

# Nanotechnology brings capability to the Warfighter

By Tracy K. Robillard  
Picatinny Public Affairs

PICATINNY ARSENAL, N.J. -- To the ordinary person, it may seem like nothing more than a simple powder. To engineers here at the Armament Research, Development and Engineering Center (ARDEC), this tiny substance has the potential to do some extraordinary things for our Warfighters.

The "nano" powders developed by ARDEC's nanotechnology team can have practical applications in nearly every part of the Soldier's inventory, from the tanks they drive, to the armor they wear, to the ammunitions they fire.

"Nano-powders produced by the ARDEC team exhibit unique chemical,

**Samples (bottom left)** Darold Martin, senior engineer, loads a sample into a thermal analyzer at the Nanotechnology Lab.

physical and mechanical properties that far exceed the capabilities of conventional materials," said Joseph Paras, materials engineer.

These improved nano-properties include reduced weight, higher strength, increased durability, increased reactivity, and the ability to vary or "tune" certain properties. These properties allow for great potential when it comes to reducing the weight of Soldier equipment and improving lethality and survivability.

This cutting-edge nanotechnology has been under way at ARDEC for the last 10 years, and so far has shown significant progress. In fact, ARDEC's nanotechnology lab is the largest facil-

ity in North America to produce nanoscale powders and materials.

### *Nano Warfighter Applications*

Nano-powders can be heated and molded to a variety of shapes and sizes, such as coils or plates, which can be applied to a wide range of products like novel explosives, warheads and countermeasure flares.

One example is using nano-materials to develop novel lightweight composites that could serve as alternatives to traditional steel.

"The Army uses a lot of steel--and steel is heavy," Paras said. "There is a big push across the Army and the Department of Defense to find a lighter alternative. We're using nanotechnology to combine aluminum and other materials to enhance the strength, so that it can compete with the performance of steel."

One such nano-composite material is one-third the weight of steel, which can have a monumental impact if applied to the Army's tanks and other combat vehicles.

"It would greatly reduce fuel costs, as well as ease the burden for logistics. There are many varieties of steel, so we'd have to do the same kind of tailoring for this material," Paras said.

Nano-materials can also have practical applications in the Soldier's armor, as strong bonds formed by the nano-particles can greatly increase



U.S. Army photo by Todd Mozes

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## Stigma for seeking mental health help decreasing

By Alexandra Hemmerly-Brown  
Army News Service

WASHINGTON -- Openly discussing the damage stigma does to Soldiers in need of mental health services is a step toward eradicating the problem, said an Army suicide-prevention leader mid-October.

Stigma and fear of career repercussions are top reasons Soldiers are reluctant to seek mental health assistance, said Col. Chris Philbrick, deputy director of the Army Health Promotion, Risk Reduction Council and Task Force.

"The issue of stigma in the Army is real," Philbrick said and explained that while the culture of the Army seems to be changing in regards to mental health, the 'tough guy' mentality has not disappeared.

Philbrick said that today, Soldiers are expected to deal with traumatic events and "drive on." And while that attitude is still necessary to accomplish missions, Philbrick explained that leaders now recognize that some Soldiers need to get help in order to successfully return to their units.

He also said that the resilience and anti-suicide educational products being refined each year are making a difference.

"We're no longer providing you with Power Point slides and saying, 'have a nice day,'" he said of the Army's current push to promote suicide prevention. "It's not effective."

Philbrick said new realistic training videos, resilience classes for basic trainees, and endorsement by senior Army leadership to eradicate the problem have heightened suicide awareness for all Soldiers.

He also encouraged Soldiers to continue seeking help up to the next level of their chain of command until they get the assistance they need. Many times, he said, Soldiers or their Families say they didn't know where to turn when in need of mental health services.

"I believe that if you get turned away at the first door,

go knock at the next one, or if need be, kick it down," he said, encouraging Soldiers to continue seeking help. He noted that Soldiers and their Family members have many places to turn when in distress: a supervisor, commander, chaplain, behavioral health services or a hospital.

Philbrick stressed the importance of first-line supervisors, and explained that they play a major role in spotting changes in Soldiers' behavior.

With the Army's suicide rate reaching about 21 Soldiers per 100,000, the ratio is slightly higher than the national average. However, Philbrick said he believes the concentration on suicide prevention and open discourse among senior Army leaders on the topic will move to decrease both suicide rates and stigma.

"We believe that the Army's adjustments will continue to move the Army forward," he said.

**The Joint Munitions and Lethality Life Cycle Management Command *Bullet'n*** is an authorized publication for members of the Department of Defense. Contents of *The Bullet'n* are unofficial and are not necessarily the views of, or endorsed by, the Joint Munitions & Lethality Life Cycle Management Command, the Department of the Army, the Department of Defense, or any other U.S. government agency.

The editorial content of *The Bullet'n* is the responsibility of the Public Affairs Office at Joint Munitions Command headquarters.

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# New director to lead Army's "Center for Lethality"

Courtesy of  
Picatinny Arsenal

PICATINNY ARSENAL, N.J. - The Picatinny community welcomes Dr. Gerardo Melendez, who recently started his new role here as the highest civilian leader for one of the U.S. Army's top research and development centers for weapons and ammunitions.

