strategies needed for a successful research enterprise.

Eager to add to the discussion, questions from the group fueled a two-hour conversation that included how U.S. research portfolios are prioritized, the relationship between R&D centers and combatant commanders and the possible exchange of scientists and engineers between the two nations.

The Turks were expressly interested in how military research centers are organized, how R&D projects are selected, and were curious how the U.S. military competes with corporate markets and other universities for scientists and what incentives military research centers have to offer. They also asked how funding for military research is managed.

"The Turks have been late to join the (R&D) party, and are now looking to establish a network similar to ours. They're here to add to their understanding of what they need to do," said Jyujy Hewitt, RDECOM's executive deputy to the commanding general. "This is certainly a step in the right direction."

"They are also going to receive Ms. (Heidi) Shyu, (Assistant Secretary of the Army for Acquisition, Logistics and Technology), who will visit them in May," Hewitt added. "So they're here to gain awareness about what we do."

Professor Dr. Ismail Demir, the undersecretary of Turkish Defense Industries, and Maj. Gen. Oguz Serhad Habiboglu, head of the Plans and Policy Division for the Turkish General Staff, led the group. Demir was



Photo: Mr. Roger Teel (RDECOM)

educated in American schools for nine years, earning two masters of science degrees from the University of Michigan and Purdue University, then earning a doctorate at Washington State University.

Each member of the Turkish delegation communicated and understood their mission.

"To enhance cooperation between R&D functions," explained Vedat Karagoz, a major in the Turkish army. "We're here to establish connections between your facilities and ours. We would also like to exchange students for specified projects."

Mining for Ideas

Turkish delegation tours military R&D centers

By Roger Teel, RDECOM Public Affairs / ABERDEEN PROVING GROUND, Md. (March 31, 2015)

"We're late about it, in terms of being a [NATO](#) country, a partner country," Karagoz said. "We don't know enough about the ecosystem which we are in. Maybe we can help you, maybe you can help us."

With the second-largest military in NATO (the U.S. is the largest), and Turkey's geographic location at the southeastern flank of the alliance and its status as a Muslim-majority country, the country plays a critical role in regional security, particularly in Afghanistan where it has pledged continued support for

Members of the Turkish military visited RDECOM March 27, touring the U.S. Army Research Laboratory's Rodman Materials Research Laboratory.

training Afghan security forces beyond 2014 through bilateral and NATO programs.

The Turkish government spent more than \$1 billion on defense, research and development in 2013. More local businesses have been introducing products to the market, contributing to Turkey's goal of relying more on domestic sources than imported products.

Turkey is also one of a handful of countries undertaking research on advanced optics. Turkey has been focusing research on Quantum-Well Infrared Photodetectors, an area in which the United States is similarly engaged.

Prior to visiting APG, the Turkish contingent toured the Defense Advanced Research Projects Agency and the Naval Research Laboratory. They were scheduled to visit the [U.S. Army Natick Soldier Research, Development and Engineering Center](#) in Natick, Mass., this week to close out their tour.



Test Kitchen

Fort Leonard Wood assesses new mobile unit

By Tiffany D. Wood, Fort Leonard Wood /
FORT LEONARD WOOD, Mo. (April 7, 2015)

The U.S. Army's mobile kitchen was put to the test on [Fort Leonard Wood](#) during a demonstration that will assess new energy-efficient appliances used to feed about 1,000 Soldiers, April 21.

Eight cooks, with the [4th Maneuver Enhancement Brigade](#), or MEB, were the first to use the appliances to prepare and serve 350 pounds of steak, 350 pounds of fries and 252 pounds of green beans in the new Modular Appliances for Configurable Kitchens also referred to as the Containerized Kitchen - Improved.

Staff Sgt. Joshua Phillips, 4th MEB cook, said the Soldiers were excited to use the new appliances, which include a combination of griddles, servers, Hawkmoor burners, convection ovens, French-plates and tilt skillets. The Soldiers were also eager to have a say in what may be the Army's future mobile kitchens, he said.

"The biggest thing the Soldiers, preparing the food, are looking forward to is that we will have a chance to provide feedback on the equipment and hopefully be able to help get

equipment that is more user friendly once it actually gets fielded," Phillips said.

Researchers and developers with the Maneuver Support Center of Excellence Capability Development and Integration Directorate and the [U.S. Army Natick Soldier Research Development and Engineering Center](#) in Natick, Massachusetts, led the demonstration at the fort's [Contingency Basing Integration Technology Evaluation Center](#), or CBITEC - a training base camp that is used as a lab to assess capabilities and evaluate new technologies for the Army.

