

September 2018

NSSC This Month



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Fuel^{to} Fight

**Army Researchers Study Nutrition and Performance
at Marine Corps Mountain Warfare Training Center**



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



Publisher's Note

John Harlow
USAG Natick Public Affairs



Fall is in full effect.

On Sept. 11, NSSC somberly observed the 17th anniversary of the Attacks on New York, the Pentagon and the field in Shanksville, PA. It is always an honor to have the Natick Police and Fire Departments join us for the observance. Brig. Gen. Malone's remarks reminded us of the sacrifice and heroism shown on that dark day. We will never forget.

It's time to throw an extra blanket on the bed and get ready for the road trips throughout New England to see the beautiful fall foliage.

At NSSC, there are some great events coming up in October.

Thursday, we will find out who earns the Commander's Cup as part of the NSSC Oktoberfest celebration.

The Hispanic Heritage observance is Oct 10 in Hunter Auditorium at 10 a.m.

The Family Readiness Group at USARIEM is hosting their Fall Festival on Oct. 19 starting at 5 p.m. There will be a Trunk or Treat, Haunted Trail and grilled food available. Find out more by contacting Sgt. Brandon Cordell Brandon.j.cordell.mil@mail.mil.

Let's hope the Patriots wake up and the Red Sox make a big run in the playoffs.

If you have a story you want told, reach out to our Public Affairs shop. Thanks for sharing your great work you do on behalf of the men and women wearing our Nation's uniform and thanks for taking a moment to read NSSC This Month.



John Harlow
Chief of Public Affairs/Legislative Liaison
USAG Natick

NSSC This Month

NSSC

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About this newsletter

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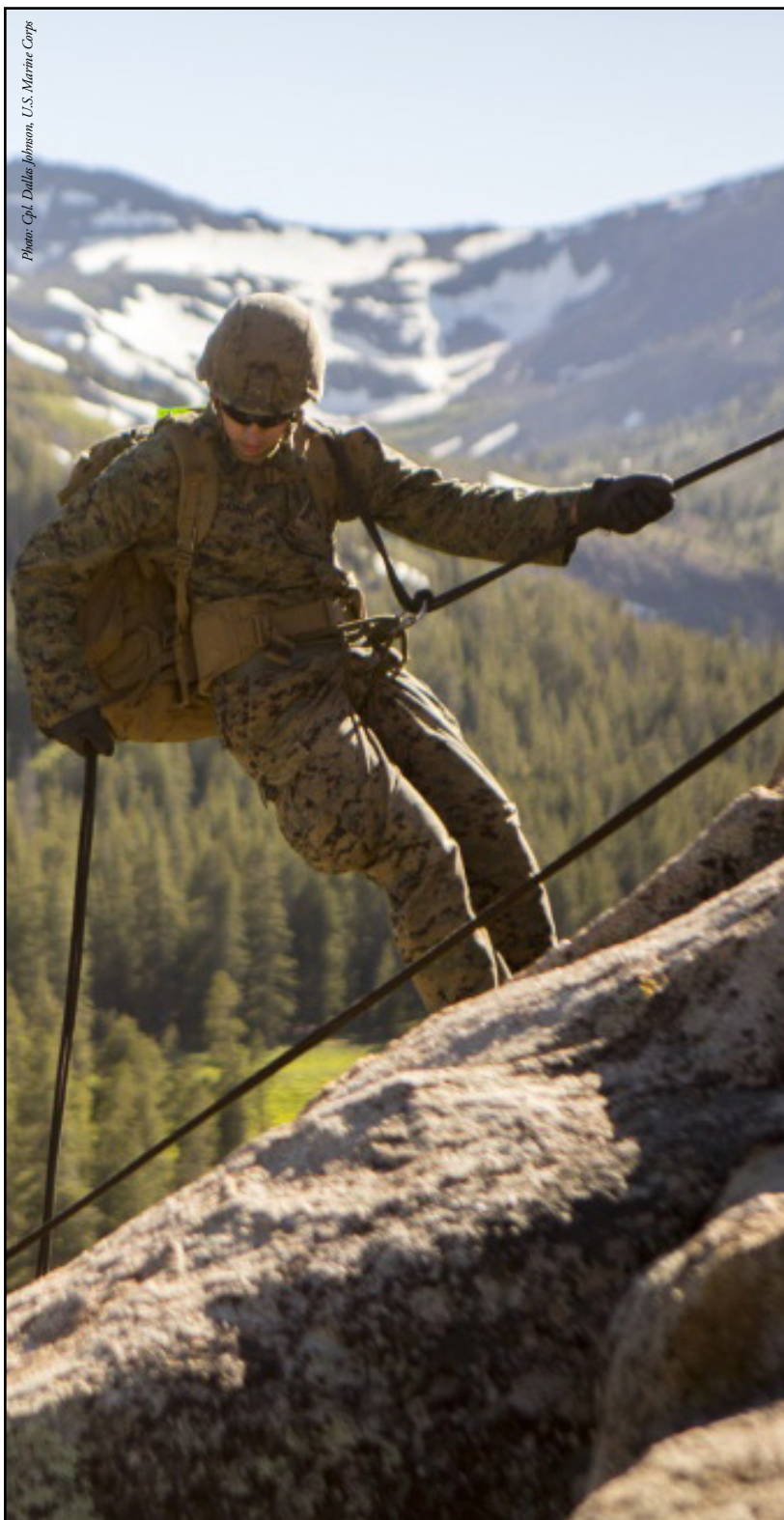
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USAG Natick News Briefs