As director of the Armament Research, Development and Engineering Center, ARDEC, headquartered at Picatinny, Melendez plans to lead his team of 3,600-plus scientists, engineers and support staff toward a successful future in providing the best weapon technologies to U.S. troops.

As one of the largest employers in Northern New Jersey, ARDEC develops nearly 90 percent of the weaponry and ammunition used by our warfighters. Known as the Army's "Center for Lethality," ARDEC also has satellite offices and facilities in Illinois, Maryland, and New York.

"I'm excited to join the Picatinny team - the sense of community here is the strongest I've seen," Melendez said. "We have great potential here at ARDEC to capitalize on the strong relationships with the other organizations and commands at Picatinny, all who play a key role in bringing new tech-




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**New Director** Through experience and role models, Dr. Gerardo Melendez learned to balance "mission first, people always." Melendez is the highest civilian leader for one of the U.S. Army's top research and development centers for weapons and ammunitions: Armament Research, Development and Engineering Center, ARDEC.

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nologies to the field that will enhance Soldiers' lethality and survivability."

With a career in government research and development since 1983, Melendez holds a master's degree in electrical engineering from Brown University and a Ph.D. from Drexel University, Philadelphia, Pa.

Before joining ARDEC, he worked at the Army's Communications Electronics Research, Development and Engineering Center, CERDEC, at Fort Monmouth, N.J., where he specialized in bringing advanced communications and computer technologies to the battlefield.

His years of experience and

multiple duties at CERDEC yielded outstanding results for the troops in combat, which he aspires to carry over in his upcoming years at ARDEC.

"The capabilities we've fielded and enabled the fielding of - those are always great accomplishments, especially when you get feedback," he said. "It's rewarding to know that whatever you did saved the life of a Soldier or made the life of a Soldier more bearable."

Melendez comes to Picatinny after the retirement of former ARDEC Director Joseph Lannon, who led the organization since 2005.

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multi-hit capability.

They also have applications in a variety of energetics, or explosives.

"By making aluminum on the nano-scale, we change/increase the available surface area so it can potentially burn spontaneously as soon as it hits the air, making it more reactive." Paras said. "When using a nano-scale energetic, it's possible to increase the yield over traditional explosives."

One success story in using nano-technology in energetics is a nano-iron material that is now being explored as an alternate source for use in the M211 flares.

The closest of these nano-products to be fielded is "Green Primer"--which is essentially a lead-free primer for ammunition.

"The primer is what sets off the gun powder--and though the Army has removed lead from the bullets themselves, there's still some lead azide in the primer," said Darold Martin, senior engineer at the Particulate Materials Lab. "The nano-version of this substance is much safer and much less toxic. It could be used in a range of munitions."

### *The Nano Break-down*

"When we look at materials on a nano level, we're looking at ultrafine particles that are on the order of one-billionth of a meter in diameter," Paras said. "It gives us tremendous ability to change the way these materials normally work, due to the extraordinary phenomena that happen when you go to the nano scale."

Nano-structured powders are created when a combination of materials are continuously crushed using a high-energy grinding process, called milling.

"We're basically taking conventional substances like aluminum or magnesium, and we're continuously breaking them up in the milling machine and reshaping them into a very fine, lamellar nano-structure," Paras said. "By

reducing the grain size, you can greatly enhance the properties of the metal."

In addition to making nano-composite powders, the team can also create nano-structures from scratch, using an advanced vaporizing and cooling process.

"We take raw aluminum and melt it using extremely high-temperature plasma, so it turns into its vapor state," Paras said. "Then we "quench" it--which means we cool it down very rapidly to condense out very tiny particles. It's similar to water condensing on the outside of a cool glass, except we cool so fast, the vapor instantaneously becomes a solid. Then, we can extract the nano-particles and harvest them for use in a wide array of applications."

### *Why Nano, Why Now?*

Many consider nanotechnology to be a relatively new field, emerging in the scientific community about twenty years ago. However, the early origins of the science stem back to medieval times, when artisans crushed clay particles to create a glittery glaze on their pottery.

"The theories behind nano-science have always been there, but being able to make the materials and put them into a useful configuration--that kind of technology and equipment hasn't been there until recently," Martin said. "We take theory from universities or small businesses that do the research, and we transition them into promising technologies."

The ARDEC is at the forefront of nanotechnology, even within private industry. In fact, Martin noted that many industry partners provide funding to ARDEC to

continue research in the nano field.

As with any new technology, keeping the product at a reasonable cost is always a challenge.

"It's such a new technology, so we can't bring the manufacturing costs down yet. We have to re-tool our facilities to be able to mass produce a lot of this stuff," Martin said.

"If it was easy, it would be done already," he added. "It's sort of like baking, in that there is an art to it, you can't always tell why certain things work exactly right together, but when they do, you know it."

So while ARDEC scientists continue to develop new nano-powders and materials, while finding cost-effective ways to carry them forward, the long-term goal is to bring more capability to the warfighter.

"We're working on emerging technology that is basically trying to enhance the lethality in the hand of the Soldier and the survivability of the Soldier," said Deepak Kapoor, nano-materials team lead.

"If you can provide him better performing materials that can help him live longer, survive longer, and kill longer--that is what any new technology is trying to capture right now."

