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## CERDEC Vehicle Becomes MVP of Stryker Team

By Daphne Hart

Communications-Electronics Research, Development and Engineering Center

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FORT MONMOUTH, N.J.—It is not often that a vehicle is called the “most valuable asset” in a brigade’s communication architecture. It is even less often that a military system is designed and built in-house. And it is almost unheard of for a technology to go from concept to delivery within six months.

But the Network Operations Center Vehicle (NOC-V), designed and built by the Communications – Electronics Research, Development and Engineering Center (CERDEC), did all of those things.

In the winter of 2001, Project Manager Tactical Radio Communications Systems (PM TRCS), formerly Warfighter Information Network – Terrestrial, approached the CERDEC’s Space and Terrestrial Communications Directorate (S&TCD) with a problem: signal officers with the new Stryker Brigade Combat Teams (SBCT) needed a vehicle that gave them the means to plan, manage, monitor and control tactical systems and networks in a battlefield environment.

“Our expertise and awareness of emerging technologies here at CERDEC, provided the PM the confidence in our ability to successfully deliver these systems given the strict schedule and budget constraints mandated by them,” said Sharon Mackey, the chief of S&TCD’s Network Operations Branch. “S&TCD developed the design and capabilities of the NOC-V, while the CERDEC’s Command and Control Directorate (C2D) did the fabrication.”

Some of those capabilities include the ability to carry and encrypt voice and data traffic, provide radio links with various tactical radio systems and connect to a Mobile Subscriber Equipment system, which acts as the battlefield’s communications network.

In addition, the NOC-V has an FBCB2 (Force XXI Battle Command Battalion/Brigade and Below) suite for battlefield situational awareness data traffic, information assurance systems, as well as a global broadcasting system, which allows soldiers to watch CNN and Armed Forces Network while they’re in the field. The NOC-V also contains a secondary tactical operations center (TOC) server, which can act as a primary server when the TOC “splits” to separate locations.

Though a requirement existed for the signal officer to have access to many of those systems, “that operational requirement was never met,” said Kimberly Ploskonka, S&TCD’s NOC-V project leader. “That’s where NOC-V was born.”

But NOC-V wound up accomplishing much more than simply meeting the requirement that bore it; its flexibility and systems have made it one of the most prized resources of the 3<sup>rd</sup> Brigade, 2<sup>nd</sup> Infantry SBCT, which deployed to Iraq in December of 2003.



**The Network Operations Center - Vehicle (NOC-V) gives signal officers with Stryker Brigade Combat Teams the ability to plan, manage, monitor and control tactical systems and networks in battlefield environments.**

In "Digitally Deployed – 120 Day Assessment of the 3/2 Stryker Brigade Combat Team," one of the signal officers who used the NOC-V in Iraq lavished praise upon the vehicle.

"The ability to place this vehicle anywhere in the brigade makes it the most valuable asset in the brigade's communications architecture," wrote Maj. Paul Fischer. "The NOC-V is not the signal-planning cell for the brigade as originally thought and had achieved a larger operational role in combat operations than initially envisioned."

Glenn Johnson, the C2D project lead for the NOC-V, said that Fischer's comments have special meaning for all of the engineers and fabricators who worked on the vehicle.

"It's rewarding to design the NOC-V system from the ground up. We start with a bare shelter and we design, fabricate, and install every bracket, mount, and cable that goes into the final shelter configuration," he said. "When you get reports back from the field that it's working well, as with the NOC-V that is currently deployed with the 3<sup>rd</sup> Brigade 2<sup>nd</sup> Infantry in Iraq, it's extremely gratifying."

Thomas Nugent, the deputy project manager at PM TRCS, singled out the collaboration between his organization, S&TCD and C2D's fabrication facility, all located in Fort Monmouth, N.J., for the vehicle's accomplishments.

"It was the teamwork that was established that made it successful," he said. "It was Team Fort Monmouth that supplied communications equipment for the Stryker Brigade Combat Team."