Garrison Spotlight

Alison Spurr, Management Analyst



Alison Spurr's friendly demeanor and helpful attitude is well known to most of the USAG Natick staff. However, she has recently taken on responsibilities that support the entirety of NSSC. Alison liaises with USAG West Point for the implementation of the Army Substance

Abuse Program (ASAP), and is the point of contact reference our contracted Employee Assistance Program (ESPYR). If you are unsure about what support services are available to you or your family through ASAP or ESPYR, feel free to contact Alison for further information, points of contact, and upcoming prevention and training programs.

Hispanic Heritage Month Fiesta

Please join NSSC leaders and teammates 10 a.m. Wednesday, Oct. 10 for a dynamic and informative program in honor of [Hispanic Heritage Month](#). The event will include entertainment, snacks befitting the occasion and plenty of fun in addition to remarks from guest speaker Hilda Ramirez, Assistant Director of the Latino Education Institute at [Worcester State University](#).

For those seeking a more comprehensive taste of the Latin world, the installation dining facility will serve a Hispanic-themed lunch Friday, Oct. 19 in honor of the occasion. Fare will include "Arroz con Pollo" (Puerto Rican rice with chicken), Cuban style roast pork with white rice and black beans, grilled blackened catfish with cilantro-lime, butter steak with chimichurri sauce, "Patatas Bravas" (stewed potatoes), Spanish asparagus with peppers, Mexican style cornbread and more.

New Barbershop Hours

The NSSC barbershop is now open for an entire business day, 8 a.m. to 5 p.m. Thursdays only (closed the remainder of the week). Drop by the basement level of Building 1 (Installation Headquarters) on Thursday and see what all the buzz is about!

Federal Benefits Open Season NSSC On-Site Health Fair is Nov. 15

This year's Federal Benefits Open Season will run from Nov. 12 through Dec. 10. The NSSC on-site Health Fair is scheduled for Nov. 15 from 10 a.m. until 1 p.m.

During the annual Open Season, employees can enroll, change plans or plan options, change enrollment type, or cancel their enrollment for the [Federal Employees Dental and Vision Insurance Program \(FEDVIP\)](#) and the [Federal Employees Health Benefits \(FEHB\) Program](#). Employees can also re-enroll or newly enroll in the [Federal Flexible Spending Account Program \(FSAFEDS\)](#).

As a reminder, the Federal Employees' Group Life Insurance (FEG-LI) Program and the Federal Long Term Care Insurance Program (FLTCIP) do not participate in the annual Federal Benefits Open Season.

Please visit www.opm.gov/insure to learn more about these Programs. We expect FEHB and FEDVIP premium rates for 2019 to be posted in early October. You will find specific Federal Benefits Open Season information on this website by the first week in November.



USARIEM

Military Nutrition Study Volunteers Needed

Healthy men and women ages 18 – 35 years are needed to participate in a research study examining the effects of consuming varying amounts of essential amino acids after resistance exercise on the body's ability to build muscle during calorie deprivation. Study participation will last approximately 4 – 5 weeks and will include consumption of controlled study diets comprised of [MRE's](#) and commercially available foods. Study procedures include body composition assessments, blood draws, muscle biopsies, study exercise, non-radioactive stable isotope infusions, and consumption of essential amino acid beverages.

Volunteers must be resistance trained, defined as having performed resistance exercise at least twice/week for the past 6 months. Testing will occur at the [USARIEM](#) laboratories in Natick, MA.

Military personnel and civilians are eligible to participate. Federal civilian employees and non-HRV Active Duty military working within the US Army Natick Soldier Systems Center must have supervisor approval. Compensation of up to \$1080.00 is available for those who complete the study.

If interested, please contact Dr. Jess Gwin at jessica.a.gwin.ctr@mail.mil or Ms. Adrienne Hatch at adrienne.m.hatch.civ@mail.mil or Dr. Stefan Pasiakos at stefan.m.pasiakos.civ@mail.mil.



NSSC

Natick Celebrates **Patriot** Day



NSSC Honors the Fallen 17 Years Later

Soldiers assigned to Natick Soldier Systems Center (NSSC), the U.S. Army Research Institute of Environmental Medicine (USARIEM), and the United States Army Natick Soldier Research Development and Engineering Center (NSRDEC), along with representatives from the Town of Natick Police Department, salute during the national anthem at NSSC September 11. (U.S. Army photo by Dave Kamm, NSRDEC).



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

On the morning of September 11, 2001, shocking images of violence and destruction were broadcast from New York, Washington D.C., and Shanksville, Pa. In the minutes, days, and weeks that followed, the world witnessed incredible acts of bravery, as hundreds of first responders set fear aside and risked their lives to save others. 343 firefighters, sixty police officers, and 15 emergency medical technicians paid the ultimate sacrifice. Their lives, and the lives of the nearly 3,000 victims of the four terrorist attacks, are honored each year with Patriot Day observances.