**In the Lab** Dave Dekmar programs a vacuum furnace in the Particulate Materials Lab.

U.S. Army photo by Todd Mozes





**Honoring heroes** Guests listen during the POW and MIA ceremony hosted by Crane Naval Support, Navy Surface and the Army Ammunition Activity.

U.S. Army photo by Tom Peske

# Crane honors war heroes with ceremony

## Courtesy of Crane AAA Public Affairs

CRANE, Ind. – Crane Army Ammunition Activity joined with Naval Support Activity Crane, and Crane Division, Naval Surface Warfare Center, in hosting the annual Prisoner of War/Missing in Action Recognition Day Ceremony on Sept. 16.

During the ceremony, held indoors due to a threat of thunderstorms, former POWs and families of deceased former POWs, former Vietnam POW Air Force Maj. Gen. (Ret) Edward J. Mechenbier served as the ceremony's guest speaker.

He spoke to the audience about the conflicts of both today, the past and the importance of remembering and honoring their sacrifices.

"We are lucky enough and blessed enough to have been born in the USA, but

sometimes that can get taken away," he told an audience made up of young and old, military and civilian. "Today we remain united in our vow to never forget."

Mechenbier, was shot down on his 113<sup>th</sup> combat mission, his 80<sup>th</sup> over North Vietnam, and was a Prisoner of War for nearly six years.

On his return to the U.S., he was awarded the Silver Star with the first Oak Leaf Cluster for his resistance to demands by the North Vietnamese for information, confessions and propaganda materiel.

He received the Bronze Star medal with "V" device for his efforts to conduct himself strictly in accordance with the Code of Conduct while POW.

During his speech, CAAA Commander Col. Linwood Clark spoke about Ameri-

ca's commitment to finding those who are missing in action or a prisoner of war and returning them home.

"Secretary of Defense Robert Gates has said that no nation in history has gone to such care, expense, or effort to locate its fallen. U.S. government dive-and-salvage teams, forensic scientists, and investigators scour the globe to seek a full accounting.

"Every year new remains are found and identified by these teams from past conflicts. We do it mindful of what we owe POW/MIAs and their loved ones. And we do it in affirmation of our strongest belief as a people: that every life is precious," Clark said.

NSWC Commander Capt. Charles LaSota also

emphasized the importance of not forgetting the sacrifices that have been made in his remarks to the audience.

He said, "We must never forget Americans from all wars that have been stripped of their dignity and freedoms. We must never forget their treatment at the hands of their captors, the physical and mental abuse that they suffered in our defense. We pray for those who are still missing in action and we feel the despair of their families."

Employees, veterans and service members also took part in the ceremony. Indiana University Army and Air Force ROTC provided the color guard for the ceremony. Army and Navy employees laid a wreath at

"Crane" continued on page 9

# Hawthorne launches effort to reintegrate local fish

By Linda Loebach  
JMC Public Affairs

HAWTHORNE, Nev. -- There's a new kid in town at Rose Creek Reservoir at Hawthorne Army Depot, in Hawthorne, Nev. A fish called the Lahontan tui chub (luh hahn tin toowee) has taken up residence.

Back in 2006, a group of biologists developed a cooperative, extensive monitoring effort of the ecosystem of Nevada's Walker Lake. The lake's ecosystem was threatened due to decreasing water volume.

At about the same time, Karie Wright, fisheries biologist with the Nevada Department of Wildlife, began testing endangered tui chub populations to determine any genetic uniqueness.

"Out of several tui chub populations tested, the Walker Lake Lahontan tui chub had the greatest genetic diversity, or in layman's

terms, it was very healthy, and was the best candidate for preservation," said Wright.

By 2008, Wright had targeted the tui chub of Walker Lake for the purpose of establishing a refuge population for this native fish.

But upstream water diversions continued to decrease Walker Lake's volume.

When lake volume decreases, total dissolved solids' concentration increases. TDS is directly related to the purity of water and affects everything that consumes, lives in or uses water.

The TDS issue at Walker Lake resulted in an increase in saline, or salt levels, which was leading to increasingly toxic living conditions for the tui chub.

The exact level of toxicity at Walker Lake that would kill the tui chub



**Young Tui Chub** The Nevada Department of Wildlife regularly captures images of Lahontan tui chub young at Rose Creek Reservoir.

population was not known. So the bottom line was to find a refuge very soon.

The search for a refuge began in 2008. Wright was exhausting all of her prospects when her boss asked about Rose Creek Reservoir at Hawthorne Army Depot. Wright contacted John Peterson, Natural Resources, at Hawthorne. "Immediately, John was interested in what we were doing and in helping our cause," Wright stated. "He truly has an interest in helping fish and wildlife in the state."

Less than three miles west of Walker Lake, Rose Creek Reservoir covered three to four acres, stored approximately 50 acres per foot of water, and was about

40 feet deep in the center.

The water clarity was high, there was little underwater vegetation, no vegetation on its banks, and minimal sedimentation. No other fish species lived in Rose Creek Reservoir, and testing showed an abundance of food available for the tui chub including various phytoplankton and zooplankton (microscopic plants and animals). The only potential predators would be fish-eating birds and bears.