Another factor in the NOC-V's success, Ploskonka said, is the speed and quality with which it was built.

In fact, the NOC-V was built so well that out of the nine systems the CERDEC has delivered to PM TRCS since 2001, just one component, a cable, has had to be replaced.

"And the only reason we had to send that is because it got run over," she added.

Was the CERDEC's customer, PM TRCS, satisfied with the CERDEC's performance?

"Absolutely I was happy with them," Nugent said. "Assuming we continue, I'll be going back to them to finish the rest."

At least one soldier would apparently second that decision.

Fischer ended his assessment by stating: "the NOC-V must continue to develop into the premier platform for the signaler and more importantly the warfighter on the ground."



**John Ruroede of the CERDEC's Space and Terrestrial Communications Directorate puts finishing touches on computer systems inside the CERDEC designed and built NOC-V.**

## Picatinny employees successfully design mortar system for HMMWV

U.S. Army Armament Research, Development and Engineering Center

PICATINNY ARSENAL, N.J. - An innovative team of armaments engineers here has successfully designed and tested a mortar that fires from a military HMMWV, a technical breakthrough never before achieved.

Nicknamed Scorpion, the mortar could provide U.S. military personnel serving in hostile areas added protection, according to Anthony Franchino who headed the five-person team.

Franchino led the effort to quickly find a way to equip the highly mobile, diesel-powered, four-wheel-drive vehicles with heavier firepower.

The HMMWV, which is designed for use on all types of roads, operates in all weather conditions and is extremely effective in the most difficult terrains.

It is used extensively by U.S. troops in Iraq and Afghanistan for a number of purposes including convoy protection, emergency response and mobile sentry.

Franchino said that the HMMWV's light weight and compact size have limited it to medium-caliber guns, soft-launch missiles and small-arms weapons until now.

"The vehicle's mass acts as a significant constraint," he said. "We believed that mounting anything larger than a medium-caliber, direct-fire gun would exceed the structural limits of the HMMWV."

The effort began when Col. Peter S. Janker, commander of Picatinny's Armament Engineering Technology Center and Franchino's boss, challenged the team to find a way to equip the HMMWV with a heftier weapon system than the ones currently used.

"Colonel Janker asked us to look for a fast, creative solution - not to develop a new armament capability," Franchino said. "That's exactly what we did."

Utilizing a foreign-made 82mm auto-fire weapon that Franchino came across while working on another program, the team began the project.

"We began tinkering with the mortar and a HMMWV that we obtained, often working on our own time during lunch, after work and sometimes on weekends," he said.

During its initial test, the Scorpion successfully fired a single shot followed by several four-round automatic bursts at a remote location on the installation.



The Scorpion mortar, developed by engineers at Picatinny Arsenal, could provide U.S. military personnel serving in hostile areas added protection.



Additional test firings were equally successful.

The Scorpion is both a direct and indirect fire weapon. It has a maximum range of 1,000 meters for direct fire and more than 4,000 meters for indirect fire.

"It could allow military personnel riding in HMMWVs to destroy improvised explosive devices from greater distances than they now can," Franchino said.

(Submitted by U.S. Army Armament Research, Development and Engineering Center Public Affairs Office)

## Milestone Reached With Advanced Chemistry Laboratory Filtration System

**U.S. Army Edgewood Chemical Biological Center**

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EDGEWOOD, Md. - In August ECBC marked a milestone in the construction of the new Advanced Chemistry Laboratory (ACL) with a ribbon-cutting ceremony for the state-of-the-art filtration and ventilation system. Multiple redundancies and the ability to "idle" the system to conserve energy are two of the new approaches incorporated into the building's design. ECBC collaborated with Letterkenny Depot, the Baltimore Corps of Engineers as well as several private contractors to design and construct the ventilation system.

