

October 2018

NSSC This Month



**Natick's Physiological
Performance Monitor is
Designed with Female
Soldiers in Mind**



**Installation Management Command
Maj. Gen. Keith L. Ware Awards
First Place, 2017, PDF Publication**



Publisher's Note

John Harlow
USAG Natick Public Affairs



Life is fragile.

We received a reminder of this when Private 1st Class Roman Centeno Jr. lost his life in a car accident Oct. 10.

A life taken way too soon at the age of 21.

The Memorial Service hosted by the [U.S. Army Research Institute of Environmental Medicine](#) was touching and gave his father Roman Centeno Sr. a glimpse of how he was liked, respected and appreciated by his fellow Soldiers. In my more than 22 years of service in uniform and out, there is one thing I learned is those you

serve with become family, and USARIEM lost a family member.

My thoughts and prayers continue to be with the family of PFC Centeno and the Soldiers and civilians at USARIEM.

If you weren't able to attend the Safety stand down, what a learning opportunity you missed out on. I learned how to walk on the ice and snow from The Safety Penguin.

We are coming up on Nov. 11 which has even more significance this year. It is the 100th Anniversary of the War to end all Wars. Since Nov. 11, 1918, brave Americans have fought in World War II, Korea, Vietnam, Grenada, Panama, Desert Storm, Somalia, Bosnia, Kosovo and the War on Terror.

If you have the opportunity, participate in the Veterans Day ceremonies in your home town. Thank you to all who have worn our Nation's uniform. Please keep those who are serving in your harm's way in your thoughts and the families who are waiting for their return.

Thank you all for doing what you do on behalf of our Soldiers, Sailors, Airmen, Marines and Coast Guardsmen.



John Harlow
Chief of Public Affairs/Legislative Liaison
USAG Natick

NSSC This Month

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About this newsletter

NSSC This Month is a monthly newsletter covering NSSC news within the Army and commercial media.

NSSC This Month is maintained by the [USAG Natick](#) Public Affairs Office.

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Cover story by Jane Benson, NSRDEC. Photo by David Kamm, NSRDEC.

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USAG Natick News Briefs

Garrison Spotlight

Paul A. Murphy, Security Guard

Paul is Security Guard, assigned to the Directorate of Operations, Protective Division. He is the first line of defense in protection of NSSC resources and personnel. He efficiently manages the access and egress of personnel and visitors onto the installation on a daily basis. Paul conducts vetting procedures, vehicle searches and explosive mitigation testing to ultimately keep all NSSC personnel safe.



Paul is a Marine combat veteran serving from May 1999 to Jan 2012, attaining the rank of sergeant. He hails from New Carlisle, Ohio and is married with 2 children.

Paul enjoys baking and is a consummate physical fitness guru. Paul recently completed the Spartan Super in Barre, Massachusetts.

Paul holds a Bachelor's Degree in Liberal Studies, majoring in historic preservation with a minor in museum studies.

Paul comes to us from the National Parks Service where he was an Interruptive Ranger, specializing in 1800th century history.

Fond Farewells



This month NSSC says farewell to Susan Baldwin (above). During her time in Natick, Susan served as the NSSC Sexual Assault Response Coordinator. Farewell Susan, and good luck in your future endeavors! We appreciate all of your excellent work. (U.S. Army photo by John Harlow, USAG Natick Public Affairs.)

2018 Commander's Cup Champions



The Integrated Logistics Support Center (ILSC) took first place in this year's Commander's Cup. Congratulations! (U.S. Army photo, ILSC).



Remembering a Soldier



U.S. Army photo by K. Houston Waters, USAG Natick Public Affairs



NSSC Honors the Life of Pfc. Roman Centeno Jr.

By K. Houston Waters, USAG Natick Public Affairs/Natick, Mass.

Soldiers and civilians gathered at Natick Solider Systems Center (NSSC) October 26 to honor the life and memory of Pfc. Roman Centeno, Jr. Roman, a 21 year-old medical logistics specialist for the United States Army Research Institute of Environmental Medicine (USARIEM), was killed in an automobile accident October 10 in Natick, Mass.

The commander of USARIEM, Col. Sean O'Neil, spoke to Roman's dedication to the Army and his positive influence on the organization. "Roman quickly made friends with many people in the organization. He was vibrant, friendly, and well-liked. But being well-liked isn't what makes a good soldier, and it won't be his only legacy. A good soldier is competent: PFC Centeno was that. He was good at his job and reliable. But more importantly, the measure of a good soldier – the measure of any person actually – is his character and commitment to his fellow soldiers, to his friends, and to his team. Today we reflect on memories of Roman. We inherit his example. An example

of service to his nation. And more importantly, service to others. And that's a legacy that we all hope to live up to."

Roman's father, Roman Centeno, Sr., who made the journey from Chicago, Il., to Natick, was in attendance for the remembrance.

Addressing Centeno Sr. directly, O'Neil said "each of us feels a great sense of loss and sadness. But as we mourn, please know our thoughts have been, and will continue to be, with you and your family. We want you to know that we love your son. We miss him. We honor him. But our words are inadequate. So more than words, today we offer our memories in the hope that they bring you comfort. And that in those memories you find peace. May his memory live forever in your heart as he will live in ours. Roman Centeno Jr. shares a great name with his father. And it's a name that will forever be a part of our organization."