In light of the plethora of positive factors, Rose Creek Reservoir was chosen as the refuge for the Lahontan tui chub.

In October 2009, 176 tui chub from Walker Lake were

"Tui chub" continued on page 7



Photo courtesy of the Nevada Department of Wildlife



Photo courtesy of the Nevada Department of Wildlife

**Page 6** Capturing adult tui chub at Rose Creek Reservoir.

**Left** Pictured is Rose Creek Reservoir on Hawthorne Army Depot, Hawthorne, Nev.

successfully transplanted into Rose Creek Reservoir. For identification purposes, all of these fish were given a right ventral fin clip. The initial mortality rate of the chub acclimating to the fresh water appeared to be about ten to fifteen percent.

But by the summer of 2010, no adult chub or offspring was observed. Wright said, "They were not observed. That doesn't mean they are not there. I marked them, so follow-up netting should confirm this. Or they could have died. They were moved after spawning and a hot summer in the bad conditions at the lake. They were mostly in poor condition and may not have survived the acclimation to the fresh water."

On June 23, 2010, 88 actively-spawning tui chub were netted from Walker Lake, and given a left ventral clip. The object was to plant pregnant chub so

that even if they could not survive the fresh water acclimation, they might spawn before dying and the offspring would survive in the fresh water.

They were placed in a tank of a 50/50 mixture of fresh/lake water and held overnight for acclimation to fresh water, like that of Rose Creek Reservoir. But ammonia that had accumulated on the bottom of the fish tank was dispersed into the water column during aeration and created a fatal mixture that killed all of the fish.

A week later, on 1 July 2010, 170 tui chub were netted at Walker Lake, given a left ventral clip, and because of time constraints, were directly transplanted to Rose Creek Reservoir without acclimation.

On July 20, a trap net was set for surviving adults, and on July 22, eight adults with a left ventral fin clip

were captured in the net. All appeared to be in good health and were given a partial clip to their anal fin to identify them. A multitude of young tui chub were observed along the shoreline of Rose Creek Reservoir. The new kids had most definitely arrived!

What is expected to happen to the Lahontan tui chub at Rose Creek Reservoir between now and the spring of 2011? "Hopefully, they have a happy winter in the refuge," said Wright. "It does not freeze, so they should be OK. In the spring, I will augment the population with more Walker Lake chub, if they are still there."

Also in the spring, Wright will use a tank of Walker Lake water to conduct an experiment on re-acclimating adult chub. "Even though the fish went to the fresh water OK, they may not go back to the salty

water OK. But the experiment may show a TDS level that we should shoot for when reintroducing the chub," said Wright.

It is necessary to continue augmentation of the chub at Rose Creek Reservoir with adult Walker Lake chub so that the genetic ability to acclimate to salty water is not lost. If Walker Lake has a great flood season, it could gain 20 feet, and the salinity would greatly decrease. Then some of the refuge chub could possibly be reintroduced to Walker Lake.

Even if the saline levels of Walker Lake decrease after a positive flood season, "...without a consistent water source for the lake, it is still important to have this population of tui chub secured at Rose Creek Reservoir," said Wright. "We are very optimistic, after fostering such great working relationships with Hawthorne Army Depot, that the tui chub refuge will be a great source for a dying lake population of fish."

It's obvious the "new kids" will play a vital role in propagating a refuge population of the native Lahontan tui chub in Rose Creek Reservoir at Hawthorne Army Depot. <sup>J</sup><sub>M</sub><sub>C</sub>

# JMC employee deploys, sees impact of mission first hand



Photo courtesy of Heather Wiley

**A Team Effort** Heather Wiley served as senior ammunition manager during her deployment; she's pictured here with co-workers. While at Camp Arifjan, Kuwait, Wiley coordinated the movement of ammunition stocks and equipment.

**By Darryl Howlett**  
**JMC Public Affairs**

ROCK ISLAND ARSENAL, Ill. – To Heather Wiley, being part of the largest logistical operation since World War II is overwhelming, to say the least.

That's the reaction the Davenport, Iowa, resident had after reflecting on her recent deployment to Southwest Asia. Wiley, who works in the Joint Munitions Command headquarters as a logistics management specialist, deployed to Camp Arifjan, Kuwait from December 2009 to June 2010.

"It was my first time deployed," she said.

Wiley is a Bettendorf, Iowa na-

tive and 2000 Bettendorf High School graduate. After high school, she went to the University of Iowa where she earned a bachelor's degree in business administration in 2004. She started working for the federal government in 2005.

Wiley was part of a 13-member team that coordinated moving ammunition stocks and equipment from Iraq and from the U.S. to Afghanistan as part of the combat surge.

While over there, Wiley learned she would be working for a familiar face, Maj. Gen. James E. Rogers, former commanding general of JMC, who while in Southwest Asia was the commanding general of the 1<sup>st</sup> Sustainment Command (Theater).

"I had to brief (Rogers) once a week," she said. "It was nice to be working with him again."

"My position description was a senior ammunition manager. I focused mainly on the ammo needs of the Southwest Asia theater of operations. I touched just about anything that needed to be analyzed."

Wiley wanted to make sure the ammunition got to its intended destination.

