

November 2018

NSSC This Month



'S2PRINT'ing Ahead

**S2PRINT Takes USARIEM
Research to the Next Level**



Also inside:

- * Salute to Service
- * Jet Lag
- * Seeing the Light
- * Designing Excellence



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



Publisher's Note

John Harlow
USAG Natick Public Affairs



I'm not sure about you, but I am still feeling the effects of how much I ate over the Thanksgiving holiday.

November was pretty busy. Our Senior Commander, Brig. Gen. Vincent Malone marched in the Natick Veterans Day Parade and spoke at the Town's Veterans Day program. The Garrison Commander, Lt. Col. Bryan Martin spoke at the Town of Braintree Veterans Day program and Command Sgt. Maj. Mike Pintagro spoke at the Town of Wayland's ceremony.

It was great to learn the history of the [26th Yankee Division](#) during World War I from their Col. Brett Conaway. It is impressive that the Division's history lives on in the current formation of the [26th Brigade](#) headquartered here in Natick.

As we turn the page on the calendar and see December, the Holiday season is here.

However you celebrate, please be safe. Allow extra time depending on the weather and be on the lookout for those who may have had a little too much to drink at their holiday parties. Look out for your friends and neighbors.

Our next newsletter is the best of 2018 and will come out in Mid-December.

I want to thank the great team that provides the content to make NSSC This Month the award winning publication that it is... from NSRDEC, Jane Benson, Jeff Sisto and David Kamm, from USARIEM, Mallory Roussel and from the Garrison Houston Waters and the deployed Vanessa Josey.

It is an honor to work with this talented group and we look forward to telling the story of the Natick Soldier Systems Center in 2019.



John Harlow
Chief of Public Affairs/Legislative Liaison
USAG Natick

NSSC This Month

NSSC

Senior Commander
[Brig. Gen. Vincent F. Malone](#)

Garrison Commander
[Lt. Col. Bryan M. Martin](#)

Command Sergeant Major
Command Sgt. Maj.
[Michael R. Pintagro](#)

Public Affairs Officer
[John Harlow](#)

Editor
[K. Houston Waters](#)

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.

To subscribe to *NSSC This Month*, please contact Houston Waters at Kenneth.h.waters4.civ@mail.mil

Web: www.army.mil/natick

Cover story by John Harlow, USAG Natick Public Affairs. Photo by David Kamm, RDECOM Soldier Center.

Table of Contents

November 2018

NSSC This Month

Cover - p. 11-12



David Kamm, RDECOM Soldier Center

NSSC This Month

USAG News Briefs	4
Upcoming NSSC Events	
Salute to Service	5
Natick Celebrates Veterans Day	
Veterans Day	7
Natick Students learn the Meaning of Veterans Day	
Armistice Day	9
NSSC Observes Armistice Day	
Focal Point	10
Thanksgiving at NSSC	
Jet Lag	13
U.S. Army and U.K. Researchers Study Jet Lag Remedy in Brunei	
Seeing the Light	16
RDECOM Soldier Center's LIFI Will Revolutionize IT on Mission Command Posts	
Combat Feeding	18
RDECOM Soldier Center Hosts Food Science & Industry Day	
Designing Excellence	19
RDECOM Soldier Center Hosts Boston's School of Fashion Design	
Wreaths Across America	20



USAG Natick News Briefs

Garrison Spotlight

Jemal Fowler, Human Resources



Jemal Fowler, who works as a contractor for the Army's Human Resources Command, provides integral support to the USAG Natick CAC/ID Card Office. He has been providing this support to NSSC Soldiers and their Families, Civilians, and Contractors since 2002. As

policies, procedures, and systems continually change when it comes to the issuance of Common Access and Identification Cards, he keeps his expertise up to date to ensure his support to us remains efficient and effective. Mr. Fowler and the CAC/ID Card Office can be found in Room A-125 of Building 1.

Fond Farewells



Team Natick says goodbye to Walter Ulrich, who retires after 22 years of service with the Department of the Army. During his time in Natick, Walter positively influenced all directorates with SMS, PAR, ASIP, and ISR. Walter received the Superior Civilian Service Award for his outstanding contributions. He will be missed! (U.S. Army photo by K. Houston Waters, USAG Natick Public Affairs).



Jeff Sisto, Research, Development, and Engineering Command (RDECOM) Soldier Center public affairs, poses with Kennedy Middle School students in Natick, Mass. during their Veterans Day "Oral History Project," (Photo by U.S. Army).



Command Sgt. Maj. Mike Pintagro, command sergeant major, U.S. Army Garrison (USAG) Natick, participates in Kennedy Middle School's Veterans Day "Oral History Project" in Natick, Mass. (U.S. Army photo by Jeff Sisto, RDECOM Soldier Center).



NSSC

Salute to Service

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

Natick Celebrates Veterans Day



Brig. Gen. Vincent Malone, senior commander, Natick Soldier Systems Center (NSSC), participates in a parade honoring veterans Nov. 11 in Natick, Mass. (U.S. Army photo by John Harlow, USAG Natick Public Affairs).



Brig. Gen. Vincent Malone, senior commander, Natick Soldier Systems Center (NSSC), speaks at a Veterans Day observance at the Morse Institute Library in Natick, Mass. Nov. 11. (U.S. Army photo by John Harlow, USAG Natick Public Affairs).