During the remembrance, Roman's friends and co-workers shared

personal stories about their brother-in-arms. “He didn’t sweat the small stuff. Or even the big stuff at times. I kind of admired him for that,” said 1st Lt. Robert Hugenberger, deputy chief of logistics, USARIEM. “He always found a way to make me smile or laugh.”

“He had this amusing habit around my office,” Hugenberger continued. “He would often approach my office door, out of sight from the hall. I could hear him coming, his footsteps, but as he got close to the door he would slow down, and sort of . . . creep . . . to the border of the office door. After about ten seconds of silence I would see his head peek around the corner at me, just a floating head in the doorframe. He would see me looking at him and it would make him smile. Which would then make me smile and laugh. It sort of reminds me of how my four year old would try to sneak up on me and scare me at home. He did it all the time. I ask him once why he did that, and he said he liked

to make sure I wasn’t on the phone, or have someone in my office, as to not disturb me. I told him he didn’t have to do that. But he did it anyway. I think he just enjoyed that it made me smile.”



U.S. Army photo by Dave Kamm, NSRDEC



Soldiers assigned to the U.S. Army Research Institute of Environmental Medicine (USARIEM), render a 21 gun salute during a memorial service for Pfc. Roman Centeno Jr., October 26. Centeno Jr., a medical logistics specialist assigned to USARIEM, was killed in an automobile accident in Natick, Mass., Oct. 10. (U.S. Army photo by John Harlow, USAG Natick Public Affairs).

“I found myself stuck somewhere, almost midnight because my usual means of transportation was either an [Uber](#) or [Lyft](#),” recounted Spc. Colin O’Neill, USARIEM. “Everyone else was asleep as it was a weeknight. I called and messaged a few people, but he was the only one that said I’m coming to get you, without hesitation. Instead of calling an Uber for me, he came in an Uber himself to pick me up. Ever since that day my respect for him amplified. I cannot forget what he did. It was very bad weather at the time. He did so much for me. I just wish I got to do more for him.”

“I really wish, for those of you who didn’t get to spend time with him, I really wish you had the opportunity to,” said O’Neill. “He was such a good person. Too good. And I’ll forever miss him and never forget about him.

Following Roll Call, the USARIEM Color Guard performed a 21-gun salute.

Roman was born June 11, 1997 in Chicago, Il. One of three sons, Roman graduated from Zapata Academy in 2011, and Little Village Lawndale High School in 2016 before enlisting in the United States Army later that summer.

After successfully completing [Basic Combat Training](#) at Fort Leonard Wood, Mo., Roman attended [Advanced Individual Training](#) at Joint Base San Antonio, Tx, where he was awarded the Military Occupation Specialty of 68J – Army Medical Logistics Specialist. Roman then served with the [563rd Medical Logistics Company](#) at Camp Carroll, South Korea, before being assigned to USARIEM in January 2018.

Roman’s awards include the Army Commendation Medal, National Defense Service Medal, Global War on Terrorism Medal, and Korea Defense Service Medal.



Back From Iraq



Natick Civilian Shares Insight Into Army's Work on Mosul Dam

By K. Houston Waters, USAG Natick Public Affairs/Natick, Mass.

The United States government employs more than two million people in support of dozens of federal agencies. These civilian employees serve many vital functions, both at home and abroad. Federal civilian employees work in offices and command centers on military installations around the world, and like their uniformed counterparts, undertake dangerous missions placing them in hostile enemy territory. Currently, more than 330,000 civilian employees work for the Department of the Army, many in countries like Kuwait, Afghanistan, Iraq, and Syria.

One such employee is Jadwiga Figiel, known to her friends and co-workers as Vee. Vee is a civil engineer with the Department of Public Works (DPW), U.S. Army Garrison Natick. Vee recently returned home after serving as an office engineer on the Mosul Dam Task Force (MTDF) with the [United States Army Corps of Engineers](#) (USACE) in Mosul, Iraq.

During her nine months in Iraq, Vee and her team worked to reinforce [Mosul Dam](#), a more than thirty year-old structure on the [Tigris River](#) in northern Iraq. Constructed by a Swedish team of engineers during the reign of [Saddam Hussein](#), the dam supplies water to an arid nation of nearly 37 million.

“Mosul Dam is practically the only source of water for all of Iraq, including Baghdad. All life surrounds this river. It’s very important,” said Vee.

Jadwiga V. Figiel, office engineer, Mosul Dam Task Force (MTDF), receives her 30 day certificate from Brig. Gen. David C. Hill, Trans-Atlantic Division Commander, during his visit to Mosul, Iraq. (Photo by U.S. Army Corps of Engineers).

Due to faulty initial construction, instability in the region, and frequent attacks from insurgent groups, including ISIS, the integrity of the dam’s foundation is compromised, making the entire region vulnerable to threats of potentially catastrophic flash flooding.

“Since the dam was built, the [Ministry of Water Resources](#) has been drilling and trying to save the dam. After a while they decided they needed help,” said Vee.