Soldiers and Department of the Army civilian employees assigned to Natick Soldier Systems Center (NSSC), the U.S. Army Research Institute of Environmental Medicine (USARIEM), and the United States Army Natick Soldier Research Development and Engineering Center (NSRDEC), along with representatives from the [Town of Natick](#) and the Massachusetts Military Task Force, met to pay their respects and observe a moment of silence on the 17th anniversary of the attacks.

James Hicks, chief of police for the Town of Natick, read the proclamation and the [Natick Fire Department](#) delivered the 11 bell tolls. Brig. Gen. Vincent Malone, deputy commanding general of the U.S. Army Research, Development, and Engineering Command (RDECOM), and senior commander of NSSC, shared personal stories about his experience in Washington D.C. during the attack on the Pentagon.

"Everyone remembers vividly where they were that morning," said Malone. "As fate would have it, I flew to Washington D.C. for a meeting at the Pentagon. But first, I had an offsite pre-brief and wasn't in the building at the time of the attack. A small detail I didn't tell my wife when I left that morning. She spent some anxious hours thinking I was in the Pentagon when the plane struck it and was fearing the worst. There was no cell coverage or communications until late in the day, but eventually I reached her and let her know I was alright."

Malone also spoke to the importance of NSSC to the Army and the United States in the aftermath of the attacks.



Representatives from the Town of Natick Fire Department pay their respects during a Patriot Day observance at Natick Soldier Systems Center (NSSC) in Natick, Mass., September 11. (U.S. Army photo by Dave Kamm, NSRDEC).

Soldiers and Department of the Army civilian employees, along with members from the Town of Natick Police Department, participate in a "stair-climb challenge" at Natick Soldier Systems Center (NSSC) September 11. The "stair-climb challenge" represents the one-hundred flights of stairs ascended by first responders in New York's World Trade Center. (U.S. Army photo by Dave Kamm, NSRDEC).



"Our Army and the entire military have counted on Team Natick to maximize their lethality, tactical advantage and expeditionary reach over the past 17 years. So you're part of our nation's response to the vicious attacks we endured on 9/11, and to the ongoing threats posed by the enemies of our country, its freedoms, and its cherished values."

In addition to the moment of silence, Soldiers and civilians participated in a "stair-climb challenge," commemorating the one-hundred flights of stairs ascended by first responders in New York's World Trade Center.

Following the "stair-climb challenge," Malone continued speaking on the significance of Patriot Day as he met with members of the Greater Boston chapter of the [Military Order of the World Wars](#) at the historic [Union Oyster House](#) in Boston, Mass, a location regarded for its role in the American Revolution.

"Please keep those we lost 17 years ago today, and their families, in your hearts," said Malone. "And keep the Soldiers, Sailors, Airmen, Marines, and Coast Guardsmen serving in harm's way, and their families, in your thoughts and prayers."

The Boston Red Sox also paid their respects on Patriot Day. Sgt. Letarsha Massey, a USARIEM Soldier and researcher, sang the United States and Canadian national anthems at [Fenway Park](#) as the Red Sox faced the Toronto Blue Jays.

Brig. Gen. Vincent Malone, deputy commanding general of U.S. Army Research, Development, and Engineering Command, and senior commander of Natick Soldier Systems Center (NSSC) speaks with members of the greater Boston chapter of the Military Order of the World Wars at the Union Oyster House in Boston, Mass., September 11. (U.S. Army photo by K. Houston Waters).



UNDER CONSTRUCTION

Construction Boom Coming to Natick



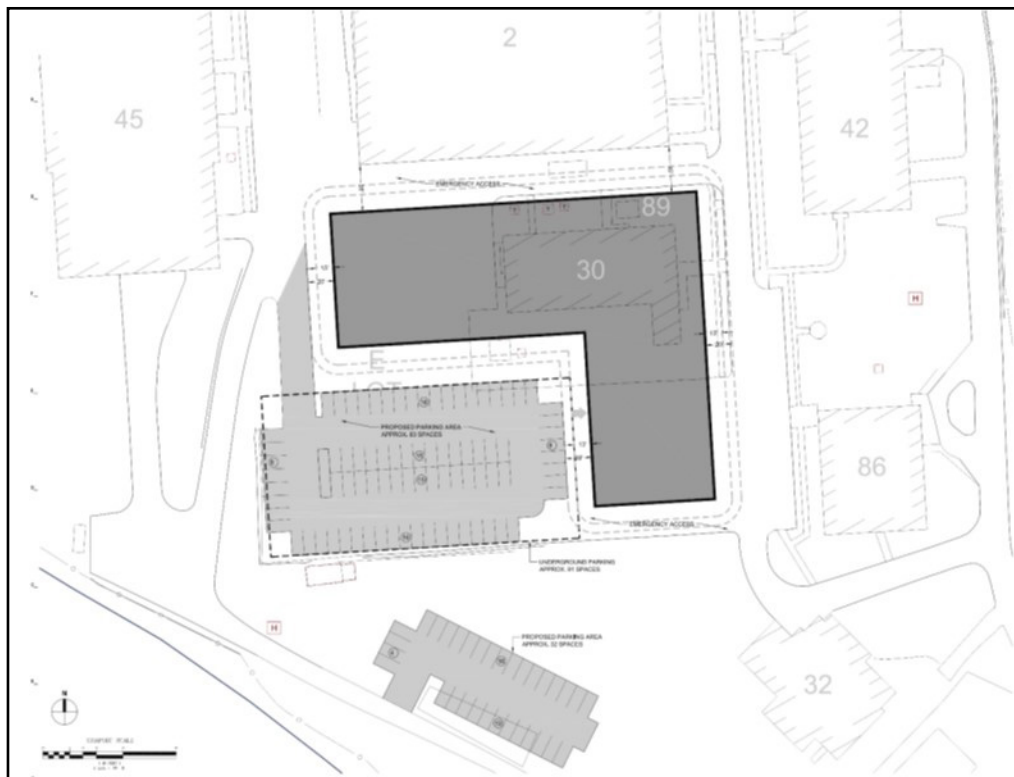
Construction crews begin work on the new U.S. Army Research Institute of Environmental Medicine (USARIEM) addition by laying concrete foundation in early September 2018. The new USARIEM addition is just one of several construction projects planned over the next few years at Natick Solider Systems Center (NSSC). (U.S. Army photo by K. Houston Waters).