A day highlighting the service of our Nation's military, Veterans Day represents selfless sacrifice and commitment to duty. This year's observance held special significance, as the holiday coincided with the 100th anniversary of the end of World War I. To highlight the occasion, NSSC leadership hit the road November 11 to share the true meaning of Veterans Day with the communities of Wayland, Natick and, Braintree, Mass.

Addressing the crowd in Wayland, Mass., Command Sgt. Maj. Mike Pintagro, command sergeant major, U.S. Army Garrison (USAG) Natick, spoke to the accomplishments of Veterans past, touching on the history of World War I and the contributions of Massachusetts to the war effort.

"Just over a century ago, Congress declared war on Germany, and subsequently Austria-Hungary, triggering a wave of patriotic frenzy and the greatest mobilization of Americans since the Civil War. Like the Civil War, what became known as the Great War and later World War I, touched the lives of virtually every American," said Pintagro.

"All told, American Doughboys -- 108 of them from Wayland -- fought in 13 campaigns during the conflict. By war's end, the U.S. suffered more than 300,000 casualties -- which counts missing and wounded -- including nearly 120,000 deaths, in a conflict that proved yet more devastating to Europe and perhaps cataclysmic for Western civilization itself. Four of the fallen were from Wayland," said Pintagro.

Brig. Gen. Vincent Malone, senior commander, NSSC, addressed those attending the Town of Natick Veterans Day observance at the Morse Institute Library in Natick, Mass.

"From the Minutemen who won our independence to today's warriors deterring aggression all around the world, the generations of patriots who dedicated themselves to the defense of our country make us stronger and more resilient as a nation," said Malone.

"Veterans have served in different places and in different ways, but serve they have," said Malone. "They have not only fought our wars, they have preserved the peace, whether in faraway lands or here at home. They have lived uncommon lives under a common banner: a love of country and service to our nation. Therefore, it is fitting that we pause as a nation to recognize their service and sacrifices."

Lt. Col. Bryan Martin, garrison commander, USAG Natick, echoed this sentiment during his remarks at Braintree Town Hall in Braintree, Mass.

"Right now, all around the country, veterans serve as teachers, doctors, engineers, social workers, community leaders, first responders, and even elected officials," said Martin. "They continue to serve our country by making a positive impact, building stronger futures and inspiring future generations. As we take time today to think about those who serve and protect our way of life and national interest, let's dedicate ourselves to honor their sacrifice by doing right by each other, by looking after that neighbor or stranger."

Young men and women from Natick, Braintree, and Wayland have answered our Nation's call since the Revolutionary War and continue to do so today.

"Our Soldiers represent the best our Nation has to offer," said Malone. "They are the heart, the soul, and the spirit of the greatest Nation on the planet. They carry on the proud legacy and traditions of our Nation's Veterans who have throughout our history, kept us free, returned home and continued to serve our Nation in a multitude of ways. Today, we say thanks to them all."



Lt. Col. Bryan Martin, garrison commander, U.S. Army Garrison (USAG) Natick, speaks at a Veterans Day observance at Braintree Town Hall in Braintree, Mass. Nov. 11. (U.S. Army photo by K. Houston Waters, USAG Natick Public Affairs)



Natick Students Learn the Meaning of Veterans Day

By Henry Schwan, MetroWest Daily News/Natick, Mass.

U.S. Army Chief Warrant Officer Alma Mendoza reads "What is a Veterans Day?" to kindergartners at the Lilja School in Natick, Mass. At right is kindergartner Issa Weiner. (Photo by Ken McGagh/Daily News Staff).

Veterans Day means honoring those who serve our country, and some Natick students got the message from a group of special guests.

Army Chief Warrant Officer Alma Mendoza walked into a kindergarten class at the Lilja Elementary School on Friday, dressed in camouflage fatigues, and started reading a picture book called "What is Veterans Day." Boys and girls huddled around her, and occasionally broke her pace with questions like, "Why does the Army save people?"

"One of our jobs is to save people from anything that is bad," Mendoza said.

Down the hall in another kindergarten classroom, Phil Hurton, a Framingham police officer and Marine Corps veteran, read "Hero Dad," a picture book about a boy who believes his father, serving

overseas in the military, is a superhero.

"I can't imagine how hard that would be, to leave loved ones behind," Hurton said of the story he read to the children. "I'm very fortunate I didn't have to do that." Hurton grew up in Hopkinton, and enlisted in the Marines out of high school, when he was single and didn't have a family to leave behind.

Navy veteran Don Merson and Marine Corps veteran Paul Carew, who serves as Natick's director of veterans services, also read to students. The effort was organized by the Natick Intergenerational Leadership Team, comprised of the Natick Public Schools and several town departments.

Allison Kuzinevich's classroom hosted Hurton, and the kindergarten teacher said his reading was "wonderfully presented."

"It's important to show (the children) how much the military does for the country," Kuzinevich said.



(above) U.S. Army Chief Warrant Officer Alma Mendoza points to the "U.S. Army" on her uniform before reading to kindergarteners Friday at the Lilja School in Natick. (Photo by Ken McGagh, MetroWest Daily News). (below) Framingham police Sgt. Phil Hurton takes question from kindergarteners during a Veterans Day program at Lilja School in Natick. Hurton served in the Marine Corps from 1995-1999. (Photo by Ken McGagh, MetroWest Daily News).