"I managed the surge of Soldiers that were going into Afghanistan. I managed prepositioning all of that ammunition. That was a new mission that was coming in, and the ammunition needed to be prepositioned so that when the Soldiers got there, there was no question as to whether or not they had what they needed or how much they needed," she said.

"There were a lot of foreign sales that I helped coordinate getting to the right customers and that meant dealing with the embassies and different diplomats within Afghanistan, Iraq, and other surrounding countries, not just those two. I worked a lot with the State Department and the Navy to make sure ammo they have purchased from the Army (as a single manager) got to their accounts and made sure it was the right kind and the right years that they had purchased, things along those lines."

Due to her outstanding service while deployed, Wiley received the Superior Civilian Service Award from Rogers, the Secretary of Defense Medal for the Global War on Terrorism and a Commander's Award for Civilian Service from former JMC Commanding General, Brig. Gen. Larry Wyche.

And how did Wiley handle returning back to her "normal" eight hour a

*"Deploy" continued on page 14*



Maj. Scott Fluegel

# JMC welcomes command chaplain

By Linda Loebach  
JMC Public Affairs

ROCK ISLAND ARSENAL, Ill.--Joint Munitions Command bade welcome to a new chaplain in July when Chaplain Maj. Scott Fluegel took over the reins at Rock Island Arsenal.

At a recent meeting, Fluegel stated, "I came from the island of Oahu to the great island of Rock Island. I prefer Rock Island." Many here, who consider Hawaii a paradise, were naturally skeptical. To dispel any doubts about his statement, Fluegel later shared, "In Oahu there are only two seasons- summer and rainy. I grew up in Minnesota and I'll enjoy the four seasons here."

"The role of an Army chaplain

is to nurture the living, care for the wounded, and honor the dead," Fluegel related as his work's philosophy.

Specifically, his role at RIA is Chaplain for JMC and the 15 JMC installations, providing religious support and counseling.

Fluegel envisions two of his main duties at JMC will be to provide the opportunity for Soldiers and civilians to practice their faiths, and to perform religious services according to the dictates of his faith (Baptist). He also plans to work on suicide prevention awareness and on visibility in the community. "I want to get the 'green suit' out there," Fluegel said.

Fluegel anticipates many other duties at JMC. As a trained counselor, Fluegel expects to help people with their personal issues. He will coordinate services with the Employee Assistance Program and with the Equal

Employment Opportunity office. As the chaplain for JMC, he hopes to visit each of JMC's installations within the next year. And the new chaplain said, "I expect to advise commanders if they seek out my advice," and added half-way kidding, "or even if they don't."

In his 33 years in the service, Fluegel served in several Guard units, has been a chaplain since 1995, and has served on active duty since 1998.

In his spare time, Fluegel is a nature photographer hoping to capture the Quad Cities' eagles, falcons and hawks on film. He is a trained commercial artist and enjoys pen and ink drawing. Fluegel cultivated orchids and other tropical plants in his yard in Oahu and anticipates growing a variety of plants in Illinois.

Fluegel foresees a busy, productive tour at JMC on the island of Rock Island. <sup>JM</sup><sub>C</sub>

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the POW Monument and placed a yellow ribbon on the POW Tree.

A seven-man firing party from a local Veterans of Foreign Wars post fired three volleys and Taps played to honor those who are missing and who died in action. The Bloomfield High School choir group, Center Stage, performed during the ceremony.

Each of the former POWs was presented with an appreciation gift for their sacrifices to the country. Following the ceremony, Crane honored the guests at a luncheon where many of the veterans provided testimonials of their experiences as POWs. <sup>JM</sup><sub>C</sub>

**A Salute** A seven-man firing party fired three volleys in honor of the event.



*Spotlight on*

# Lean Six Sigma

## Turning scrap metal into cash for demil projects

**By Darryl Howlett**  
**JMC Public Affairs**

ROCK ISLAND ARSENAL, Ill. – A three million dollar increase sales in less than a two-year period is nothing to sneeze at. And for Army leaders, it's something that definitely gets your attention.

The increase in sales came from a Lean Six Sigma green belt project led by Rich Fuller, Joint Munitions Command's demil office.

The project was launched to improve the process of selling scrap material recovered from conventional ammunition demilitarization projects at JMC installations.

The project's goal was to increase frequency of scrap sales and improve the method in determining the value of recovered materials.

"We went from three sales in six months (at the installations) to multiple sales every month," he said.

All of the command's demilitarization installations and depots participated in the demil recycling program, according to Fuller.

"The installations have different things that they recycle," he said. "Some installations have been very creative. Letterkenny (Munitions Center) recycle a lot of plastic and wire from their missile recycling program."

Seventeen people made up the project team including individuals from the JMC demil team, the Program Manager Demil Office, located at Picatinny Arsenal, N.J., and JMC support contractors.

According to Fuller, as the project unfolded, the instal-

lations took the lead in developing their own methodologies for conducting competitive sales. In addition, brainstorming and data-gathering sessions have become part of the agendas at the Global Demil Symposium (held in May) and the Demil Users Group Meeting (held in October.) But the key to the success of the program has been the active involvement and innovation shown by our demil installations.

Fuller said the three most common materials sold are steel, brass, and aluminum.

In the past, the sales were done by DMRO with the money going back into the U.S. Treasury.