On March 8, 1951, Secretary of the Army Frank Pace Jr., announced that Natick, MA was selected out of 278 proposals from 40 states as the location of the Army Quartermaster Research Laboratory at an estimated cost of \$11 million. Translate that into current dollars, the construction of what is now the Natick Soldier Systems Center would have cost just under \$107 million.

Over the next couple years, the Army will be investing nearly \$83 million in construction projects.

In January, demolition begins on the two housing units closest to the installation. At Heritage Lane 24 units will replace the aging townhouses and on General Greene Ave., there will be four homes. Construction on the new military housing is estimated to begin in May of 2019 and be completed in September of 2020.

"The current housing units for these two locations date back to 1974," said Jason Gove, USAG-Natick master planner. "The units are in failing and failed condition and do not meet minimum standards to support the needs of the Soldiers and their families assigned to Natick Soldier Systems Center. This project will improve Natick's Family housing living conditions by providing quarters that meet current standards



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

of quality of life, sustainable building principles, energy conservation, size, habitability, and safety."

The Soldier Squad Performance Research Institute (S2PRINT) has made it through the 35 percent design phase and looks on track to start construction in the Spring of 2020.

The S2PRINT facility is 80,600 sq.ft. of research and development where researchers from the Natick Soldier Research Development and Engineering Center (NSRDEC) and the U.S. Army Research Institute of Environmental Medicine (US-ARIEM) can study not just the Soldier, but the Soldier and Squad and how they perform.

The cost of constructing the S2PRINT Building is \$50 million and estimated to be operational in the Spring of 2022.

The proposed S2PRINT facility will baseline, measure, predict and optimize individual and small unit readiness, performance, and resiliency across real-world, mission-essential tasks. The work, conducted by scientists and engineers at Natick Soldier Research, Development, and



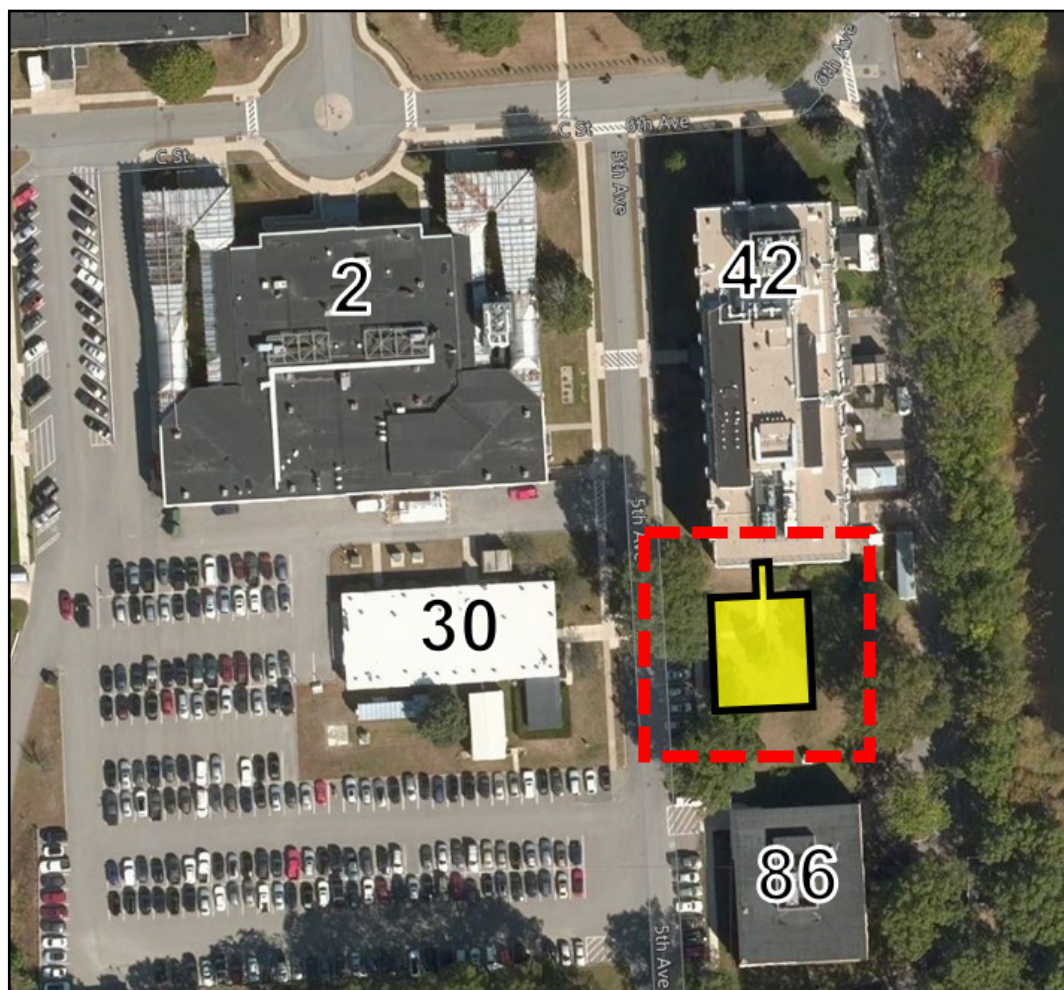
Construction crews lay concrete for the foundation of an additional U.S. Army Research of Environmental Medicine (USARIEM) building in early September 2018. The 8,600 square foot project combines all MEDCOM assets from buildings 30 and 42 (see diagram at the bottom of pg. 10 for more details). (U.S. Army photo by K. Houston Waters).