One of her students, 5-year-old Andrew Gaffney, said, "I thought there would be more soldiers (in the book.)" Another student, 6-year-old Cian Warren, said the book was "great," because the dad in the story is a "hero."

Mendoza was the only active military member among the readers, and each has a story to tell of their military service.

Mendoza grew up in Anaheim, California, is in her 21st year of active duty, and currently works at the U.S. Army Natick Soldier Systems Center.

Merson served in the Navy from 1964-67 during the Vietnam War, and spent most of his time aboard an ammunition ship in the Gulf of Tonkin.

"It was hectic, a lot of work, 24 hours a day, seven days a week," Merson said. "There was always a chance anything could happen."

Carew was active duty Marine Corps from 1970-72, and spent the next 10 years in the Marine Corps active duty reserves.

Hurton was only 18 when he enlisted in the Marines in 1995. His four years of service included six months aboard a ship in the Mediterranean during the Kosovo conflict.

Luca Cetto is a fourth-grader at the Lilja school, and didn't have the benefit of participating in the reading because it was geared to kindergartners. But Cetto has a daily job that reminds him of the sacrifices made by those in the armed forces. Luca is the alternate standard bearer at the school. His job is to raise the flag up the flagpole each morning, and lower it after the closing bell. As he carefully folded the flag at the end of the school day, Luca reflected on his job and the meaning of Veterans Day.

"It's an honor to do this," Luca said. "Veterans Day is a day to honor everyone who fought for our country, and died in service."





all of us serving in today's Yankee Brigade."

Known as one of the finest expeditionary forces in the world, the "Yankee Division" was formed of National Guard elements from all six New England states. The division fought in six campaigns and spent more time on the front line than almost any other division during World War I.

"The centennial commemoration presents a unique opportunity to raise awareness of the legacy of the American expeditionary forces and to honor their contributions to victory in the first World War," said Malone.

During World War I, the Yankee Division lost more than 1,500 men and suffered more than 12,000 wounded during seven months of fighting on the western front.

The Yankee Division demobilized at [Fort Devens](#) in May of 1919 before being recalled again during [World War II](#) (WWII).

The Yankee Division was separated from active duty November 13, 1946. The division was reorganized into the [Massachusetts National Guard](#).

After several changes in name and function, the 26th MEB is now a reserve component combat support formation headquartered in Natick, Mass.

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

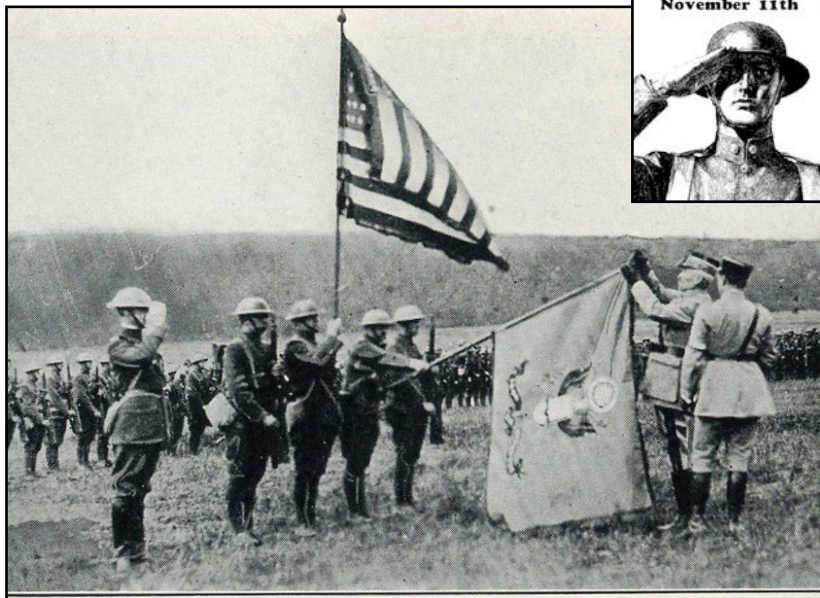
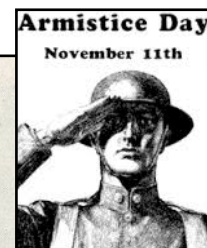
Lt. Col. Bryan Martin, garrison commander, United States Army Garrison (USAG) Natick, presents Col. Brett Conaway, commander, 26th Maneuver Enhancement Brigade (MEB), with a token of his appreciation for participating in the NSSC Armistice Day event. (U.S. Army photo by John Harlow, USAG Natick Public Affairs).

On the 11th hour, of the 11th day, of the 11th month, in the year 1918, almost four years of intense fighting finally came to an abrupt and dramatic end. With thousands dead, and nations torn apart, at last the "Great War" was over. [Armistice Day](#) remembrances, observed in dozens of countries on November 11, help us to not forget the names and deeds of those who never returned home.

"This is an important milestone in the history of our Army and our nation," said Brig. Gen. Vincent Malone, senior commander, Natick Soldier Systems Center (NSSC). "The first World War profoundly and forever changed not only our Army, and our military, but our nation and its role in the world."

Team Natick continued this tradition of remembrance by hosting an Armistice Day event of their own. To highlight the end of [World War One](#) (WWI) Centennial commemorations, the command team from the [26th Maneuver Enhancement Brigade](#) (MEB), an organization with direct ties to the famed [26th Infantry "Yankee" Division](#), was on-hand to share some of the unit's WWI history.

