

Cummings, Brian Patrick	AC	MAJ
Cummings, Steven Francis	AC	LTC
Davis, Christopher Patrick	AC	MAJ
Dimarco, Andrew John	AC	MAJ
Field, William Edgar	AC	MAJ
Fuller, William Scott	AC	MAJ
Guthridge, George Amos III	AC	MAJ
Haider, Ruth Ann	AC	MAJ
Hirschman, Keith Alan	AC	MAJ
Hitz, Stephen Ernest	AC	LTC
Hummel, Michael Lawrence	AC	LTC
Jacobs, Ronald Jr.	AC	LTC
Johnston, Robert Jon	AC	MAJ
Kilgallon, John	AC	LTC
Lane, Edward Joseph	AC	MAJ
Lemondes, John Jr.	AC	MAJ
Mansir, Martin Joseph	AC	LTC
Mason, Patrick Howard	AC	LTC
McVey, Wade Leonard	AC	MAJ
Morris, Jeffrey Scot	AC	LTC
Paul, Richard	AC	CIV
Payne, Thomas Lancaster	AC	LTC
Pincoski, Mark James	AC	MAJ
Pope, Joseph Kevin	AC	MAJ
Pulford, Scott Alan	AC	MAJ
Puthoff, Frederick Anthony	AC	MAJ
Rettie, Craig Lorimer	AC	MAJ
Rodgers, Kenneth Patrick	AC	LTC
Rush, Christian Edward	AC	MAJ
Sanders, William Alton	AC	LTC
Schafer, Joseph Hughes	AC	LTC
Shipe, Richard Thomas	AC	LTC
Steinbugl, Louis Frank	AC	LTC
Stoddard, Kevin Patrick	AC	MAJ
Switzer, Michael Robert	AC	LTC
Visconti, Albert John	AC	MAJ
Voigt, Jeffrey Ralph	AC	MAJ
Wason, John Duane	AC	LTC
Wells, Charles Andrew	AC	MAJ
Wiley, Danny Alford	AC	MAJ
Williams, Julian Roosevelt	AC	MAJ
Zarbo, Michael Eugene	AC	LTC



## News Briefs

### Pouches Change Drinking Practices for Soldiers

Pouches that can be resealed are changing the way troops drink. Drink pouches developed by the DOD Combat Feeding Directorate at the U.S. Army Soldier Systems Center in Natick, MA — in partnership with packaging companies Pactech in Rochester, NY, and Kapack in Minneapolis, MN — allow warfighters to pour water into a package holding a powder mix, shake and consume the beverage from the opening. If they want to save some for later, the plastic zipper seal holds it in.

Field data showed that almost half of the Soldiers are not consuming the Meal, Ready-to-Eat (MRE) beverage base mix because of the inconvenience of using and cleaning the canteen cup, said Lauren Milch, a physical scientist at Combat Feeding who managed package development. Pouring the mix into a canteen full of water is prohibited according to Army doctrine, so the packages are frequently thrown away unopened.

“The 12-ounce beverage pouch is the first project from the Individual Combat Ration Team’s Improved Packaging for Combat Rations program aimed at reducing packaging and increasing consumption,” explained Vicki Loveridge, a senior food technologist and project officer for improved packaging. “Including a resealable plastic bag was a partial solution, but the drink pouch takes care of everything by replacing the current dry mix package with a disposable drinking vessel,” she continued.

Originally intended to replace the MRE beverage base mix, the beverage pouches could be used for any of the military ration beverages or liquid foods, such as dairy shakes. For hot cappuccino or cocoa, the pouch was designed to fit into the flameless ration heater. “A rectangular drink pouch with a plastic zipper was evaluated in 1991, but it was shelved because the cost was considered ‘extravagant’ at 25 cents apiece,” Loveridge noted.

In the last 3 years, researchers developed prototype pouches with nonreclosable tear-off spouts, reclosable sports-type pull caps and twist-off caps that were studied along with the final package design. “We wanted something reusable, and



The Individual Combat Ration Team's new 12-ounce beverage pouch. (Photo courtesy of Soldier Systems Center.)

they didn't want or need a pouch to stand up, just a way to set it down," Loveridge explained. "The extra expense of a stand-up pouch was unnecessary, and it's a harder pouch to keep from cracking."

In the first twist-off cap pouch evaluation in 2001, 91 percent of the troops consumed their beverages, but the twist-off cap was too bulky and expensive. The latest prototype has a tear-off portion just above a resealable interlocking plastic zipper on top and slight hourglass shape for easy holding. "What's very different from what you see at the grocery store is the zipper with a multilaminar foil and 3-year shelf-life requirement," Loveridge said. "It's difficult to incorporate a zipper without compromising the foil."