Engineering Center (NSRDEC) and the U.S. Army Research Institute of Environmental Medicine (USARIEM), advances Soldier and squad readiness through Human Performance Optimization (HPO) research on the Soldier's and squad's cognitive, social, physiological, physical, and nutrition-based performance. Outcomes of this research will inform Army Modernization Priority #6 – Soldier Lethality, Army Warfighting Challenges (#1 and #8 through #10), and the Army's Human Dimension Strategy (S0s 1.5 and 2.4).

S2PRINT will provide world-class scientists and engineers with a state-of-the-art, mission relevant, controlled environment for applied studies in Soldier and squad performance optimization and enhancement. S2PRINT's focus areas include but are not limited to development of validated performance and training strategies, tools and interventions for the Soldier, leader and small unit, enhanced Soldier and squad performance and readiness, mitigation of injury and, interventions to increase Soldier and squad resilience and longevity.



This diagram depicts the locations of future Natick Soldier Systems Center (NSSC) housing units. North of the pond, 24 housing units are expected to be built on Heritage Ln. South of the pond, four units are expected to be built on General Greene Ave. Disposal for current housing is expected to begin January 2019, with new construction beginning in May 2019.



The S2PRINT facility will promote collaboration among NSSC and other government agencies. It will also enable and actively seek unique collaborations and partnerships with the nation's premier research and industrial partners, first responders, and many of the country's finest academia institutions.

Construction is in progress between the USARIEM and Navy buildings on an 8,600 sq. ft. addition to the USARIEM building. The construction cost is at \$6 million and it is expected to be completed in early 2019 and fully operational in the Spring of 2019.

Other projects on the horizon are replacements of storage buildings, a container and testing laydown area and new post office with combined construction cost estimates of \$5 million.

(left) This aerial view shows the future site of the new Mail Distribution Center on Natick Soldier Systems Center (NSSC). The estimated completion date for the center is slated for fiscal year 2020.

Outstanding Service

NSRDEC Employee Recognized Among Outstanding AMC Personnel of the Year



During a recent town hall at the Natick Soldier Research, Development and Engineering Center, Douglas Tamilio (pictured here, left), the director of NSRDEC, officially presented Robert Bernazzani (pictured here, right) with the Louis Dellamonica Award for Outstanding Army Materiel Command Personnel of the Year for 2017. Bernazzani is a supervisory mechanical engineer and the team leader for the Joint Food Service and Engineering Team in the Combat Feeding Directorate at NSRDEC. (U.S. Army photo by David Kamm, NSRDEC)

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

Robert Bernazzani has been named one of 10 recipients of the [Louis Dellamonica Award](#) for Outstanding [Army Materiel Command](#) Personnel of the Year for 2017.

Bernazzani is a supervisory mechanical engineer and the team leader for the [Joint Food Service and Engineering Team](#) in the [Combat Feeding Directorate](#), or CFD, at the U.S. Army Research, Development and Engineering Command Soldier Center.

[Douglas Tamilio](#), the director of the Soldier Center, officially presented Bernazzani with the Louis Dellamonica Award during a recent town hall. During the town hall, Bernazzani also received the [Superior Civilian Service Award](#) from the Department of the Army and a congratulatory letter from [General Gustave F. Perna](#), commanding general of the U.S. Army Materiel Command.

The Louis Dellamonica Award is given to employees who have contributed significantly to AMC's mission to develop and deliver materiel readiness solutions. Dellamonica was a general engineer at [Hawthorne Army Depot, Nevada](#). His 65-year career exemplified integrity, innovation, leadership and outstanding dedication to Army Materiel Command's mission.