The United States and its allies have assisted in efforts to secure and stabilize the dam since 2016. USACE, along with a team of Italian engineers, are currently working hand-in-hand with Iraqi Minister of Water Resources on a number of construction and infrastructure projects in Mosul.

“The main goal of this project was to secure the dam. What they are doing is drilling, like 160 meters below, through the foundation of the dam, and grouting – pouring a special mix of concrete down. Because the foundation of the dam was sitting on deteriorating material, the water was penetrating and filtering out components of the rock. They are afraid of collapse.”

U.S. Army photo by Bob Zook



Vee and her team acted as a liaison between the general contractors and the Ministry, preparing contracts for work done on and around Mosul Dam. This required tremendous teamwork and communication. “I’m a people person. So talking to Iraqis, from a totally different culture, while working with the Italians and trying to explain, to people who speak a different language, and make sure they understand what needs to be done, was challenging.”

Despite an incredibly busy schedule – working seven days a week, 12 hour days – Vee and her team still found time to enjoy getting to know her foreign colleagues. “We had fun. We visited the Ministry of Water Resources like two or three times a week. We had tea. Very delicious tea. And lots of parties. We wanted to show them we are trying to help protect the Iraqi people. They were very friendly and hardworking. They feel like this dam is life.”

During her time in Iraq, Vee served as Contracting Officer’s Representative (CRO) for transportation and personnel service contracts for the MTDf.

MOSUL, Iraq—Staff Sgt. David Gills and Capt. James MacGibbon of the 569th Engineer Dive Detachment and Maj. David Kenna, Operations Officer from ASG-Kuwait’s Brigade Special Troops Battalion pose for a photo with the Mosul Dam in Mosul, Iraq, Nov. 29, 2017. (U.S. Army photo by Spc. Austin Hendrickson)





Hispanic Heritage Month



Sep. 15-Oct. 15, 2018



Hilda Ramirez, assistant director, Latino Education Institute, Worcester State University, shares personal stories and insights during a national Hispanic Heritage Month observance at Natick Soldier Systems Center (NSSC) October 10. (U.S. Army photo by David Kamm, NSRDEC).



Johnny and Andres Giraldo of Salsa Y Control Dance Company, based in Allston, Mass., perform on stage in the Hunter Auditorium at Natick Soldier Systems Center (NSSC) Oct 10. The dance was the final act of a national Hispanic Heritage Month observance hosted by the installation. (U.S. Army photo by David Kamm, NSRDEC).



U.S. Army photo by David Kamm, NSRDEC



U.S. Army photo by David Kamm, NSRDEC



Natick's Physiological Performance Monitor is Designed with Female Soldiers in Mind

By Jane Benson, NSRDEC Public Affairs/Natick, Mass.

Women Soldiers are making invaluable contributions to our great nation, and they deserve clothing and equipment designed with them in mind.

That's the idea behind the Biometric Algorithm Monitoring Brassiere Integration, or BAMBI.

Designers at the Natick Soldier Research, Development and Engineering Center, or NSRDEC, are hard at work developing BAMBI, a performance brassiere that uses integrated sensing technology to transmit information on a Soldier's physiological condition. NSRDEC will use the Heat Strain Index, or HSI, [Heart Rate Monitoring](#), or HRM, and Core Temperature Algorithms as testing guidelines for ways to detect the physiological variances that could potentially lead to heat stroke, exhaustion and fatigue.

The idea for BAMBI was spurred by NSRDEC's ongoing performance optimization research, focusing, in part, on innovative techniques for improving Soldiers' cognitive capabilities. BAMBI research and development is in its very early stages. Down the road, the data

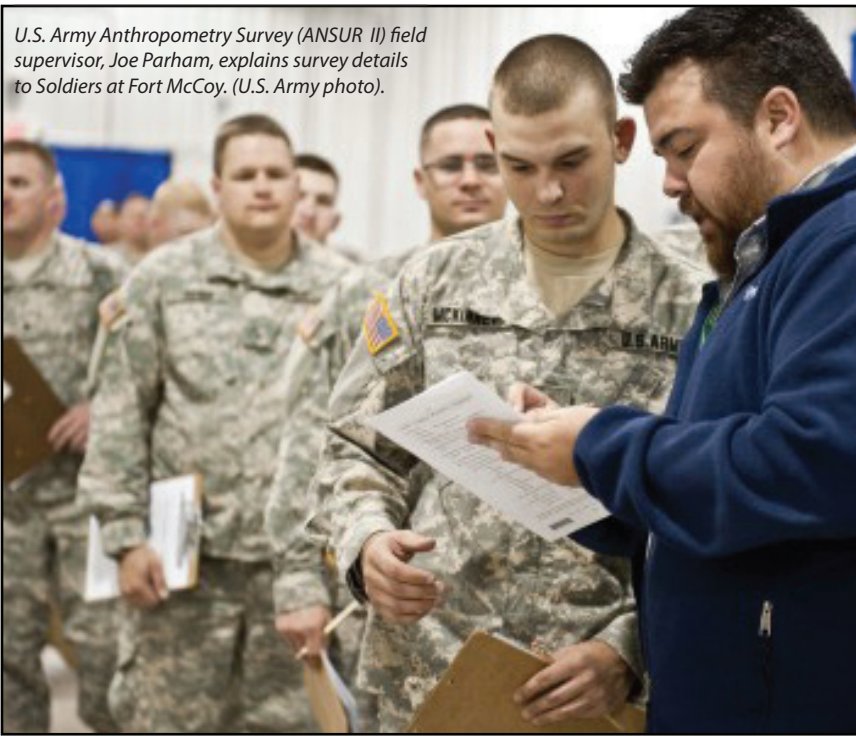
The Natick Soldier Research, Development and Engineering Center is working on the Biometric Algorithm Monitoring Brassiere Integration, or BAMBI. BAMBI is a performance brassiere that uses integrated sensing technology to transmit information on a Soldier's physiological condition. BAMBI was born when Ashley Cushon (pictured here), an NSRDEC clothing designer, came up with the idea and submitted it as a proposal to NSRDEC's Bootstrap Initiative, which encourages innovation and creativity while streamlining processes. BAMBI is part of NSRDEC's efforts to create clothing and equipment with female Soldiers in mind. (U.S. Army photo by Dave Kamm, NSRDEC)