"Being a part of something so historic is incredibly motivating," said Col. Brett Conaway, 26th MEB commander and guest speaker for the event. "It's a tremendous honor to be able to tell the story of the Yankee Division, and tell the story of World War I through the eyes of the Yankee Division. Suffice it to say that it's tremendously motivational for



Decoration of regimental colors, U.S. 104th Regiment, U.S. 26th Division, at Boucq, France, April 28, 1918, by General Passaga, 32nd French Army Corps, first American regiment cited for bravery under fire (U.S. Government photo).



**Focal
Point**

Thanksgiving at NSSC

November 16, 2018



Command Sgt. Maj. Mike Pintagro, command sergeant major, U.S. Army Garrison (USAG) Natick (left) and Col. Sean O'Neil, commander, U.S. Army Research Institute of Environmental Medicine (USARIEM) (right), joined other NSSC leadership to serve Thanksgiving meals to Soldiers at the installation dining facility November 16 (U.S. Army photo by K. Houston Waters, USAG Natick Public Affairs).



Lt. Col. Bryan Martin, garrison commander, U.S. Army Garrison (USAG) Natick, along with other NSSC leaders, served Thanksgiving meals to Soldiers at the installation dining facility November 16 (U.S. Army photo by K. Houston Waters, USAG Natick Public Affairs).



David Kamm, RDECOM Soldier Center



David Kamm, RDECOM Soldier Center



'S2PRINT'ing Ahead

David Kamm, RDECOM Soldier Center

S2PRINT Takes USARIEM Research to the Next Level



By John Harlow, USAG Natick Public Affairs/Natick, Mass.

The Soldier Squad Performance Research Institute (S2PRINT) a partnership between the [Natick Soldier, Research, Development and Engineering Center \(NSRDEC\)](#) and the [U.S. Army Research Institute of Environmental Medicine \(USARIEM\)](#) is expected to become operational early in 2023. The researchers at USARIEM are already looking ahead at what the new center will provide to enhance their research.

Dr. Stephen Muza, the Deputy Director for Science and Technology at USARIEM, has been part of the USARIEM effort from the time the idea of the S2PRINT building was a concept to now with S2PRINT in design.

"The concept of the S2PRINT facility emerged around 2010," said Muza. "Originally the concept was to purchase a building in Natick

and convert the big open building into a large laboratory where we could study teams instead of individuals, so we have been working on this for eight years now.

To perform research at the squad level, studies have been performed in motor pools and other locations in conditions that are not ideal."

"The S2PRINT facility will provide us with the laboratory that has the physical and data capabilities to study teams," said Muza. "We currently have some of the most sophisticated performance laboratories in the world between NSRDEC and USARIEM, but they are largely focused on the individual Soldier.

This is going to open up the door to look at team dynamics, communications and start to identify the attributes of the best squads from the standpoint of metrics for combat performance," Muza continued.



“After we gather the information and data on the high performing squads, we can start to find ways to intervene to improve the other squads and fire teams.”

It is expected with the research and conditions provided by the S2PRINT facility, it will accelerate our ability to translate the information learned from individuals and teams.

“We will be able to simulate the field environment in the large combat maneuver lab,” said Muza. “That in fact is going to be one of the more significant elements of the S2PRINT, that we will be able to reduce costs and accelerate our transitions.

“The S2PRINT building, while it is not an environmental chamber, it is a much more controlled environment than working in an available motor pool or in the field,” said Muza. “This facility will allow us to control elements like sound and lighting and that will allow us to simulate everything from moonlight to full sunlight. It will allow us to look at sensory inputs whether it be audio or sight, we will have a lot more control on the conditions for the research and that will provide results that will be more pertinent and valid across a wide spectrum of environmental conditions and operations.”

The research performed by USARIEM in the S2PRINT facility is geared to optimize Soldier performance and lethality, not just individually, but at the squad level.

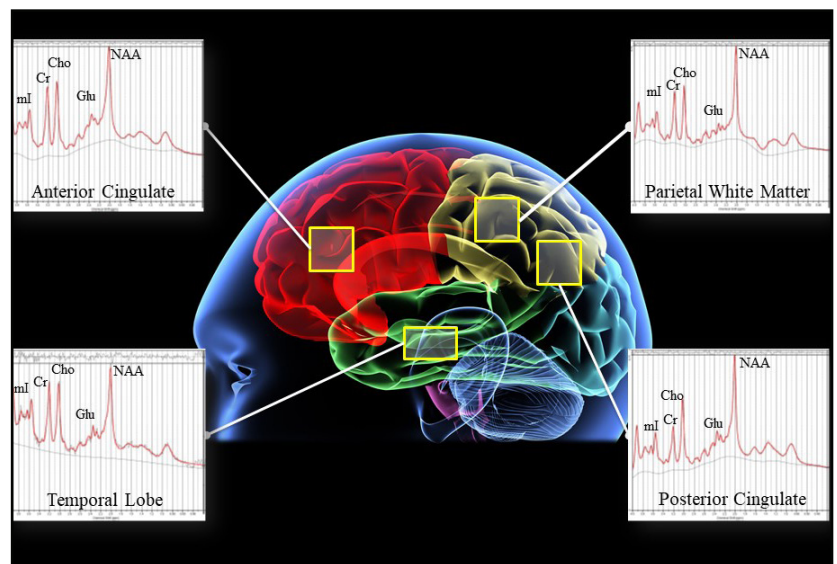
“This will allow us to extend the research we have and will continue to do on the individual Soldier, but now integrate it to the team,” Muza said. “A good example is the physical demands associated with a team task. Combat engineers typically don’t operate as individuals. They operate as a team and have to share the physical cost or metabolism associated with a particular task and identify how that can be optimized. Then that skill can be taught to other squads or teams so they can enhance their performance.”