Bernazzani was recognized for his exceptional professionalism, technical competency, exemplary leadership, and ongoing commitment to excellence in support of the warfighter.

Along with his team members, Bernazzani provided the Army, Navy, Marine Corps, Air Force, and Coast Guard with cutting-edge field-feeding equipment and systems, as well as exceptional engineering and technical support.

Under his skillful leadership, Bernazzani's team provided operational and acquisition guidance to the user community, ensuring that the systems were provided in a timely manner and that the users had the ability to sustain and operate the equipment effectively and efficiently.

"Bob's team truly epitomizes the joint service nature of the DOD Combat Feeding

Research and Engineering Program, and has consistently received the accolades of his transition partners in the Navy, Marine Corps, Air Force, and Army logistics and foodservice communities," said Stephen M. Moody, director, Combat Feeding.

"All four services have different missions and require different approaches," said Bernazzani. "One of the goals of our research and development is to enable the services to perform their mission without negatively impacting logistics."

One of the project efforts supported by the team and Bernazzani during fiscal year 2017 was a Navy project to address the needs of Navy Aircraft Carriers that may have to operate in a communications-denied environment.

CFD's Joint Food Service and Engineering Team worked with the Navy to evaluate its list of food items for resupply for 30-day, 45-day, or 60-day time periods, and to determine if the items can be stored in the ship's refrigeration systems, freezers, chill box or dry storage. The goal is to prevent the need for the ship to be re-supplied before the end of the designated time period -- which would interrupt the mission.

Bernazzani explained that he and his team, in conjunction with another team, developed a test plan and observed the at-sea operation during two ship deployments. The results of the evaluation were used to determine how well the storage spaces worked and how well the crew accepted the changes to the existing menu.

In a separate effort, Bernazzani and his colleagues in CFD are hard at work on a project making improvements to recipes developed by the Armed Forces Recipe Service.

"The team is working to improve nutrition in dining halls for all the Armed Services," said Bernazzani. "We are looking at all the recipes that are used by all the military services every day. The end goal is provide better nutrition to all warfighters to improve performance and health. This work will have a significant impact."

As a winner of the Louis Dellamonica Award, the supervisory mechanical engineer feels honored to be in such accomplished company.

In particular, Bernazzani mentioned Betty Davis, who is a CFD supervisory food technologist and Science and Technology branch chief. Davis is a previous Top Ten AMC Employee and also a member of the Research & Development Associates for Military Food and Packaging Systems Hall of Fame.

"To be in the same group as someone like Betty Davis is an incredible honor," said Bernazzani. "The fact that people I hold in high esteem in Combat Feeding have won this award and now I'm included with them is incredible. I'm still not at their level but I'm very proud."



**Focal
Point**

Patriot Day

September 11, 2018



SGT Letarsha Massey, a Soldier and researcher at the U.S. Army Research Institute of Environmental Medicine, USARIEM, sang the USA and Canadian national anthems during the Boston Redsox versus Toronto Blue Jay's baseball game at Fenway Park in Boston, Mass. on September 11, 2018.



Fuel to Fight

**Army Researchers Study Nutrition and Performance
at Marine Corps Mountain Warfare Training Center**

Approximately ten thousand feet above sea level, in the [Toiyabe National Forest](#) in California, U.S. Army Research Institute of Environmental Medicine, or USARIEM, scientists traveled to the Marine Corps [Mountain Warfare Training Center](#), or MCMWTC, this summer to assess energy expenditure, energy intake and physical performance in warfighters during mountain warfare training.

The MCMWTC trains U.S. Servicemembers and allied partners to fight and survive in mountainous

environments during any season. Those who undergo the 30-day mountain operational training exercise at the MCMWTC learn how to conduct operations in the mountainous terrain and fight an enemy that can attack at any time in the battle space.

For Maj. Nicholas Barringer, a USARIEM research dietitian and one of the principal investigators in a team that includes Drs. James McClung and Stefan Pasiakos, it is critical that warfighters have enough fuel to operate, fight and win in such a

demanding and realistic training environment.

“Training in a mountainous environment can be metabolically demanding for warfighters, especially when they are carrying heavy loads,” Barringer said. “In USARIEM’s previous research, we have seen that warfighters have increased energy expenditure when operating at high altitude. One reason for this, besides the increased metabolic demand of altitude, is that walking through mountainous terrain is more physically demanding than walking on flat ground.”

If warfighters do not eat enough energy to match the strenuous work they perform in such demanding conditions, this could lead to “negative energy balance,” Barringer added. Warfighters can experience negative energy balance for a number of reasons, such as operating in difficult environmental conditions, lack of time to prepare and consume rations, taste and functionality of rations and physical and mental stresses that can reduce appetite.

When warfighters are not eating enough required nutrients, like protein, which is necessary for recovery and preserving lean muscle mass, this can negatively impact military health and readiness. This problem has been historically prevalent in our military, and for several years, USARIEM has partnered with other U.S. and international military branches to develop solutions.