With four studies already showing substantial percentage increases in the number of troops using the beverage pouch, another field test is scheduled to determine how warfighter performance improves with increased hydration.

An order of 7,000 beverage pouches has been placed for two Combat Feeding developmental products — the Remote Unit Self Heated Meal and First Strike Ration. An electrolyte-based drink powder beverage pouch was approved for four varieties of the MRE menu and could be fielded as soon as September 2004. "The drink pouch is something they really need, and it's designed to add minimal cost," Milch interjected. "We hope it takes off in popularity like the miniature bottles of Tabasco sauce and flameless ration heater."

For more information about the Soldier Systems Center, go to <http://www.natick.army.mil>.

## PM DWTS Connects Logisticians of 3ID With CSS VSAT

*Stephen Larsen*

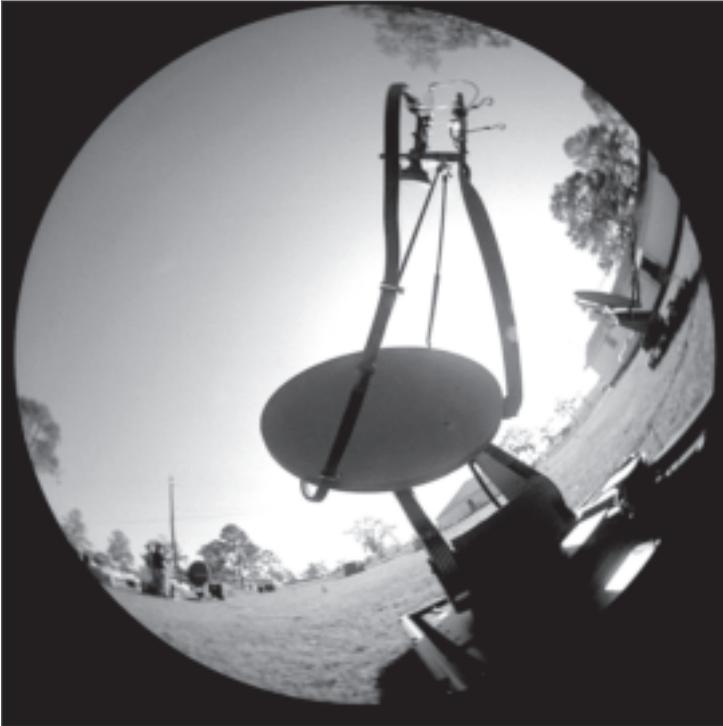
When the Army's Product Manager for Defense Wide Transmission Systems (PM DWTS) conducted training and fielded the Combat Service Support Very Small Aperture Terminal (CSS VSAT) satellite communications systems to the 3rd Infantry Division (3ID) Soldiers at Fort Stewart, GA, on May 5, 2004, it was more than just part of the Army G-4's initiative to "Connect the Logician."

"In Iraq, it becomes a force protection issue," said MAJ Angel Nieves, the CSS Automation Management Officer for 3ID. "We can take Soldiers off the road and minimize the time they're in harm's way."

"This product will save lives because logistics people won't have to make extended road trips for communications," said Rick Forrest, a former U.S. Marine Corps sergeant major, who headed the PM DWTS fielding team. "'Connect the Logician' is more than just a slogan — it's a lifesaver."

"This is a paradigm shift. CSS VSAT will fundamentally change the way support operations are executed in the Army," MAJ Michael Devine, PM DWTS, explained to 3ID Soldiers as he opened his initial training session. "It will give you the capability to reach back and touch information systems at home — right there where you stop. And it will reduce 'sneaker net' and make it safer," he added, referring to the practice in which Soldiers must save logistics data on a disk and then drive or walk the disk to another location.

"I came out of the tactical environment to help develop solutions," said Devine, telling the group about his deployment to Kosovo in 1999 as a Brigade Signal Officer with 7th Corps Support Group during *Task Force Hawk*. He related to them how, initially, he had no means to transmit logistics data until he received a satellite-based communications 'flyaway' package from PM DWTS, a proponent of Project Manager Defense Communications and Army Transmission Systems.