Mark Ferguson, who heads up the CBITEC, said the demonstration, which will be the first for the lab, allows researchers the opportunity to evaluate the efficiency and operability of the kitchen and appliances.

"The new kitchen and appliances were designed to address specific capability gaps found with the existing appliances in the areas of function and design," Ferguson said.

Specifically, he said, the existing appliances are inefficient and noisy, require a genera-

The U.S. Army's mobile kitchen will be put to the test on Fort Leonard Wood during a demonstration that assessed new energy-efficient appliances used to feed about 1,000 Soldiers, April 21, 2015.

tor, cannot be removed from the kitchen, and dump all their heat and exhaust into the cooking area. "The new appliances address all those issues, will use far less fuel, and can be operated on solar power," Ferguson said.

One area the cooks assessed was the kitchen's temperature, said Phillips, who is looking forward to a "cooler, more comfortable piece of equipment to cook in."

"The kitchens we have now are extremely loud and, during summer, extremely hot to the point that a cell phone will turn off. My cell phone actually said, 'Due to hot temps, the cell phone is powering off.' I've never seen a cell phone do that before," Phillips said.

After the demonstration, the data collected will be used to determine the levels of savings the Army would see if the new kitchen and appliances were used to feed Soldiers at base camps around the world.

Seventy-one years later, Isadore Cutler can't shake the sensory overload that he experienced on that day in April 1945.

That was when he and other members of the Army's [17th Signal Operations Battalion](#) arrived at the notorious [Buchenwald Concentration Camp](#). They had smelled it kilometers before they could see it.

"I want to tell you of my worst nightmare to this day," said the 91-year-old Cutler, "piles of human bones of men, women and children; the crematorium; the smell; the human skeletons walking around."

Cutler shared the memories of his World War II experience with the [Natick Soldier Systems Center](#) community April 16 during NSSC's Holocaust Remembrance in Hunter Auditorium. It had all begun for the then 20-year-old on D-Day, June 6, 1944. He and the 17th had come ashore at [Normandy Beach](#).

"We were sitting ducks," Cutler recalled. "Most of my outfit died on that morning 70 years ago."

"I will never forget my buddies who lost their lives at such a young age, nor what I saw at Buchenwald."

His superiors had given Cutler and his fellow Soldiers no idea what they would encounter at Buchenwald.

"I did know that just before we left, our truck was loaded up with food," Cutler said. "When we got to the camp, it was disbursed. And they had to be very careful about how they handed the food out to these people,



Army veteran recalls the Holocaust

By Bob Reinert, USAG-Natick Public Affairs / NATICK, Mass. (April 16, 2015)

because these people hadn't eaten for so long. Some of the people who sort of gulped the food down got good and sick."

Cutler, who is Jewish, and the other Soldiers became ill at the sight of human beings in that condition.

"They were emaciated," Cutler said. "They lived in terrible, unsanitary conditions."

"The American troops were all shocked at what they saw. We all had a job to do, and we just had to do it."

Years later, Cutler had a medical examination to discover the cause of pain in his chest. His doctor found part of his esophagus was eroded, and he suggested that the fumes he had breathed in at the camp could have done it. But that was far from the worst mark left on Cutler by Buchenwald.

"I wake up sometimes in the middle of the night, and I can see myself laying on top of the dead bodies," Cutler said. "I don't understand why that is, but it's something that happens."

Continued from p. 7

Valcourt said that NSSC might work with the Town of Natick on future compost collections.

"We've turned a new page," Valcourt said. "We're really trying to develop a good partnership. The Army is lucky to be in Natick. We have a great town here."

Natick also has tapped Boston's world-class colleges and universities for their environmental expertise.

"I've pointed (our laboratories) towards the MIT chemical substitution database," Valcourt said. "If you can accomplish the mission using something that's less hazardous, guess what? We don't have to manage it. It could be less hazardous to use from a health and safety perspective."

Chemical substitution is part of Natick's Certified Green Laboratory program. The installation also certifies green offices. Recently, NSSC added a green procurement program.

Other Natick environmental programs include installing more energy-efficient windows, lighting, computers and HVAC systems; reducing water usage; acquiring electric vehicles; subsidizing employee use of mass transit; installing solar light pipes and BigBelly Solar Intelligent Waste and Recycling Collection Systems; and organizing electronic waste collection days. McHugh wants to do even more.

"I would love to have solar power," McHugh said. "I think a lot of these roofs would be (ideal) for that."

"We're trying to get more and different products here that would reduce our energy consumption."

EARTH DAY

U.S. Army Garrison Natick
celebrated Earth Day 2015
with an April 22 tree-planting
ceremony near Building 5.
For more news about the
installation environmental
program, see page 6.

2015