Earlier this year, Barringer and other USARIEM researchers met the MCMWTC command and medical staff, who wanted to ensure that the students were eating enough high quality food to protect their health, performance and readiness. The USARIEM researchers proposed a field study with 100 volunteers that would assess warfighters’ overall energy expenditure and physiological changes during the mountain exercise.

“The purpose of this study is to determine if warfighters are consuming enough energy to meet the physical demands of mountain warfare training and if their nutritional status is linked to physical performance,” Barringer said. “The study results will allow us to work



“The lessons learned from this study will help drive recommendations and technology to improve the survivability and lethality of warfighters operating in mountainous terrain.”

Maj. Nicholas Barringer,
research dietitian, USARIEM



with MCMWTC on developing courses of action to improve their dietary intake if necessary, whether that is as simple as increasing servings of food provided, or more complex such as working with the Combat Feeding Directorate in the Natick Soldier Research, Development and Engineering Center to produce a new ration component or meal plan. It is also important to note that the Toiyabe terrain is similar to northern Afghanistan, so there might be some lessons gleaned from this study that could apply to those battlefield scenarios.”

USARIEM researchers journeyed to MCMWTC this summer to collect energy and nutrition data from a group of study volunteers for the first iteration. Researchers collected food logs and discarded rations daily in order to estimate energy intake. They also gave a subset of the warfighters doubly labeled water, which contained an isotope that allowed researchers to determine energy expenditure.

The researchers also wanted to see how the warfighters’ dietary intake affected their physical performance. Researchers tested warfighters’ lower body power and anaerobic and aerobic capacities by having them perform vertical jumps, a sprint test and a 20-meter shuttle run before, during and after the mountain exercise. They also collected blood samples throughout the study to assess biomarkers that indicate warfighters’ nutritional statuses.

LEFT: U.S. Marine Corps Cpl. Ryan L. Jaskulka, right, mortarman, Headquarters and Service Company, 1st Battalion, 6th Marine Division (1/6), 2nd Marine Division (MARDIV), eats hot chow before hiking with Alpha Company, 1/6, MARDIV, to landing zone sardine rock where they will learn how to rappel for basic mountain training, during Mountain Exercise 5-15 at the Marine Corps Mountain Warfare Training Center, Bridgeport, Calif., Sept. 16, 2015. Marines participate in a month-long field exercise focusing on core mission essential tasks such as assault climbing, animal packing and small unit movements, to strengthen expeditionary high altitude warfare tactics in a mountainous environment against a hybrid threat, as they prepare for world-wide deployment. (Photo by Cpt. Kelly L. Street, 2DMARDIV.COMCAM).

RIGHT: Anthony Karis, the study project coordinator and a researcher from the U.S. Army Research Institute of Environmental Medicine, or USARIEM, collects nutrition and physical performance data from Marines completing the mountain exercise at the Marine Corps Mountain Warfare Training Center, in the Toiyabe National Forest in California. (Photo by Maj. Nicholas Barringer, USARIEM).

“Biomarkers help us identify other nutrition problems, so we can see where we need to intervene and provide advice, education or delivery of a new ration component or meal plan that can address MCMWTC students’ needs during mountain warfare training,” Barringer said.

Barringer and his research team will conduct the same study with a new set of warfighters during the MCMWTC winter mountain exercise. Barringer explained that this study iteration would allow researchers to see if the winter mountain exercise affects warfighters’ energy expenditure differently than in the summer. Barringer expects warfighters’ energy expenditure will be “much greater.”

“Our most current study iteration allowed us to assess warfighters’ nutritional intake during the summer mountain exercises, which are already physically

demanding,” Barringer said. “The winter mountain exercise introduces an entirely new set of obstacles for warfighters. Cold weather itself is more metabolically demanding, but when you add the extra cold weather gear and exercising through snow with a heavy load, it is even more physically demanding.”

The researchers aim to present their data to MCMWTC leadership by next year.

“The MCMWTC team has been instrumental in the development and success of this project,” Barringer said. “Their leadership and staff are the experts on surviving, fighting and winning in mountainous terrain. Being able to bring USARIEM’s science to the Marines and potentially improve performance is exciting as we are truly executing USARIEM’s mission of bringing science to the warfighter.”

“The information we are gathering from this study is intended to provide warfighters with practical solutions when fighting and operating in mountainous environments. By closing that energy deficit gap, if we find one, we can ensure that warfighters are prepared to continue performing their training and missions. The lessons learned from this study will help drive recommendations and technology to improve the survivability and lethality of warfighters operating in mountainous terrain.”

The Future of Rations

Natick Hosts Future Combat Feeding Capabilities Workshop

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

The Research Development and Engineering Command Soldier Center's Combat Feeding Directorate, or CFD, recently hosted a Future Combat Feeding Capabilities Workshop. Uniformed service members of the Army, Navy, Marine Corps, and Air Force attended the workshop, during which they brainstormed about how food and nutrition can best serve the joint warfighter in the future.

During the workshop, participants discussed future battlefield conditions and the criteria for food and nutrition that may be needed to optimize warfighter performance and lethality. The workshop, and the direct interaction with warfighters, will help identify gaps in field feeding requirements and capabilities for ten years in the future or longer. The information gathered during the event will be used to help shape CFD's research and development efforts.