According to Fuller, each installation announces the weight and type of materials to be sold. Interested buyers then send sealed bids for the material. The buyer with the highest bid buys the material.

"That money goes to PM Demil who then writes a check for that installation," he said. "The whole intent of the program is to help the installations. The installations deserve most of the credit." <sup>JM</sup><sub>C</sub>

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# iWalk because iCare: Arsenal launches CFC

**By Rebecca Montgomery**  
**JMC Public Affairs**

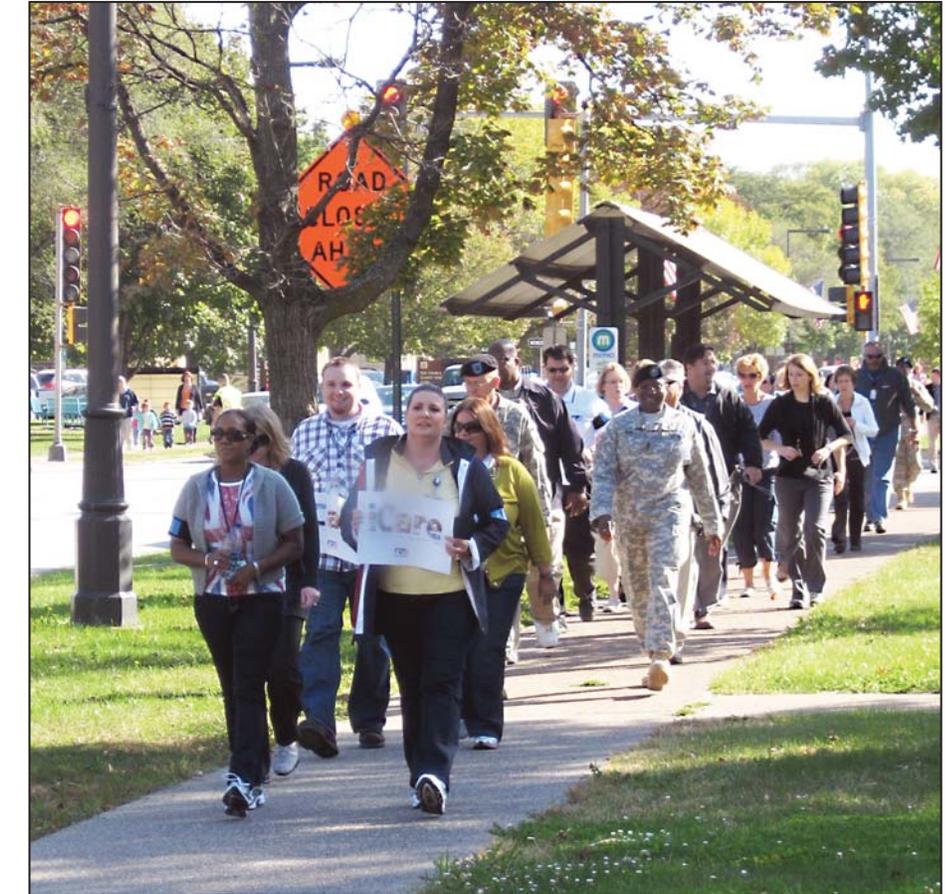
ROCK ISLAND ARSENAL, Ill. -- Scores of federal employees walked to the fire station October 6 to show their support for the annual federal workforce charity campaign and kick off of the six-week pledge drive.

The men and women of the federal government donate to Combined Federal Campaign charities to make a lasting difference in people's lives in the Quad City Area and beyond.

Col. Richard Dix, Army Sustainment Command chief of staff delivered the keynote address.

"Every day is a gift, and if we give back every day is a blessing," he said.

Describing how his sister died of lupus 25 years ago, Dix told of how he pledged to help eradicate the disease and support families through the CFC. "That is my why," he said, referring to



U.S. Army photo by Dan Carlson

his personal life experience that makes CFC special to him.

"The Combined Federal Campaign provides a lifeline to our Quad City community that is unduplicated in scope by any other charitable effort," said Gail Karp CFC essay contest first place winner.

In her essay, Karp, who works at TACOM, told of her son who was diagnosed with autism and the CFC agency that provided peer mentoring and local educational programs.

"Our emotional well-being and our son's case management successes could be linked directly back to the guidance that we received from other parents we met through the chapter," she said.

Second place essay contest winner Linda Loebach of the Joint Munitions Command told of her niece's diagnosis with epilepsy and how her family was traumatized by the news.

Loebach's niece contacted a CFC charity for help. "They gave her a

wealth of information and advice which made our family feel reassured that all of us could deal with this devastating diagnosis," she said.

Brian Swiss, U.S. Army Garrison Rock Island Arsenal deputy and emcee commented on the powerful effect of the essays.

"These essays really bring it home," he said. "Eighteen years ago I started with a donation each pay period, and I know that made a difference."

Representatives from local and national CFC participating non-profit organizations had displays and information tables set up in the fire station for employees to learn how their money is put to good use.

"Nationally the CFC has raised \$283 million and is the most successful workplace charity fund raiser. Many of those organizations have helped you and me as well as our friends and families during times of need," said Pat

"iWalk 2010" continued on 14

# Radford AAP hosts Wounded Warrior hunt

**By Joy Case**  
**Radford AAP Public Affairs**

RADFORD, Va. -- Radford Army Ammunition Plant hosted its second Wounded Warrior deer hunt Oct. 7, by providing hunting opportunities to six Wounded Warriors.