### Employing a Global Network

Devine showed the Soldiers how the CSS VSAT system provides Non-Classified Internet Protocol Router Network (NIPRnet) access via satellite to CSS users almost anywhere in the world through a global network that connects remote users to one of several hub stations around the world. After Devine's introduction, Forrest's fielding team conducted classroom instruction and then hands-on training, during which the Soldiers experienced firsthand how easy it is to assemble, operate and then disassemble the CSS VSAT system, which is packed in only five transit cases.

The CSS VSAT system includes built-in Global Positioning System (GPS) receivers, a motorized satellite antenna and a laptop computer that runs the CSS VSAT software program — enabling individuals with little or no satellite communications training to set up a satellite communications link and acquire NIPRnet access almost anywhere in the world. The system software determines current antenna location, determines the satellite to be used, configures the modem and automatically positions the antenna via GPS.

The system can be connected to either a local area network via a hub, router or switch, or to a wide area network via a wireless interface, such as the Combat Service Support Automated Information Systems Interface (CAISI), another PM DWTS product that allows the terminal operator to be displaced by up to 4 miles from the antenna, greatly increasing Soldier survivability.

### The Future is Now

“We’re not reinventing the wheel, we’re repackaging COTS [commercial-off-the-shelf equipment],” remarked Devine. This first fielding to the 3ID was with prototype terminals, to be followed by fielding of production terminals starting in August 2004, and to be completed by this September, thereby better supporting 3ID's transformation.

Nieves was impressed by how spiral, rapid development — with improvements to follow — was giving his Soldiers much-needed communications capability now. “In less than a year, we have the capability. It’s not a pipe dream somewhere, it’s in the hands of Soldiers,” Nieves emphasized.

The Army rapidly deployed a limited number of CSS VSAT systems during *Operation Iraqi Freedom*. The systems received high marks from BG Charles Fletcher Jr., the Army's Assistant Deputy Chief of Staff for Logistics (G-4), in his remarks at Industry Day, Program Executive Office for Enterprise Information Systems in Arlington, VA, on March 17.



Soldiers got hands-on training in assembling, operating and disassembling the CSS VSAT satellite communications systems when PM DWTS fielded the equipment to the 3ID at Fort Stewart. (U.S Army Photo by Bob Fowler.)



A contractor from the PM DWTS fielding team instructs 3ID Soldiers on the CSS VSAT System's numerous capabilities.

"VSAT was a lifesaver," said Fletcher. "And CAISI, we didn't realize how critical it would be until we got it set up and found we were no longer tied to all this wire we were stringing. The 4th ID used it extensively; the 101st Airborne Division used it extensively," he continued. "That's why we're pushing very hard now to make it the standard Army system. Our system centerpieces for the 'Connect the Logistician' initiative are VSAT, CAISI and satellite communications in a lighter version — the comms backbone to really empower logistics," Fletcher concluded.

"This is going to become our division standard for transmission of logistical data," said Nieves. Echoing his remarks, Forrest quipped, "This is 'tip of the spear' technology, the first of its kind to 'Connect to the Logistician.'"

Bill Flynn, a Logistics Assistance Representative with the U.S. Army Communications-Electronics Command, summed it up as he observed the training and CSS VSAT system hand-off to the 3ID. "This is historic," said Flynn. "Every after action report from Iraq cried out for this, noting a lack of communications for logistics. This solves it. Not just a little bit, but a lot."

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## PM DSCS-T Weathers 50-mph Winds to Install Satellite Terminals in Aleutians

*Stephen Larsen*

The Army's Product Management Office for Defense Satellite Communications Systems – Terminals (PMO DSCS-T) had to meet an accelerated schedule and brave 50-mph winds to provide a DSCS satellite communications terminal. This was necessary to meet a Missile Defense Agency (MDA) requirement on Shemya Island, AK, near the Aleutian Island's western end.

The MDA requires the terminals to provide long-haul voice, data and video communications to support their ground-based midcourse defense (GMD) mission as they develop, test and deploy the Ballistic Missile Defense System, which provides a layered defense against ballistic missiles of all ranges in all phases of flight.

MDA's original requirement was for PM DSCS-T to provide two 38-foot diameter AN/GSC-52 terminals at Eareckson Air Station on Shemya. The first terminal was to be operational June 1, 2004, and the second by Sept. 1, 2004. In addition, MDA required PM DSCS-T to provide another AN/GSC-52 terminal at Fort Greely, AK, also to be operational by Sept. 1, 2004. Then, MDA accelerated their testing schedule and required a long-haul connection by April 1, 2004.



When the MDA accelerated its testing schedule and required a long-haul connection by April 1, 2004, PM DSCS-T provided, as an alternative, a new "D" version of an AN/TSC-86 terminal — with dual 20-foot diameter AS-3199 antennas to transmit and receive two satellite areas simultaneously.