gathered through BAMBI could potentially be used to improve risk management strategies Army-wide.

BAMBI was born when Ashley Cushon, a clothing designer in the [Soldier Protection and Survivability Directorate](#) at NSRDEC, came up with the idea and submitted it as a proposal to NSRDEC's [Bootstrap Initiative](#). Dr. Ken Desabrais, previously an NSRDEC research aerospace engineer and now NSRDEC's human protections administrator, created the initiative to encourage innovation and creativity while streamlining processes and minimizing bureaucracy.

"I heard about Bootstrap and I thought it would be a good opportu-

U.S. Army Anthropometry Survey (ANSUR II) field supervisor, Joe Parham, explains survey details to Soldiers at Fort McCoy. (U.S. Army photo).



nity to help meet the needs of female Soldiers," said Cushon. "During my research, I found that there is a lack of Army items tailored specifically for the female body. Female Soldiers aren't even issued an official sports bra, and the item that was once developed and intended to serve that purpose couldn't support the variety of body types found in the female Soldier population. So, I thought let's kill two birds with one stone. Let's give them something that fits well and also create a platform where we can run the same tests and analysis that previously had been done on the male majority. Let's fill that gap."

Cushon is working on a prototype.

"The short-term goal is to make sure the technology works and that it fits and functions appropriately," said Cushon. "The long-term goal is for us to create an effective female-centric platform for introducing integrated sensing technology into the Army's effort of improving Soldier and squad performance. As the device is monitoring a Soldier's heart rate, we will be analyzing the variations in beats per minute specifically. We will use algorithms developed by the U.S. Army Research Institute of Environmental Medicine to calculate the Soldier's core body temperature directly from heart rate. These validated algorithms will allow us to calculate and report HSI from the Soldiers' heart rate using a simple 1 to 10 scale that indicates how much heat stress the user is experiencing. The higher your core body temperature, the higher the potential for experiencing physiological stress."

During testing, in addition to wearing BAMBI, participants will also be hooked up to a [Holter monitor](#), which is the medical standard for ECG monitoring and diagnostics. Participants will be able to monitor and track their heart rate and core body temperature via a smart phone app. Researchers will be able to not only record beats per minute, or BPM, and its variations, but analyze the data to estimate core body temperature.

"My thoughts, when approaching the design, are performance and protection focused -- how to produce an item that not only aids in protecting the female Soldier from heat-related stress, but is sure to perform as needed -- a fit that supports her in any activity," said Cushon.

Cushon will be using her background in fashion design, patterning and fit development, along with data from specific points of measure gathered during the [2012 U.S. Army Anthropometry Survey](#), or ANSUR II, to design, pattern, prototype and test a base-size sports bra that more accurately fits the sizing requirements of the current female Soldier. ANSUR II was conducted by NSRDEC experts and contractors, who collected 93 body measurements and three-dimensional surface scans of thousands of Soldiers across the country.

"There is a lot to consider in terms of fit and function," said Cushon. "Establishing a baseline fit before getting into the more complex details -- like the fabric types and the sensor location -- is key. No matter how simple or complicated the garment, if it doesn't fit well either it won't work properly or Soldiers won't wear it. The goal of BAMBI is to help minimize risks and improve safety. An ill-fitting garment can be as detrimental as heat stress -- specifically in areas that affect the Soldier's awareness, alertness and overall performance -- preventing them from being mission ready and jeopardizing their well-being. We don't want to give them

something that's going to hinder them from performing well; we want to give them something that's going to help them perform."

By using the ANSUR II data to improve BAMBI's fit, NSRDEC's potential product will be designed to fit the diverse range of female sizing that exists in the Army population. Current commercially available sensing brassieres are not designed to accommodate this range.