Muza has spent a career studying the performance of Soldiers and hopes that the research at the S2PRINT facility can show us the value of teaming.

(above) This graphic represents a exterior design concept of the west side of the future Soldier Squad Performance Research Institute (S2PRINT) facility at Natick Soldier Systems Center (NSSC). Construction is expected to begin in 2020.

“I hope that we can really learn to understand intra-squad communications,” said Muza. “I think if we can find out the key pathways of intra-squad communications from high performing squads we can translate the findings into teaching and instruction to take an average performing squad and turn them into a highly performing team. That would be a major outcome.”

The S2PRINT facility may be five years from an operational capability, but researchers at USARIEM are already looking at ways to enhance the Soldier and Squad.



This diagram provides an example of brain chemical spectra in specific regions of interest for a U.S. Army Research Institute of Environmental Medicine (USARIEM) study on the chemical bio-markers associated with mild Traumatic Brain Injury (TBI) and Post Traumatic Stress Disorder (PTSD).



USARIEM



Jet Lag

U.S. Army and UK Researchers study
jet lag remedy in Brunei

Could breathing reduced oxygen help warfighters recover from jet lag faster? In an effort to find out, U.S. Army and U.K. researchers recently conducted a [jet lag](#) study on British warfighters who traveled to the lush rainforests of [Brunei](#) to take the Operational Trackers

Instructors Course.

You don't have to be a warfighter to understand how exhausting and debilitating jet lag can be.

Anyone who has traveled across multiple time zones has experienced varying symptoms of jet lag, including tiredness, fatigue, sleep difficulties, head ache, irritability and gastrointestinal distress. These symptoms can slow down vacations, plague athletes and performers and cause traveling employees to lose valuable work hours.

Unlike civilians, warfighters have to face rapid deployments across multiple time zones, and upon landing, they have to be physically and cognitively ready to accomplish their mission. That's not easy to do when you feel like you are in a fog and can barely keep your eyes open.

"Warfighters who experience jet lag are almost like casualties because they are incapacitated cognitively and physically, compromising mission readiness," said Dr. Beth Beidleman, one of the study's key investigators. "It has been shown that jet lag can affect warfighters' cognitive abilities, such as reaction time, memory, executive function and concentration. It can also affect physical ability to the point where warfighters are unable to do their jobs."

Beidleman, a research physiologist from the U.S. Army Research Institute of Environmental Medicine, or USARIEM, added that this study could be one of the first of many in which USARIEM researchers will partner with the [U.K. Institute of Naval Medicine](#), or INM, and the [Walter Reed Army Institute of Research](#), or WRAIR, to study the effectiveness of the reduced oxygen treatment.

"The goal of this study is to see if this reduced oxygen treatment is more effective than other jet lag remedies, such as caffeine, melatonin or pharmaceuticals," Beidleman said. "By leveraging our connections with [Department of Defense](#) and international collaborators, including the sleep research team at WRAIR and Dr. Simon Delves' INM research team, who work with British warfighters deploying to Brunei, we have been able to collect valuable jet lag data on warfighters."

To understand how people get jet lag, you have to picture your body as a clock. According to Beidleman, your brain contains a master circadian clock that regulates other clocks in your body.

For about 24 hours every day, this circadian clock controls your bodily functions, temperature, heart rate, hormone levels and sleep. Particularly, it helps your body stay alert during the day and asleep during the night. Your circadian clock is entrained by the light-dark cycle, or when the sun rises and sets.

When you rapidly fly across several time zones, your circadian clock, which sends signals for sleep and wakefulness, does not match the local time of the place where you landed. This mismatch causes you to experience jet lag symptoms.

Your circadian clock and the light-dark cycle will gradually fall back in sync, but that takes time. Beidleman said the number of days it takes people's circadian clocks to recover from jet lag matches the number of hours between time zones. Brunei is

eight hours ahead of the U.K. So, according to Beidleman, it would take about eight days for the British warfighters' internal circadian clocks and the external light-dark cycle to synchronize. Beidleman also added that flying eastward (such as from the U.K. to Brunei) is harder than flying westward. That's because your body's circadian clock is slightly longer than 24 hours. So when you fly east, you are shortening your days, which goes against what your body wants to do.

Beidleman pointed out that while pharmaceuticals and caffeine may help you sleep or stay awake, they do not actually



"Warfighters who experience jet lag are almost like casualties because they are incapacitated cognitively and physically."

**Dr. Beth Beidleman, research physiologist,
USARIEM**

reset your circadian clock. But there is evidence that leads researchers to believe that reduced oxygen can.

“Reduced oxygen causes your body to produce a molecule called HIF1 α , properly known as Hypoxia Inducible Factor1-alpha,” Beidleman said. “When you are in a low-oxygen environment, such as at high altitude, your body produces this signal molecule, which binds to your DNA and regulates over one hundred genes that help your body adapt to those conditions.