The 21-filter system has the capacity to filter 225,000 Cubic Feet per Minute, and is composed of two types of filters: 18 Multiple Cell Radial Filters (MCRF) and 3 Fixed Installation Filters (FIF). The MCRFs that make up the bulk of the system are unique in that they were originally designed for collective protection, in which the inside of a building is protected from an outside contaminant. For the ACL, these filters were customized for the opposite function: to prevent contaminants inside the lab from getting into the environment. The FIFs, which can be stacked next to each other in a series, will be used for chamber set-ups in the Midspectrum Agent Lab.



Each filter consists of four stages: a pre-filter that collects large particle sized dust; a High Efficiency Particulate Air (HEPA) filter that collects sub-micron sized particles; a test section; and a High Efficiency Gas Air (HEGA) filter that filters toxic vapors and gases. The system will have the capability to filter nuclear, biological, and chemical (NBC) agents.

This filtration system, which exceeds the requirements for this kind of facility, will be an essential component of the ACL, helping make it the nations premier site for work with military unique chemical agents.

(Submitted by Edgewood Chemical Biological Center Public Affairs Office)

## HISPEC Has High Hopes to Meet Biodetection Challenge

U.S. Army Edgewood Chemical Biological Center

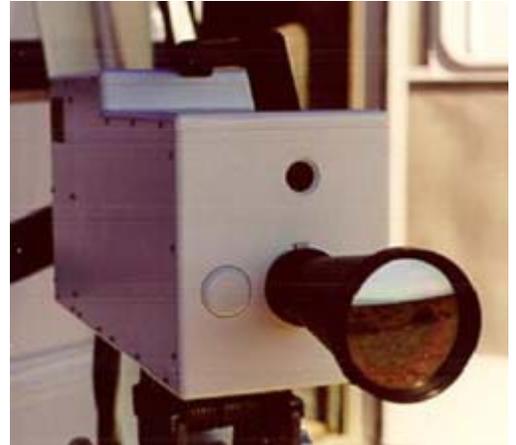
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EDGEWOOD, Md. - Devising a reliable passive standoff detection device for biological aerosols presents a challenge for scientists. Recently, however, ECBC scientists have discovered they can apply successful chemical detection technology to the biological realm with a few adjustments to accommodate the unique characteristics of biological agents. The High-Sensitivity Spectrometer (HISPEC), one of the Center's most promising detection technologies, has been successful in early tests against a biological challenge.

The HISPEC is a Fourier Transform Infrared (FTIR) spectrometer designed to be an order of magnitude more sensitive than the chemical agent detectors listed above. In fact, it is the most sensitive commercial FTIR field spectrometer ever constructed. It uses optics and moving mirrors to divide incoming light into an interference pattern, allowing analysis of spectra that may identify the presence of a biological agent. A highly sensitive infrared radiation detector is used to monitor the interference pattern. In order to minimize electrical noise and permit very sensitive measurements, the detector is kept at very low temperatures below -300 degrees Fahrenheit.

Researchers at ECBC have recently demonstrated the ability of the HISPEC to detect and identify the anthrax simulant *bacillus subtilis* in the field. These initial experiments have produced encouraging results for these efforts to adapt passive standoff detection technology for use against biological agents.

(Submitted by Edgewood Chemical Biological Center Public Affairs Office)



**The HISPEC has been successful in early tests against a biological challenge.**

## Volunteers needed to assist with eCYBERMISSION

By Raini Wright

Army News Service

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WASHINGTON – eCYBERMISSION, the Army-sponsored science, math and technology competition for youth, needs volunteers to serve as cyberguides, ambassadors and installation points of contact for this year's competition.

Volunteers are generally Army personnel who must have an active security clearance. While applications are accepted year-round, Soldiers and civilians interested are encouraged to apply now through early September.

The program's mission is to generate interest among youth in science, math and technology and to communicate how important these areas are to the future success of our nation, said Kelly Stratchko, eCYBERMISSION program manager.

Teams of three to four students, in grades six through nine, compete for monetary prizes and the opportunity for national recognition. Teams design projects that incorporate science, math and technology in the areas of health and safety, the environment, sports and recreation, and arts and entertainment.