"I want to emphasize the fact that the design and fit portion of the effort is going to be the most difficult," said Cushon. "Developing a female undergarment is no simple task. There's too large of a variety of body shapes and sizes to meet every need. Currently, there is no industry solution that accommodates the sizing needs of our female Soldiers. That's why the ANSUR II data is so crucial to this process. I think once we develop that median size we will be able to build from there, providing something specifically tailored for them. Afterwards, we can down-select the best materials and components to keep the device comfortable and effective as a method for data collection."

By using the ANSUR II data, designers can work to establish a true Army specific median size.

Cushon is dedicated to working on ideas that enhance Soldier performance, and she hopes to open up discussion with warfighters, as well as other researchers, about the creation of more female-centric items.

"I want to continue to contribute to that narrative in a way that possibly has a long-term effect," said Cushon. "It's so important. Depending on the item, there are times we have to start with designs built to male dimensions and resize them for females. BAMBI is an opportunity to start with the female Soldier in mind. We have to stay aware of what they want and need. That's why interacting and communicating with Soldiers is so important. As the science behind sensing and textile technology continues to advance, so do our opportunities to improve what we can do to help the Soldier. Working here at NSRDEC and seeing how something that starts as a concept in your mind can go from being 2D to 3D to being in the hands of the Soldier is incredible. They are sacrificing so much to protect and sustain the life that we know -- it's humbling to be able to give back in any capacity."



There is a delicate balance between training Soldiers rigorously and training them safely.

Warfighters can lose valuable training days due to unit leaders taking overzealous safety precautions, and as a result, they cannot learn and practice the necessary skills to become a ready and lethal force. However, warfighters training rigorously while forgoing safety can lead to disastrous consequences such as heat illness. These consequences can cost the U.S. military valuable training time, money and operational readiness.

Heat illness is a particular concern during warmer months, but that does not mean warfighters have beat the heat as soon as summer has ended. Surprisingly, heat illness can happen year round due to a combination of factors, not just heat and humidity.

“Body heat production from physical activity is the number one factor that causes body core temperature to rise,” said Laurie Blanchard, a biomedical engineer from the U.S. Army Research Institute of Environmental Medicine, or USARIEM. “Hot environments add to body heat gain, and hot and humid environments and heavy clothing make it more difficult to get rid of body heat. Put them all together, and you have a recipe for heat illness.”

To help solve this problem, Blanchard and other USARIEM researchers have been developing a mobile application that can help

Hot Tech

Army researchers developing heat illness mitigation app

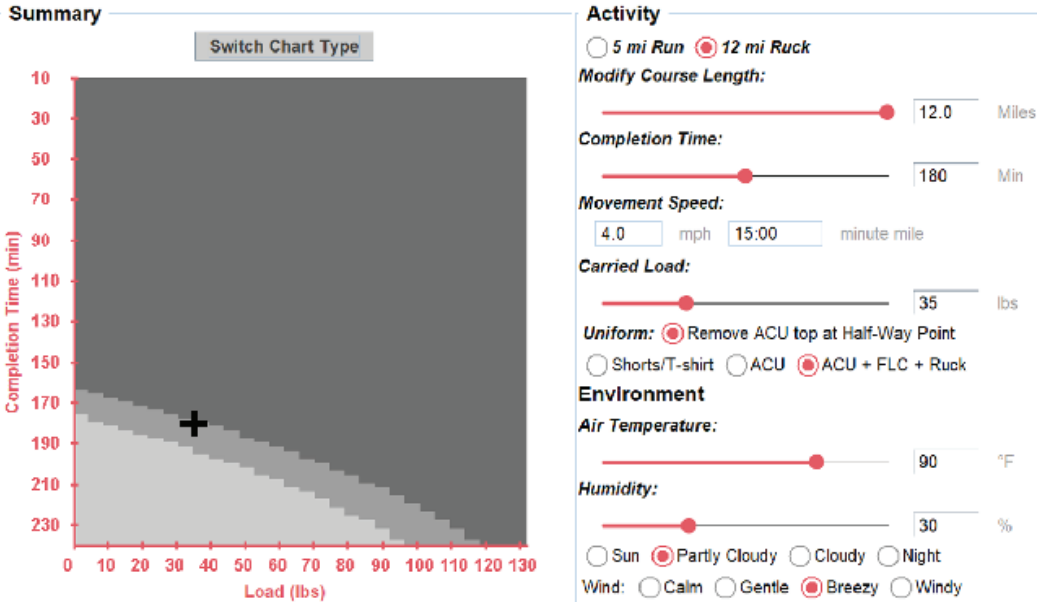
By Mallory Roussel, USARIEM Public Affairs/Natick, Mass.

unit leaders understand how these factors affect military readiness so they can mitigate risk and optimize training.

[The Heat Strain Decision Aid](#), or HSDA, is a tablet- and computer-based ‘app’ that can help unit leaders and mission planners quickly determine a troop’s risk of heat illness during training or operational scenarios. HSDA’s simulations of heat stress, according to Blanchard, support the safe work time tables found in current Army heat injury prevention doctrine, Technical Bulletin Medical 507, or TB Med 507.

“HSDA contains equations that predict how body core temperature changes during and after training and how changes in clothing, activity and environment affect the specific rise and fall of body core temperature,” Blanchard said. “This mission planning tool gives unit leaders objective, science-based guidance that can be found in TB Med 507, the Army’s current heat illness and hydration guidance, in a way that is easy and useful for developing prevention and mitigation strategies against heat illness.”