Richard Hamm, Darrell Miller, Michael Garrison, David Hall, Jim Gordan and Robert Lanier all participated in this event.

At 5:00 a.m., on the day of the hunt, the six military veterans assembled, inventoried their gear, readied their bows and headed out into the night. The patrol on this day was to their assigned deer stands in hopes of an encounter with a foraging whitetail deer.

At the end of the day, the hunters had two eight-point

bucks to show for their skill and patience. Before departing the plant, the hunters stated that they were thrilled to be able to participate in the hunt and thanked their guides and all the supporters at the plant that made it possible.

Virginia Department of Game and Inland Fisheries and Army staff personnel assisted the hunters. ATK Energetic Systems provided the bows and safety harnesses to the Wounded Warrior program. These will be used to keep the program going in years to come by helping veterans to enjoy the hunting opportunities at RFAAP.

“As the only major Army installation in Southwestern Virginia, it was a distinct honor

to reach out to all veterans especially our Wounded Warriors who have sacrificed so much for our Nation. “This was only a small event that we can sponsor to thank them for their service and help them in their healing process. RFAAP is always looking to sponsor events for Wounded Warriors, veterans,

veteran organizations, and families of deployed Soldiers”, said Lt. Col. Andy Munera, plant commander.

**Can You Spot the Hunter?** Jim Gordan, a United States Army veteran of the Vietnam War takes his position in a tree stand during a hunt at the Radford Army Ammunition Plant. Gordan was joined by five other wounded warriors on the hunt.



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# SCRANTON, PA

## More than just “The Electric City”

By Linda Loebach  
JMC Public Affairs

ROCK ISLAND ARSENAL, III.--  
What do you think of when you hear  
the words “Scranton, Pennsylvania?”

Do you think of Michael, Jim, Pam  
and Dwight who work for Dunder Mif-  
flin, Scranton’s fictional paper com-  
pany on TV’s “The Office?”

Or, do you think of the town’s  
nickname “The Electric City?”

Does the Scranton Army Ammu-  
nition Plant come to mind? If not,  
it should. SCAAP has maintained  
a prominent presence in the city of  
Scranton for almost 60 years.

SCAAP perches on 15 acres at the  
edge of historic downtown Scranton  
where the Delaware, Lackawana and

Western Railroad, founded by brothers  
Seldon and George Scranton, built four  
cavernous brick buildings in 1908 to  
manufacture and repair steam locomotives. This locomotive enterprise was  
one of the first examples of a large,  
well-planned and designed industrial  
facility in the United States.

“In 1953, the U. S. Army acquired  
the DL&W facility, where U. S. Hoff-  
man Machinery Corporation became  
the first contractor and manufactured  
large caliber steel projectiles,” Tim  
Tuttle, SCAAP historian said. In  
1963, Chamberlain Manufacturing  
Corporation took the reins and oper-  
ated at SCAAP for more than 40 years  
until General Dynamics Ordnance and  
Tactical Systems took over in 2006.

“Consequently,” Tuttle explained,

“SCAAP has always been a govern-  
ment-owned, contractor-operated  
facility.”

SCAAP may be the smallest of the  
Joint Munitions Command’s installa-  
tions, but its manufacturing capabili-  
ties are quite unique. The skills of the  
employees at SCAAP are also unique  
to the forging industry. In the 1960s,  
about 1,700 employees worked three  
shifts per day at SCAAP. Today, with  
the advent of automation and robotics,  
less than 400 employees on two shifts  
get the work done.

SCAAP produces 105mm to  
155mm diameter projectiles from raw  
steel stock using long stroke, 400- to  
2,500-ton presses. The projectiles are  
manufactured from 19-foot-long steel  
bars called “billets” which arrive by  
train and truck.

The largest billet is square, but  
its corners are rounded. Its cross-  
sectional dimensions are 5 ¼ inches by  
5 ¼ inches and it weighs 1,700 pounds.  
The smallest billet is a 3 ⅞ inch round  
billet and weighs about 800 pounds.  
The standard shape of billets, produced  
by steel mills, is round, but the hearths  
or floors of the gas furnaces at SCAAP  
are flat. Square billets are used so  
that the steel pieces don’t roll around  
during the heating process. Conse-  
quently, the hearths of the gas furnaces  
are being rebuilt with “V” notches so  
they can heat round parts. The induc-  
tion heaters currently contain V-shaped  
holders that can hold round or square  
parts.



Photo courtesy of Tim Tuttle

“Scranton PA” continued on page 15

## Deploy continued from page 8



Heather Wiley

Wiley also gained an appreciation for recreational running while deployed.

"I ran eight, 5Ks while deployed and have continued that here (locally) and hope to complete the half-marathon for the Quad Cities Marathon," she said.

JoEtta Taschler, Chief, Readiness Assessment Division, is Wiley's supervisor. She has seen Wiley's performance and dedication to U.S. forces.

"Heather's always been eager to learn and is dedicated to the mission," she said. "While over there, Heather

was very helpful in gaining strong liaisons and contacts."