The program started two years ago and has grown from 903 teams competing during the first year to 1,624 teams this past spring. Officials estimate that the amount of teams competing this year may exceed 2,000. Anywhere from 400 to 600 volunteers will be needed.

Volunteers serving as ambassadors visit community groups within their regions to explain the program's key messages to educators while encouraging students to participate. Cyberguides are scientists and engineers who serve as online mentors to provide guidance, support and answers to students' questions. Personnel who volunteer as installation points of contact will be the main channels of communication from the program's headquarters to the ambassadors and cyberguides located at the installations.

This program is so important because our nation is no longer at the top in science, math and technology fields, said Karin Santos, who has been an eCYBERMISSION ambassador and installation point of contact at Fort McPherson, Ga. since the program's beginning. We need to support the community in these fields, she said.

Once an applicant is accepted as a volunteer, he or she receives continuous e-mail notifications about the program. Cyberguides are needed for four hours per week while ambassadors are needed for 15 to 20 hours per month. There is no standard time commitment for installation points of contact.

To learn more about the program and to register as a volunteer, visit [www.ecybermission.com](http://www.ecybermission.com).

## PARTNERSHIP BETWEEN ECBC ADVANCED DESIGN AND MANUFACTURING TEAM AND THE U.S. ARMY CHEMICAL SCHOOL

### U.S. Army Edgewood Chemical Biological Center

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EDGEWOOD, Md. - A partnership is being formalized between ECBC ADM and the U.S. Army Chemical School (USACMLS) at Fort Leonard Wood, Mo., to establish a rapid concept assessment process for chemical defense technology application by leveraging the rapid prototyping capabilities of ECBC's Advanced Design and Manufacturing (ADM). The goals of the concept assessment process are to rapidly respond to the need for modifications to currently fielded equipment; to rapidly assess the potential of mature or maturing technologies to meet the needs of operational concepts; to reduce the cost of fielding equipment; and to provide data instrumentation support for critical data elements in early user demonstrations and experiments.

This rapid prototyping capability allows a quick response to product concepts that are driven by market pressures, management edicts, consumer preferences, or technological breakthrough. This rapid prototyping capability serves the military in the same manner, except with the military, the market pressures become changing threats, management edicts become military leadership edicts, consumer preferences become soldier's preferences for ease of operation and dependability, and technology breakthrough becomes a technology opportunity. This rapid prototyping capability, virtual prototyping capability, sophisticated 3D scanning hardware and software, small-scale production, and the necessary expertise exist at ECBC's engineering and fabrication facilities.

As the field user and trainer for chemical defense, the Chemical School needs the capability to rapidly modify fielded equipment and new equipment and instruments to take advantage of lessons learned during training and testing.

Because there are always more good ideas than resources, the Chemical School will establish a concept assessment team composed of personnel from ECBC and the Chemical School to screen all concepts that are potential candidates for rapid prototyping. ECBC will establish a rapid assessment and prototyping team to evaluate the concepts for availability of technically solvent technologies, engineering trade-offs to demonstrate the concept, potential for manufacturing, development risk, time required, and costs.

This partnership will establish formal lines of communication and procedures that will allow direct communication between the two organizations that should save a considerable amount of time. This partnership will combine the unique capabilities of two organizations to take concepts from ideas to working products using solutions that are better, cheaper, and faster.

(Submitted by Edgewood Chemical Biological Center Public Affairs Office)



ECBC engineers work in their Edgewood-based rapid prototyping facilities.



## Collaboration with Poland produces new DEA

**U.S. Army Edgewood Chemical Biological Center**

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EDGEWOOD, Md. - ECBC signed a new data exchange annex (DEA) in August with the Polish Military Institute of Chemistry and Radiometry (WiChR). MG Roman Iwaskiewicz, director of Armaments Policy of the Polish Ministry of National Defense, was the signatory on this new DEA, which focuses on the science and technology of chemical and biological defense and further expands the cooperation between the two organizations. This agreement comes on the heels of a recent agreement with the Military Institute of Hygiene and Epidemiology (WiHE). ECBC now holds partnership agreements with the two primary military institutes in Poland addressing chemical and biological defense.