The Army's PM DSCS-T continues work in installing two 38-foot diameter AN/GSC-52 terminals at Eareckson Air Station on Shemya Island, near the western end of the Aleutian Islands.



“This new requirement did not allow for the transportation and installation time for the first AN/GSC-52 to be available,” said Dan Singleton, installation team leader for the project for PM DSCS-T, which is part of PM, Defense Communications and Army Transmission Systems (PM DCATS). Singleton added that PM DSCS-T provided, as an alternative, a new “D” version of an AN/TSC-86 terminal — with dual 20-foot diameter AS-3199 antennas to transmit and receive two satellite areas simultaneously.

Singleton said PM DSCS-T had the AN/TSC-86D components flown to Shemya and “expeditiously installed,” allowing successful transmission traffic for MDA’s April test mission.

“In the event of any delays in the installation schedule caused by transportation or weather problems, the AN/TSC-86D can also assume the mission of the second AN/GSC-52 at Shemya,” said Singleton, stressing that weather is a huge factor in this project.

### Land of the 50-mph Fog

Shemya is not exactly the garden spot of the world. While the temperature remains fairly constant throughout the year, averaging 39 F, the highest recorded wind speed in the state of Alaska, 139 mph, was recorded on Shemya. The wind speed drops below 30 mph only during June and July. Aircraft pilots refer to it as “the land of the 50 mile-per-hour fog” — something to which Singleton can personally attest.

“Five times, we tried to fly there, but couldn’t due to high winds or lack of visibility,” said Singleton. “Sometimes the airplane would go halfway and come back, sometimes it would go all the way but couldn’t land.”

Still, Singleton said, PM DSCS-T is using a combination of surface ships for larger items and aircraft for smaller items and will have the two AN/GSC-52s installed and passing transmission traffic by the required June 1 and September 1 dates.

The PM DCATS GMD team — led by Steve McClintock, Assistant PM GMD; Victor Ferrer, Terminal Acquisition

Team Leader; and Singleton — all give credit to the team supporting them. This team includes the U.S. Army Information Systems Engineering Command, which engineered the interconnect facility; Tobyhanna Army Depot, which fabricated the AN/TSC-86D; and Harris Corp., which is building the AN-GSC-52s and unique shelters for them.

The installation at Shemya is part of the Army's AN/GSC-52 Modernization Program, which started in 2000. Under the program, PM DSCS-T has modernized 30 of 65 terminals, including upgrading radio frequency equipment, antenna motors and control, monitor and alarm systems. The upgrades will extend the life of the terminals by approximately 15 years.

PM DCATS, located at Fort Monmouth, NJ, is part of the Program Executive Office Enterprise Information Systems, headquartered at Fort Belvoir, VA.

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### Lab Tackles Problem of Military Stress Fractures

Stress fractures caused by repetitive pounding activities of physical training take a toll on enough of the military population, specifically recruits, that a major research program, Bone Health and Medical Military Readiness, was started in 1997 to address the problem. Armed with the latest research tools acquired in the past year, the Bone Health and Metabolic Laboratory at the U.S. Army Research Institute of Environmental Medicine (USARIEM), located at the U.S. Army Soldier Systems Center in Natick, MA, is ready to examine its piece of the puzzle.

“The program’s goal is to ultimately eliminate stress fractures,” said MAJ Rachel Evans, a research physical therapist and Director of Bone Health Research. “Stress-fracture cases have been reported since the late 1800s and today are one of the most common and potentially debilitating overuse injuries seen in military recruits, particularly women.”

Stress fractures are overuse injuries that occur when muscles transfer the overload of strain to the bone, most commonly

in the lower leg, and cause a tiny crack. “They’re tricky to see on an X-ray and disrupt physical training, sidelining troops while costing DOD as much as \$100 million annually in medical costs and lost duty time,” explained Evans.

The program is funded in part by Congress through the advocacy efforts of both the National Coalition for Osteoporosis and Related Bone Diseases and the American Society for Bone and Mineral Research, and managed by USARIEM. Overall, the research is multifaceted, examining factors such as gait mechanics, impact attenuation and genetics. USARIEM research physiologists are studying specifically how exercise and nutrition influence stress fractures.

“A systematic approach to the study of stress fracture was needed but hadn’t been done,” Evans remarked. “With this focused effort, and recent breakthroughs in technology, we’re hoping to come up with science-based strategies to identify individuals at risk for stress fracture, and then prevent their occurrence through innovative training interventions.”