Taschler said Heather often uses her analytical skills to find corrections on reports.

Deploying to support our country is worthwhile, according to Wiley.

"Don't think – just deploy. It will be such a rewarding experience such as it was for me. You'll get to learn about yourself and Army logistics. The experience while being deployed was invaluable once I returned to my job on the Arsenal." <sup>JM</sup><sub>C</sub>

## iWalk 2010 continued from page 11

Behr, Illowa Bi-State 2010 CFC Chair.

The Combined Federal Campaign is the only authorized solicitation of federal and postal employees in the workplace on behalf of charitable organizations.

The Illowa Bi-State CFC covers all federal, postal and military employees in the 37-county area of Boone, Carroll, Hancock, Henderson, Henry, Jo Daviess, Knox, Lee, McDonough, Mercer, Ogle, Rock Island, Stephenson, Warren, Whiteside, and Winnebago counties in Illinois; and Allamakee, Benton, Black Hawk, Cedar, Clayton, Clinton, Delaware, Des Moines, Dubuque, Henry, Iowa, Jackson, Johnson, Jones, Lee, Lynn, Louisa, Muscatine, Scott, Tama, and Washington in Iowa.

Last year these employees gave \$821,390 to local, national and international charities through the Illowa Bi-State CFC. Almost half of the donations stayed in the Quad City area.

More information on the campaign and winning essays are available at <http://illowacfc.org/>. General information on the national campaign is available on the U.S. Office of Personnel Management's Web site, at [www.opm.gov/cfc](http://www.opm.gov/cfc).



U.S. Army photo by Dan Carlson

**Arsenal CFC** Thirty-five local charities were represented for the 2010 Illowa Bi-State Combined Federal Campaign kickoff ceremony at Rock Island Arsenal on Oct. 6. The Illowa Bi-State Combined Federal Campaign covers all federal, postal, and military employees in 37 surrounding counties. Last year's campaign raised \$821,390.

## Scranton PA continued from page 13

The billets are sawed by tungsten carbide saws into “mults”.

“I was told that this term originated here and refers to a single billet being cut up into ‘mult’-iple pieces,” said Tuttle. The largest mult weighs 109 pounds and is used to manufacture the M795 projectile. The smallest mult weighs 16 pounds and becomes the rear part of the 120mm illumination round.

Originally fueled by oil, the furnaces at SCAAP are now fired by natural gas or electricity. SCAAP boasts five round gas furnaces about the size of a two-car garage and three smaller and rectangular, electric, heat-induction heaters.

“Gas furnaces take longer to start up and shut down, but they are more useful for bigger steel objects. Electric heaters heat up more quickly, but cost more to operate than gas,” said Tuttle. The contractor, General Dynamics, decides which type of furnace is the most cost effective to utilize for any given product.

Mults are fed into a furnace and heated until they are glowing red, released one by one onto a conveyor belt for a short trip, then grabbed by a giant robotic hand that places a mult on a stand, called a die, and an elongated, oil-coated, flaming press descends to forge, or stamp, the steel into the cylindrical shape of a projectile.

The robot moves the parts through each step of the forging process. The first is the “preform” step which forges the mult into a short cylinder with a small depression on top.

Next is the “pierce” step which enlarges the depression and shapes the part into a hollow cylinder.

The third step is the “draw” which extrudes the part through a ring die to make the cylinder wall thinner and longer.

Then the robot turns the part upside down over a spigot that squirts water inside to remove scale that could cause imperfections at the next forging step.

The robot then drops the still-glowing, steel part into an opening in the floor onto a conveyor. Below ground, a projectile part is periodically chosen from the conveyor for inspection.

The inspector uses calipers to measure the length and width of various points on the part according to specifications, and keeps exacting records of his findings.

The steel parts travel to cooling racks, where they cool slowly to ensure that the steel remains soft and manageable for additional machining.



Photo courtesy of Tim Tuttle

Next, the parts are rough-machined where metal is machined off to approach the final dimensions of a finished product.

Some products necessitate a “nosing” process. The open end of the part is heated and a special forge presses it into an “ogive” -the pointed end of the projectile.

To harden the steel of the projectile’s form, the part is heated again, then “quenched” in a tank of oil. The quenched parts are heated again to achieve their specified rigidity. The hardened parts go to the finish turn step where they are machined again to final dimensions.

Each part is bathed in zinc phosphate and a sealer and painted. The parts are packaged on pallets and shipped to other JMC installations where they are “LAPd” - or load, assemble, packed and then shipped to

U.S. warfighters.

Currently, SCAAP produces two 120mm mortar rounds including the M930 illumination round and the M931 FRPR practice round.

It also makes three 155mm howitzer projectiles including the M795, the M107, and the M110. In addition, SCAAP has the capability of producing 105mm rounds.

“We’re far from the flagpole,” said Richard Hansen, SCAAP Commander’s Representative.

“We’d like more people to know what we do here.” Now, when you hear the words “Scranton, PA,” what will come to mind?

Surely, it will be Scranton Army Ammunition Plant.

**Induction Heater (page 13)** Scranton Army Ammunition Plant’s glowing mult moving through induction heater.

**(above)** Scranton’s own robot places a glowing mult on die with elongated, oiled press above.