(Submitted by Edgewood Chemical Biological Center Public Affairs Office)



## ECBC to Employ New Bioinformatics Technique

**U.S. Army Edgewood Chemical Biological Center**

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EDGEWOOD, Md. - ECBC and the Virginia Bioinformatics Institute under a Congressionally funded effort have been co-developing an integrated, interactive bioinformatics package known as the Global Pathogen Portal, or PathPort. The beta version has now been completed. PathPort has complete analytical and statistical capabilities, provides a common architecture to integrate databases and provides comprehensive information on pathogenic organisms. ECBC expects to employ this bioinformatics technique to assist in ongoing work related to toxicogenomics, detection of pathogenic organisms using multiplexed gene arrays, peptide libraries, comparative genomics of toxin producing plants, and in vitro toxicology.

(Submitted by Edgewood Chemical Biological Center Public Affairs Office)

## RDECOM and UCF Collaborate to Look into the Future of Warfighter and Unmanned Systems Interaction

By Joshua Flapan

Simulation, Training and Technology Center

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ORLANDO, Fla. - The U.S. Army Research, Development and Engineering Command (RDECOM) Simulation & Training Technology Center (STTC) has partnered with the University of Central Florida's (UCF) Institute for Simulation and Training (IST) for research, experimentation and testing on human and unmanned system(s) interaction. The research focuses on improving man-in-the-loop training and human learning with unmanned systems.

Few universities have the opportunity to partner with an organization that can provide an environment to benchmark their research such as the one in RDECOM. The UCF robotics club has had the opportunity to participate in the Defense Advanced Research Projects Agency challenge and the Tank Automotive Research and Development and Engineering Center unnamed system competition. They are now headed for the Office of Naval Research's Seventh International Autonomous Underwater Vehicle Competition.

While discussing this effort, Dr. Neal Finkelstein said, "One of the main goals I believe the University is looking at is to create a center in Orlando where the science of unmanned systems is explored and especially how humans confidentially interact with these systems. If the goal of the military is to have hundreds of unmanned systems on a battle space, then someone should be providing the 140 to 150 companies in the area with graduates that understand the science of unmanned systems and how that fits into the warfighter's needs of simulation, training and instrumentation."

Upon graduation, Tim Roberts of IST and President of the UCF robotics club, intends to join industries' push to develop the robotic warfighter of the future. Because of the interest from RDECOM, the UCF robotic team is hoping to develop three new robots to supplement their existing robots and possibly add a robotics track to the curriculum. The UCF student government gave the thumbs up for funding a robotics club. All are hoping this will attract future students to the program.

## ARL Employees Mentor Local Students

By Stephany Jaramillo

Army Research Laboratory

ADELPHI, Md. - As they have every year for more than 20 years, students from area high schools and colleges spent eight weeks of their summer vacation at the U.S. Army Research Laboratory at Adelphi and Aberdeen Proving Ground. This year, there were 40 high school and college students at ALR and 23 at APG.

After successful in-processing, the students are assigned throughout the directorates to work alongside world-class ARL scientists and engineers, who will be their mentors, providing guidance on projects that have potential real-world application.

The students and the 63 ARL volunteer scientists and engineers are participants in the Science and Engineer Apprentice Program, a partnership of Department of Defense research facilities, the high schools and colleges in their areas, and George Washington University in Washington, D.C. SEAP, ongoing since 1980, is one of more than 60 education outreach programs implemented at ARL.

One summer apprentice, Gregory Szeto, from Thomas Stone High School, Waldorf, Md. assigned to Dr. David Keith Wilson at Adelphi in atmospheric acoustics, said he "encountered a lot of interesting things I had no idea were out there... research ventures, robotics, computer simulation technology."