“Animal studies indicate that this same molecule sends signals to ‘clock genes’ that help your body adjust when you experience jet lag. We want to see if giving warfighters this reduced oxygen treatment could also reset the circadian clock and accelerate jet lag recovery by triggering production of HIF1 α .”

This reduced (14 percent) oxygen is similar to the quality of air you would breathe if you were standing 10,000 feet above sea level. Administered for 2 hours, this level of oxygen is not severe enough to cause acute mountain sickness. It’s not only safe, but the technology to deliver reduced oxygen exists both commercially and within the military.

Before departing for Brunei, researchers assessed warfighters’ sleep, physical activity, jet lag symptoms, cognitive performance and internal circadian rhythms in the U.K. Researchers were able to monitor warfighters’ internal circadian rhythms by measuring their core body temperatures with physiological status monitoring systems. They also collected saliva samples in order to monitor warfighters’ melatonin and cortisol levels while recovering from the long-distance travel.

“When your circadian clock operates normally, your core body temperature falls when you sleep and rises when you wake,” Beidleman said. “Melatonin, a sleep aid, peaks when you are asleep, and cortisol, a stress hormone, peaks when you are awake. By monitoring those three things, we are able to assess how your circadian clock normally operates and how it operates when you experience jet lag.”

Upon landing, the researchers divided the warfighters into two groups. One group received a single dose of the reduced oxygen treatment for two hours in the morning, while the other group received a placebo. The researchers tracked how long it took each group to recover from jet lag by collecting and comparing the same data they gathered before flying to Brunei. The USARIEM, WRAIR and INM researchers are now

analyzing that data back in the lab.

“Jet lag is a problem anyone can face, but it becomes even more significant when warfighters’ lives are at stake,” Beidleman said. “Having this jet lag data is going to be extremely valuable for future research and development of jet lag interventions because it will enhance the capability of our warfighters to operate effectively across the spectrum of operations when the Army is in conflict.”

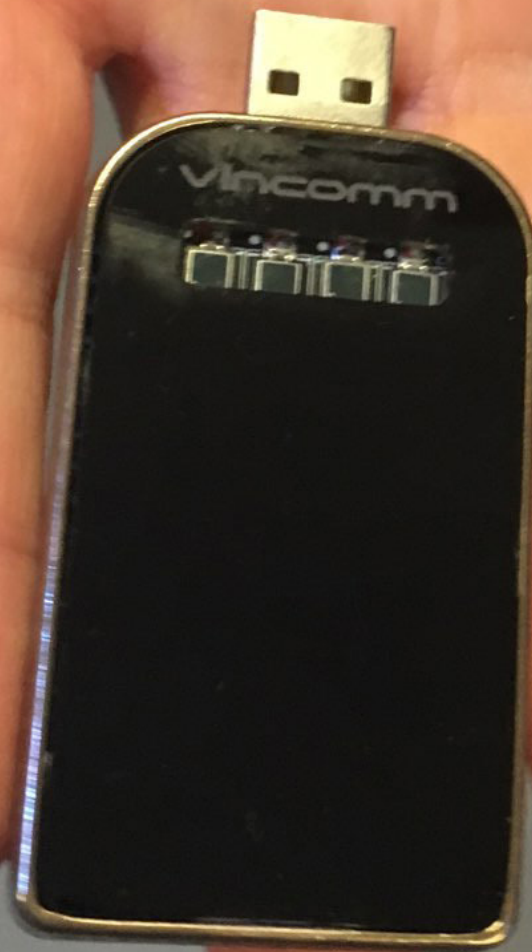


ABOVE: Dr. Simon Delves, left, from the U.K. Institute of Naval Medicine, and Dr. Mark Buller, middle, and Dr. Stephen Muza, both from the U.S. Army Research Institute of Environmental Medicine, stand in front of the Jungle Warfare Division building at the Brunei garrison, where they researched the effectiveness of using reduced oxygen as a jet lag treatment.

BELOW: Dr. Beth Beidleman, far middle, from the U.S. Army Research Institute of Environmental Medicine, administers a cognitive test on British warfighters deploying to Brunei.



Seeing the Light



RDECOM Soldier Center's Lifi Will Revolutionize IT on Mission Command Posts

When investigating new ways of transmitting and communicating information, sometimes it helps to see the light.

This is the idea behind a new technology being investigated by the Research, Development and Engineering Command Soldier Center's [Expeditionary Maneuver Support Directorate](#), along with its industry partner, [VLNComm](#) of Charlottesville, Va.

"It's a wireless system but instead of using radio frequencies it uses infrared light," said Frank Murphy, an engineer on EMSD's System Development and Engineering Team. "It is called LiFi, or light fidelity. It has many advantages."

Murphy has been investigating ways to utilize the emerging commercially available technology in a tactical environment as the physical characteristics appear to solve many issues facing wired and wireless field command post network systems.

The technology will be used in expeditionary mission commands. EMSD has come up with a concept for using LiFi within any enclosed mission command platform. LiFi eliminates the problems associated with the time-consuming task of running data lines in tactical operation centers and command posts. Moreover, since the technology does not use radio waves, it cannot be detected outside the confines of the mission command platform.

"The technology uses light waves to transmit and receive data between the servers and the user's computer," said Melvin Jee, the leader of EMSD's Command Post Platforms Branch. "As light cannot pass through walls, the enemy cannot detect the signal."