When unit leaders open HSDA on a tablet or computer, they can



adjust warfighters' activities, clothing, the environmental conditions and the intensity and duration of the exercise simply by pressing a few buttons and toggling a few switches. HSDA does the rest of the work by displaying a chart to the user that estimates how likely troops will experience heat illness during a training or operational scenario.

HSDA even shows leaders when warfighters would be most likely to experience a heat illness during the span of an exercise. For example, a unit leader using HSDA could see that Soldiers would be most likely to experience a heat illness during the first hour of a three-hour loaded ruck march.

"One of the advantages of using HSDA is that unit leaders have a tool that helps them visualize how different mitigation strategies can affect their risks of heat illness," Blanchard said. "Users can manipulate HSDA's settings to see how changing uniforms, the length and pace of an exercise and the load carried can increase or decrease heat illness risk.

"Even in those cases where the distance, pace and load cannot be altered, such as for a required training event at a specialty school, HSDA can help users plan effective treatment strategies for expected heat casualties, like providing extra ice sheets, closely watching trainees and planning medical evacuations in advance."

USARIEM researchers developed the user-friendly software interface for the app warfighters know today. Yet the math behind HSDA has existed long before apps were even invented. According to Blanchard, USARIEM developed HSDA from over 30 years of research on heat illness, hydration and body core temperature. Researchers were able to build and validate the equations within HSDA by conducting hundreds of field studies on thousands of subjects in a variety of environments.

Researchers conducted even more laboratory studies at Natick Soldier Systems Center in the [Doriot Climatic Chambers](#), a unique facility that can simulate an extreme range of global weather conditions, from hot deserts to the chilly Arctic. Blanchard and other researchers measured Soldiers' body core temperatures as they marched on treadmills while carrying external loads and wearing a wide range of clothing, from Army physical training uniforms (shorts and a t-shirt), to Army Combat Uniforms, to insulating chemical, biological and ballistic protective gear.

This year, USARIEM briefed the HSDA app to the [Training and Doctrine Command's](#) Heat Illness and Prevention Subcommittee. USARIEM received several requests for a copy and is now working

with the [U.S. Army Medical Materiel Development Activity](#) to make HSDA available to download.

Since spring 2018, USARIEM has transitioned a current version of HSDA to the [1st Special Warfare Training Group](#) (Airborne) at the [U.S. Army John F. Kennedy Special Warfare Center and School](#) and to the [U.S. Air Force 352nd Battlefield Airmen Training Squadron](#), who both specifically requested to use the app to mitigate heat illness during training. Under an international agreement, USARIEM has also developed a version of HSDA for the [U.K. Institute of Naval](#)

"[Heat Strain Decision Aid] gives unit leaders objective, science-based guidance that can be found in TB Med 507, the Army's current heat illness and hydration guidance, in a way that is easy and useful for developing prevention and mitigation strategies against heat illness."

Laurie Blanchard, biomedical engineer, USARIEM

[Medicine](#), who incorporated the app into their training centers as a tool to reduce the incidence of heat injuries.

"Unit readiness is dependent on rigorous military training," Blanchard said. "However, training without taking safety precautions, especially during warmer months, can lead to heat illness, heat stroke and even death. These injuries can have significant medical costs, can have long-term medical implications and can force lost training days, impacting unit readiness and individual Soldier careers.

"We have been able to design current versions of HSDA for specific military groups at their sites. Transitioning the app to U.S. and international warfare training groups has allowed us to collect valuable feedback that we can incorporate into HSDA to make it a more robust app that all warfighters can use."

Building the Team



The Army's Soldier and Squad Performance Research Institute Will Increase Lethality, Resilience

By Jane Benson, NSRDEC Public Affairs/Natick, Mass.

"No Soldier ever fights alone," said Cynthia Blackwell, the S2PRINT project director at the Natick Soldier Research, Development and Engineering Center, or NSRDEC.

The ways in which Soldiers interact individually and in squads and small teams play a key role in success on the battlefield. This is one of the main ideas behind the creation of the Soldier Squad Performance Research Institute, or S2PRINT.

NSRDEC and the U.S. Army Research Institute of Environmental Medicine, or USARIEM, have joined together to lead the development of this state-of-the-art facility, which is slated to be built at the Natick Soldier Systems Center in Natick, Massachusetts.

The institute will empower NSRDEC's and USARIEM's world-class scientists and engineers with a controlled, cutting-edge, and mission-relevant environment in which to perform applied studies to uncover ways to optimize Soldier and squad performance and enhance combat

U.S. Soldiers with the 2nd Battalion, 503rd Infantry Regiment, 173rd Infantry Brigade Combat Team (Airborne) engage opposing forces in a simulated exercise during Saber Junction 18 at Hohenfels Training Area, Germany, Sept. 26, 2018. The ways in which Soldiers interact individually, in squads and on small teams will be a key area of study for the Army's new Soldier Squad Performance Research Institute, or S2PRINT. (U.S. Army photo by Cpl. Gabrielle Weaver)

readiness.