COL Karl Friedl, USARIEM Commander, earlier in his career led a bone health study at Fort Lewis, WA, and said the understanding of bone physiology is significantly advancing and has widespread ramifications on health. “There has been no program in DOD that paid attention to bone health in the past,” Friedl continued. “Anything we can provide has the potential to save millions of dollars and enhance readiness through reduction in lost duty time, attrition from the military and medical cost-avoidance. We want to avoid occupationally induced stress fractures now, and osteoporosis and osteoarthritis later.”

Noninvasive methods of studying bone health at USARIEM started in the early 1990s with the first Dual Energy X-ray Absorptiometry (DEXA) machine to measure bone density. Still in the lab, the older DEXA machines have been superseded by the superior software and scanning times in a new Prodigy fanbeam bone densitometer, according to Robert Mello, a research physiologist and the Lab Director.

The Prodigy scans total body bone density in 5-inch instead of 1-inch increments, increasing precision and cutting scan time from 30 minutes to 6 minutes. Improved software provides a clearer picture of total body composition and bone mineral density.

“We can look at regional areas of interest, such as sections of the tibia, forearm or hip,” Mello said. “Before you had to scan an entire area — just to have this capability is a major

advance.” The Prodigy also allows researchers to scan small animals to study bone health.

While the Prodigy gives a front-to-back, 2-dimensional view, the peripheral quantitative computerized tomography machine allows researchers to analyze 3-D cross sections of spongy and outer bone. It’s designed to reconstruct a volumetric model of bone, from which bone density and, for the first time, bone geometry, can be determined. “We can now look at cross-sectional images where stress fractures are most common,” Evans said. “There’s also software to quantify muscle mass at that point.”

Another scanning instrument is the hand-held ultrasound bone sonometer, which examines bone quality by measuring the speed of sound of ultrasonic waves axially transmitted along the bone. The results can then be used as an aid in bone strength assessment. “We can identify bones that may be at risk,” Mello said. “The big thing is the portability so that it can easily be taken to the field.”

To help understand the relationship between muscle mass and bone strength, the lab purchased an isokinetic dynamometer to assess muscle strength and endurance for the major joints of the body, except the neck.

“Although research is focused on preventing stress fractures in the military, the information learned can apply to any population of physically active people to help prevent stress fractures,” stated Evans.

### Upcoming Studies

Four studies by USARIEM are planned in the next year to try to answer how muscle structure and function relates to bone quality. Researchers will examine whether differences in bone density and geometry exist between the right and left tibia, and then look at how that changes through physical training. One objective is to find out the proper training balance, to see where bone strengthening ends and weakening begins.

A third study will look at the effect of three 12-week exercise programs — aerobic training, strength training and a combination of the two — against a sedentary control group. “We want to look at what factors might build up bone,” Evans continued. “Maybe we can put recruits on a program before they go to basic training to ward off potential problems.”

Building on what they’ve learned in the experimental study, the plan is to transfer that information to actual basic

combat training units to examine what risk factors, such as slender bones or low bone density, predispose trainees to injury. Evans and Friedl gave examples of expected outcomes from current projects that USARIEM is managing. Soldiers with high risk for fracture may simply stand on a platform for 15-minute daily treatments of low-frequency vibration to stimulate bone development. Recruits might benefit from specific guidance on physical training, and calcium and vitamin D supplementation resulting from studies now being conducted with Navy basic trainees.

Various studies at USARIEM could lead to new recommendations on zinc and protein content in operational rations to optimize bone health. Even basic biology studies, such as one that demonstrated a refractory period in response of bone cells after mechanical stimulation, may affect military training with science-based advice to break up physical training into more than one session per day to maximize the benefit to bone health.

For more information about the Soldier Systems Center or USARIEM, go to <http://www.natick.army.mil> and <http://www.usariem.army.mil>.



Assistant Secretary of the Army for Acquisition, Logistics and Technology and the Army Acquisition Executive (AAE) Claude M. Bolton Jr. hosts the Acquisition Senior Leaders' Conference, an invitation-only conference, each year. This year's conference was held Aug. 9-12, 2004, in Louisville and Fort Knox, KY.

The 2004 conference theme was Army Acquisition Corps — *Supporting the Fight, Improving the Force and Building the Future*. Conference focus areas included Army transformation, the criticality of interacting with the U.S. Army Armor Center and School to prepare mounted force warriors for full-spectrum combat operation and the Army Acquisition Corps commitment to provide soldiers with systems critical to decisive victory now and in the future.