Murphy's investigation into the technology was inspired in part by Douglas Tamilio, the director of RDECOM Soldier Center, sharing an article about LiFi with RDECOM Soldier Center leadership. Murphy's investigation was also inspired by the vision of Claudia Quigley, the director of EMSD, and the RDECOM Soldier Center's ongoing partnership with the [82nd Airborne](#). The RDECOM Soldier Center and the 82nd Airborne have worked together extensively to find out ways to best meet the needs of warfighters.

Murphy explained that Quigley and other members of the directorate were working with the 82nd Airborne during a field exercise. During the exercise, Murphy noticed that the setup of IT cabling was proving to be a time-consuming and difficult task.

"They had a hard time setting up their IT network, which isn't usually an NSRDEC area, but we felt that we could address the need," said Murphy. "Tactical speed is absolutely essential for command post setup. LiFi is potentially faster, easier to install and doesn't have the security and exposure issues of other technologies. LiFi is un-hackable and untraceable when used within the command post shelter."

"It's virtually impossible to find the wavelength the data is being transmitted on, so if LiFi is detected, it's hard to intercept the data stream," said Jee.

EMSD is working with industry partners. Murphy explained that the commercially available technology was modified to fit a tactical

environment. The technology will affect how Soldiers communicate and, thus, carry out a mission.

"A command post of any size is an information processing center," said Murphy, "They take information from the field whether it comes in from a drone, Soldier/squad reports, other personnel in the area, satellite information, information from wheeled vehicles, or from behind the front lines -- all this information gets fed to the command post staff. They make a decision and then the information goes right back out. Lives depend on this communication."

"LiFi is part of NSRDEC's plan to provide a fully integrated platform with all of the necessary infrastructure in order for the warfighter to set up his command post," said Jee. "Just as a house is fully integrated with power, lights and network cabling -- allowing the homeowners to just concentrate on the furnishings -- NSRDEC plans to provide a fully functional house, allowing the warfighter and program managers to provide the 'furniture.'"

"In a command post, everyone has a job to do and they have their information chain," said Murphy.

"All these Soldiers need network access. With this, you simply shine the light over their head. After you hook the transceiver into the USB port, the transceiver will detect the signal and you will be hooked up to the IT network of your command post. It's as simple as that. We also hope to have it integrated into the wiring harness for the lighting so we can just roll up the tent and pack it away during a move."

Murphy emphasized that the NSRDEC project is really a team effort

and that several entities at the Natick Soldier Systems Center were important to the development of the technology. He also received "great guidance" from his branch chief, Melvin Jee, and from his team leader, Connie Miles-Patrick, System Development and Engineering Team, as well as the DREN team and people in the Natick Contracting Division.

He also credited the use of the [Base Camp Integration Lab](#), or BCIL, which was

created by and is expertly run by, Product Manager Force Sustainment Systems. A first-generation Li-Fi system prototype was recently set up at the BCIL and successfully demonstrated the capability to send and receive data using the BCIL's IT network.

"The people at the BCIL were incredible," said Murphy. "They gave us the perfect platform to showcase the tactical capabilities of this device. This project really showcases what Natick is all about. The Natick team dove in with both feet. Great things happen when people believe in each other and in an idea. We all want to help the Soldier."

Murphy believes that LiFi is truly the wave of the future.

"The demand for data inside the command post is only going to continue to increase," said Murphy, "So data quantity and quality need to improve to meet this demand. This technology can be hooked up permanently in rigid wall mission command platforms, but it can be used anywhere. We will be bringing world-class communications, security, speed and capability to the frontline Soldier. Information in the field is a weapon. This technology will help the warfighter make better decisions and be more effective and lethal in the field. This changes everything in the IT network system. It's a game changer."

"Information in the field is a weapon. This technology will help the warfighter make better decisions and be more effective and lethal in the field. This changes everything in the IT network system. It's a game changer."

Frank Murphy, Engineer

RDECOM Soldier Center Hosts Food Science & Industry Day



By Jane Benson, RDECOM Soldier Center/Natick, Mass.

The Research, Development and Engineering Command's Soldier Center's [Combat Feeding Directorate](#), or CFD, hosted Food Science & Industry Day on Oct. 25.

During the event, approximately 77 attendees from industry and academia learned about CFD's work in vacuum microwave drying, food safety, performance nutrition, tube foods, nutrient analysis, cutting-edge packaging, efforts to reduce the warfighter's load, and muscle recovery studies -- to name just a few areas.

"Food Science and Industry Day provides our stakeholders in industry, academia, and other government agencies with an invaluable opportunity to engage with us on our home turf," said Jeremy Whitsitt, CFD's deputy director. "The tours, demos, and informal conversations that take place throughout the day go a long way in galvanizing critical relationships so that warfighters' lives can be impacted through the work we do."

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 Food Science & Industry Day event gives Natick scientists the opportunity to follow up on their prior presentations of R&D work at the [Research & Development Associates for Military Food and Packaging Systems](#) meeting," said Dr. Tom Yang, a CFD senior food

technologist. "It provides industry people, as well as Soldiers, the opportunity to have one-on-one, in-depth discussions about our R&D work in order to fully grasp the core of the novel technologies being explored by CFD scientists. Attendees were given a chance to actively see, touch, and even taste the prototype products that scientists have developed. Many Q&As between the attendees, who had industry and military field experience, and CFD scientists were valuable to both parties in regards to the technology improvement, transition, and scale-up production. It's a win-win situation and helped to establish potential collaborations between CFD and industry."