S2PRINT's emphasis is on [Human Performance Optimization](#), with research focusing on the individual Soldier's and the squad's cognitive, social, physiological, physical, and nutrition-based performance. Blackwell explained that S2PRINT will provide the Army with a greater understanding of teams, leading to the optimization of team interactions and team dynamics.

S2PRINT will help researchers to develop validated performance and training strategies; tools and interventions for the Soldier, leader and small unit; techniques to mitigate injury; and interventions to increase

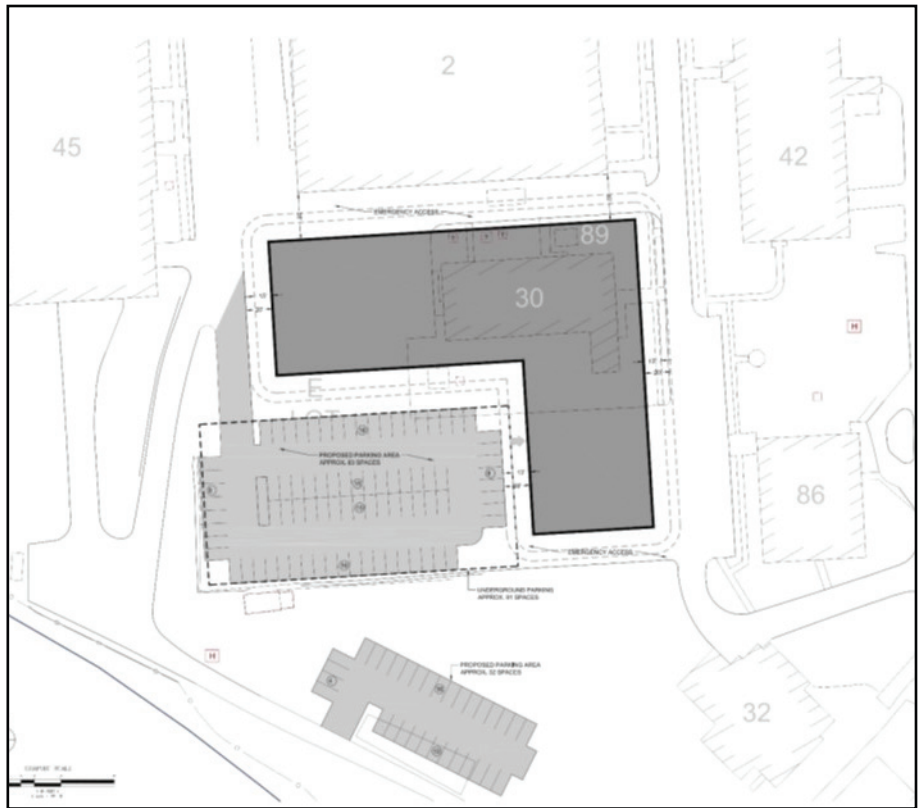
Soldier and squad resilience and longevity.

Studies performed in the S2PRINT facility, which will include several operationally relevant laboratories, will help researchers baseline, measure, predict and optimize individual and small unit readiness, performance, and resiliency across real-world, mission-essential tasks. Outcomes/findings of this research will ultimately help improve readiness, enhance mission performance, and increase Soldier and squad lethality.

The new facility will also enhance NSRDEC's and USARIEM's already strong collaborations with top-notch academic institutions, cutting-edge industrial partners, and other DOD agencies and initiatives. As with other work performed by NSRDEC and USARIEM, the knowledge obtained through S2PRINT will lead to technologies and informational resources that will benefit not only warfighters but also first responders.

Moreover, Natick will be able to develop and evaluate prototype gear and emerging technologies more quickly than ever before, accelerating the delivery time of critical information and equipment to troops in the field -- all while reducing costs.

S2PRINT is expected to become operational in the spring of 2023.



These diagrams demonstrate the 80,600 square foot Solider Squad Performance Research Institute (S2PRINT) building currently under construction on Natick Solider Systems Center (NSSC). The project is expected to cost \$50 million and be operational in fiscal year 2022.





NSRDEC

Bright Idea!

NSRDEC's Bright Idea for Lighting System Improves Illumination, Saves Energy

By Jane Benson, NSRDEC Public Affairs/Natick, Mass.

The Research, Development and Engineering Command Soldier Center's [Expeditionary Maneuver Support Directorate](#), or EMSD, has developed a new lighting technology that provides better illumination while using less energy than fluorescent tube lighting.

Under a Cooperative Research and Development Agreement with [Southern Cross Printed Electronics](#), Australia, and its U.S. representative BAM International, EMSD developed the [Flexible Light Emitting Diode](#), or LED, Lighting System, which is also called MFLEX. The MFLEX system is part of EMSD's ongoing commitment to improving energy efficiency and reducing the logistical footprint of expeditionary base camps.

"Although there are several alternative LED lighting solutions available to the warfighter, all of which provide the benefit of saving energy, which ultimately translates into fewer or smaller supply convoys, the major benefits of these lights are reflected in three measures: 1) the amount of time necessary to setup and takedown a tent, 2) the transportation weight and volume, and 3) the quality of the lighting," said Melvin Jee, leader of the Soldier Center's EMSD's Expeditionary Command Platforms Branch.