In addition to helping identify the warfighter's future food and nutrition needs, the workshop also aimed to increase participant awareness about the DOD Combat Feeding Program and current field feeding options.

CFD is committed to actively pursuing, adapting and cultivating leading-edge technologies to ensure military operators have the decisive edge in all aspects of combat feeding. To help lighten the warfighter's carrying load for extended, semi-independent close combat operations, the directorate is working on innovative ways to maximize the energy and nutrient density of ration components.

Additionally, CFD researchers are focused on providing capabilities to use nutritional interventions to optimize warfighter performance; protect food and water from contamination; increase understanding of the gut microbiome; apply creative manufacturing technologies to food delivery systems; and increase energy efficiency and decrease manpower associated with joint-service field feeding.

The Future Combat Feeding Capabilities Workshop underscored CFD's commitment to working directly with warfighters, whose input CFD greatly values.

"Having a representative from all the services, as well as several different military occupational specialties, together at one table for an open discussion on the future of combat rations was highly effective because it allowed the combat feeding developers to see different viewpoints and focus on what's important to the end user," said Capt. Christina Deehl, who works in the Human Performance Program (THOR3) at the [U.S. Army Special Operations Command](#) and was one of the workshop's participants. "As the USASOC performance dietitian, my focus is on the operator getting an adequate amount of high quality nutrition to fuel him or her for a physically intense mission."

"Gathering feedback from military service members with occupational experience in nutrition/human performance, logistics and resupply provides awareness of field feeding challenges," said Jeannette Kennedy, a CFD technical advisor who coordinated the execution of the event. "Additionally, stakeholder feedback is vital to ensure that researchers and engineers understand the context of the field feeding environment."

"These activities are important because they allow scientists and engineers to hear about critical issues directly from uniformed service members, and engage at a level that is not routinely possible," said Brian Gemmill, a requirements analyst in G3/5, Operations and Plans, who served as the workshop's facilitator.

Helping warfighters perform their best is at the heart of the work performed by the Soldier Center.

"I am excited to know that ideas from this workshop will help guide research and development efforts and ultimately provide capabilities to optimize warfighter performance," said Kennedy.

"I am proud to be part of a team that is tirelessly working to provide human performance solutions that will increase Soldier lethality and nutritional health," said Gemmill.



NSRDEC



NSRDEC Kicks Off *Exoskeleton Engineering Analysis Project*

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

Building on its extensive exoskeleton R&D work, the U.S. Army Research, Development and Engineering Command Soldier Center has commissioned a detailed engineering analysis of existing and emerging exoskeleton products of interest as part of its ongoing exoskeleton evaluation program.

"We are encouraged by the potential to advance exoskeleton capabilities for needs that span from enhanced mobility and stamina for infantry to added strength for combat engineering missions," said David Audet, Chief, Mission Equipment & Systems Branch, [Soldier Performance Optimization Directorate](#), or SPOD.

The Soldier Center is collaborating with [Boston Engineering](#) based in Waltham, Mass. Boston Engineering will lead the independent, third-party engineering analysis for the exoskeleton project, which kicked off early September 2018. The effort is a collaborative engagement among the Soldier Center, Boston Engineering and Materiel Developers. The outputs of the effort will benefit the ultimate user -- the warfighter -- and will also serve as a valuable tool for developers in their product improvement and optimization processes.

"This product engineering analysis has the potential to streamline development by mapping exoskeleton technologies to specialized military needs," said Mark Smithers, CTO, Boston Engineering. "We are proud to collaborate with NSRDEC (Soldier Center) to accelerate exoskeleton technology transition to the field. Boston Engineering's background in robotics, wearable technology, human-machine analysis and product optimization makes us well-suited to support this initiative for Soldiers."

As the number of exoskeletons in use by industry increases, so does the Department of the Army's confidence in their safe and effective use for combat and non-combat operations. Following the directions set forth by the Chief of Staff of the Army, [General Mark A. Milley](#), the center has amped up its efforts to address the anticipated operational warfighter benefits of exoskeletons.

The Soldier Center has been evaluating exoskeleton technologies since the early 2000s, focusing primarily on optimized soldier performance and squad lethality, faster dismounted movement to objectives, and reducing physiological and cognitive load burden of combat duty. The SPOD leads the effort to demonstrate high Technology Readiness Level, or TRL, exoskeletons in operationally relevant environments and to transition them to [Program Executive Office, Soldier](#), or PEO Soldier, for fielding.

The center's priority in its first phase is to evaluate the most promising systems for the most needed tasks. They also will look at these systems as tools that can reduce the risk of physical injury risk before, during or after combat operations or strenuous activities.



This Soldier is participating in a Natick-led study on the effects of bulk on Soldier performance. (U.S. Army photo by NSRDEC).

Some family members couldn't wait to welcome home nearly 400 paratroopers from the 4th Infantry Brigade Combat Team (Airborne), 25th Infantry Division, June 2, at Joint Base Elmendorf-Richardson's Hangar 1, Alaska, after their return from a nine-month deployment to Afghanistan in support of Operation Freedom's Sentinel. (U.S. Army photo by John Pennell).



Day of the Deployed
October 26, 2018