"Events like these provide a great opportunity for the CFD project officers to educate our partners about the science and technology involved in military field feeding," said Patty Cariveau, CFD's executive assistant.

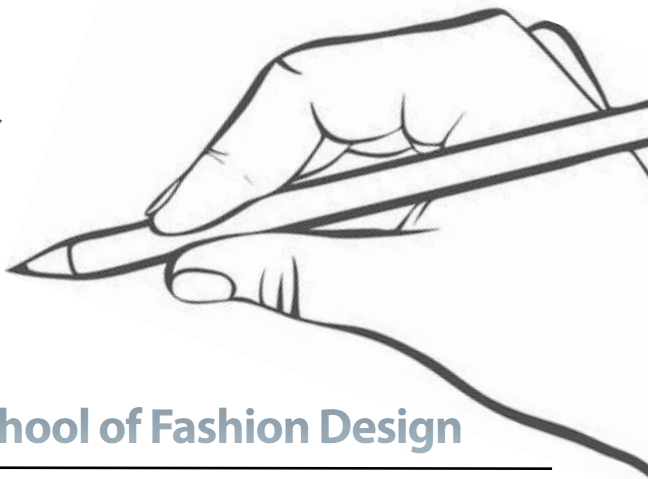
Visitors also learned about other capabilities outside of the CFD, including clothing design, pattern and prototypes; aerial delivery; and expeditionary maneuver support. They also toured the [Doriot Climatic Chambers](#) and the Additive Manufacturing Testing Lab.

"The event is important for building relationships with industry because it brings folks to the table to talk about requirements, technological advancements, and best practices," said Alfredo Lujan, a Soldier Center clothing designer. "In order to get a great product, you have to get a variety of perspectives to refine the form of the object and the logistics to manufacture the item."

At the heart of the event was CFD's dedication to fostering productive collaborations to support its ongoing commitment to the warfighter.

"The field feeding community is a team," said Whitsitt. "Each member of the team has a role to play. The FS&I day is a great way to communicate and demonstrate the role that we play. Just like the Red Sox, this team is amazing!"

Designing Excellence



RDECOM Soldier Center Hosts Boston's School of Fashion Design

By Jane Benson, RDECOM Soldier Center/Natick, Mass.

Collaboration is always in fashion at the RDECOM Soldier Center.

That was the idea behind the recent visit of Michelle Simpson, the executive director of the [School of Fashion Design in Boston](#), Mass. During her visit, Simpson received an overview of work being done by the Design, Pattern & Prototype Team in the RDECOM Soldier Center's [Soldier Protection and Survivability Directorate](#). She also received a tour of the [Navy Clothing and Textile Research Facility](#)'s design shop. Both the RDECOM Soldier Center and NCTRF are located at the Natick Soldier Systems Center.

During the visit, experts from RDECOM Soldier Center and NCTRF discussed with Simpson the role of their clothing designers, as well as potential opportunities for student tours and internships.

Some of the functions of clothing developed at the RDECOM Soldier Center include cold-weather protection, flame and thermal protection, ballistic protection, and chemical-biological protection – to name just a few. Designers need to have, or quickly learn, advanced skills in form, fit and function. The weight, fit and flexibility of these items also have to be designed so they do not hinder human performance.

“What we do is very technical,” said Carole Winterhalter, an RDECOM Soldier Center textile technologist who works in the Soldier Protection and Survivability Directorate. “It’s clothing systems’ engineering – so the individual components all have to work together and facilitate Soldier performance. Accurate fit, range of motion, and comfort all play an important role in the design of the items in order to provide optimum protection, mobility and agility on the battlefield, as in the case with body armor.”

Winterhalter believes that Simpson’s visit will help the school to provide students with information about career options that they may not be aware of, as well as create the potential opportunity for internships. Boston’s School of Fashion Design provides students with hands-on training that is hard to find elsewhere and is well-suited to the work being done by RDECOM Soldier Center and the NCTRF.

“The school really emphasizes hands-on execution,” said Winterhalter. “The classes are small so that students get a lot of hands-on



Jeff Sisto, RDECOM Soldier Center

instruction in traditional techniques, draping, sewing, and tailoring, as well as instruction in state-of-the-art, computer-aided design and pattern grading. The execution piece of design is essential for prototype development. These skills are no longer taught at a lot of schools but they are key for the work we do here. The School of Fashion Design really teaches students craftsmanship.”

“We really focus on students creating a high quality garment and that is a core value of our program,” said Simpson. “Technology changes, but the need to create something of high quality never changes. We focus on the execution of the garment.”

“The military needs creative designers to create innovative, high quality, high-tech garments to solve complex Soldier system problems,” said Winterhalter. “You need people not only skilled in conceptualizing, you need people that can transfer two-dimensional fabrics into three-dimensional products – which is a very exacting process. It’s great to have a local resource, whose principles and techniques complement ours.”

“It’s so important to hear from employers what they need and expect from graduates,” said Simpson. “I would love to see our students get more real-world experience.”



A section of Arlington National Cemetery, in Arlington, Va., shows a fraction of the 143,000 wreaths placed at the graves of fallen service members during Wreaths Across America, Dec. 14, 2013. Thousands of volunteers helped place over 143,000 wreaths at the graves of fallen service members as part of the annual Wreaths Across America event. (Department of Defense photo by Sebastian Sciotti Jr.)