The Flexible LED Lighting System will replace the fluorescent tube lighting commonly used in the field. The system can be used in virtually any size tent, provides more illumination, and greatly reduces shadow area when compared to fluorescent tube lighting.

"The flexible LED lights provide fairly even illumination, virtually eliminating heavy shadow areas, making the environment more comfortable for the warfighter by reducing fatigue due to eye strain," said Jee.

By improving illumination and reducing the presence of shadows inside the tent, the system helps facilitate command and control functions. Soldiers often carry out various aspects of mission planning while in tents, including looking at maps and other information, and the

The Natick Soldier Research, Development and Engineering Center's Expeditionary Maneuver Support Directorate, or EMSD, has developed a new lighting technology that provides better illumination while using less energy than fluorescent tube lighting. Developed under a Cooperative Research and Development Agreement with Southern Cross Printed Electronics, Australia, and its U.S. representative BAM International, the Flexible Light Emitting Diode, or LED, Lighting System, is part of EMSD's ongoing commitment to improving energy efficiency and reducing the logistical footprint of expeditionary base camps. (U.S. Army photo by NSRDEC).

improved illumination and reduction of shadows may help them better perform such tasks.

Moreover, the system is more compact and weighs significantly less than fluorescent tube lighting. The Flexible LED Lighting System fits into a backpack-sized bag. This one small bag replaces up to four transit cases needed to light a single tent with fluorescent lighting. The cases weigh between 40 to 50 pounds each, compared with the backpack-sized bag needed for LED lighting, which weighs only 10 pounds.

The backpack-size bag contains 12 meters of flexible LED lighting, complete with cables and hangers. The bag also contains the power supply and control circuitry, which allows the lights to be dimmed and/or switched from white light to blue/green blackout light.

Warfighters do not require a specific Military Occupational Specialty, or MOS, to install and operate the lighting system. The LED system does not have to be taken down when moving to a new location, increasing ease of mobility and reducing setup and tear-down times.

The system is being used by the [82nd Airborne Division](#). The Soldier Center has partnered extensively with the 82nd Airborne to gain insights into improving and developing appropriate tools, techniques, products and technologies for the warfighter. The division's feedback/input helped to shape the development of the Flexible Light Emitting Diode Lighting System.



NSRDEC

Saving Lives



NSRDEC-Developed Body Armor Saved Lives in the Battle of Mogadishu

By Jane Benson, NSRDEC Public Affairs/Natick, Mass.

On the 25th anniversary of the [Battle of Mogadishu](#), Matt Daly -- who currently works in the Research, Development and Engineering Command Soldier Center's Soldier Protection and Survivability Directorate at the Natick Soldier Research, Development and Engineering center -- reflected on his time at NSRDEC years ago as a captain in the Army and the role NSRDEC played in the development of the body armor used in the Battle of Mogadishu, which took place on Oct. 3-4 1993.

At the time, Daly had come to NSRDEC from a special operations unit and worked as an operational subject matter expert.

"One of my duties was to support the Ranger Body Armor Project," said Daly. "It was being worked on by Cynthia Mooney and Janet Ward. The short story is that during a down select of commercial body armors it was decided to move away from that strategy ... and have Natick design a new improved armor."

Daly explained that the [Joint Special Operations Command](#), or JSOC, funded the project, Special Projects Support Activity (which is no longer in existence) managed the effort, and the Ranger Regiment was the customer/user.

NSRDEC succeeded in developing a whole new body armor in under a year to adhere to the JSOC timeline.

Daly said that Mooney and Ward spent the next 11 months working

The Natick Soldier Research, Development and Engineering Center developed Ranger Body Armor (pictured here) that was used and helped save lives during the Battle of Mogadishu, which took place 25 years ago on Oct. 3-4 1993. The battle was the subject of journalist Mark Bowden's book Black Hawk Down, which was later made into a movie with the same name. (U.S. Army photo by David Kamm, NSRDEC)

"full throttle." They were under extreme pressure to meet the delivery deadline in September 1992 and they succeeded.

"The body armor was accepted....and over the course of the following year the Ranger Battalions were equipped and trained in time for 'Black Hawk Down,'" said Daly.

Journalist Mark Bowden -- who wrote the book Black Hawk Down which was later made into a movie with the same name -- told ABC News that he was in awe of the professionalism and skills of the roughly 100 American service members who were faced with a force of Somali fighters who numbered in the thousands.

"The Ranger Body Armor project was a tremendous challenge and Natick met it," said Daly. "Prior to fielding the Ranger Body Armor, no Army units had individual body armor as it was considered too expensive to outfit every Soldier in every combat arms unit. Most importantly, there are at least 12 men who fought in that battle who walk this earth today for only one reason -- they were wearing Ranger Body Armor."

Veterans Day

November 11, 2018



Retired Army 1st Sgt. William Staude salutes the Colors being carried by Soldiers from the 316 Expeditionary Sustainment Command, stationed at Corapolis, Penn. Nov. 11, 2011. (U.S. Army photo by Master Sgt. Michael Sauret).