When Wilson and Szeto published their research titled, "Reference Guide for the Acoustic Battlefield Aid Version 2," Szeto contributed to developing the initial versions of a software module called Acoustic Waveform Analysis User Interface and Receiver Array Designer, which is a component of the computer program, Acoustic Battlefield Aid. Soldiers will use the ABFA to determine what sounds the enemy might hear from a particular military system, such as a UAV or ground vehicle. Additionally, it can be used to determine what friendly forces might hear from an enemy's system. The tool can be used in planning missions as well as configuring defensive placements for maximizing enemy detection based on environmental conditions.

Both ARL and the students benefit from SEAP. According to Norma Cammarata, program coordinator at Adelphi, the program "brings in new ideas and skills and serves as motivation for the career scientists and engineers to break old molds and try new approaches." SEAP also provides a chance to encourage future scientists and engineers, she added.



Eight of the local high school students participating in the Science & Engineering Apprentice Program this summer at U.S. Army Research Laboratory pause for a photo on their last day at ARL Adelphi. Shown from left to right are Calvin Yu, Watkins Mill High School; Michael Feinberg, Thomas Jefferson High School; Andrew Kim, Wootton High School; Stephen Didion, St. John's College High School; Melinda Petre, Atholton High School; Will Beekman, Centennial High School; David Karr, Winston Churchill High School; and Andrew Udovic, St. Albans School.

## ECBC Employee Wins Federal Award

U.S. Army Edgewood Chemical Biological Center

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EDGEWOOD, Md. - Charlotte Albro, ECBC program analysis, was chosen as the Federal Executive Board Federal Women's Program Outstanding Woman of the Year. The Federal Woman's Advisory Council works to increase achievement by woman federal employees by eliminating false barriers to success, improving self-confidence, fostering a supportive environment and identifying problems and solutions relating to the success of woman in government. Albro, who works in the Advanced Planning & Initiatives office, was chosen because of her efforts with Aberdeen Proving Ground's 2003 Women's Equality Day, her mentoring activities and her work with the Baltimore Federal Executive Board Federal Women's Advisory Council meetings.

(Submitted by Edgewood Chemical Biological Center Public Affairs Office)



**Charlotte Albro, ECBC program analysis receives recognition for being chosen as the Federal Executive Board Federal Women's Program Outstanding Woman of the Year.**

## Krs bids a fond farewell to friends and coworkers

By Larry D. McCaskill

### US Army Research Development and Engineering Command Public Affairs

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EDGEWOOD, Md. -- "Don't make me kill again."

The quote, sounding like a corny line from a bad gangster movie, has echoed in the U.S. Army Research Development and Engineering Command Public Affairs Office since the charismatic Susan Krs first stepped into what was then the U.S. Army Chemical Biological Defense Command Public Affairs Office in 1998.

Krs, born and raised in Essex, Md. spent her entire federal career within a 25-mile radius of her home. On her departure from government service, for the first time in a long time, Krs was almost speechless. Almost.

"It's overwhelming. I'm proud to have served my country for 37 years in the civilian capacity," Krs said. "I'd like to thank everyone that I worked for and with over the years."

Krs began her civil service career in 1967 after graduating from Kenwood High School in the U.S. Army Publications Distribution Center in Middle River, Md. From there she worked at the Commissary at Fort Holabird, then to the Social Security Administration in Woodlawn before returning to work at the Publications Center for 23 years.

Krs moved over to the Edgewood Maryland office after the Publications Center was placed on the list for base realignment and closure.

During her illustrious career, she has received many awards including the Department of the Army Superior Civilian Service Award.

Krs is relocating to North Carolina, where she plans on spending her time fishing, listening to music, and volunteering for the Department of Aging as well as local Veterans of Foreign Wars posts.



**Brig. Gen. William Lenaers, second from left, commanding general, U.S. Army Ordnance Center and Schools, and his wife Lorel, far left, congratulate retiree 1st Sgt. Pamela Irle, center, while fellow retirees Susan Krs, Marilyn Root and her husband Duane look on at the retirement ceremony held at Top of the Bay Aug. 25. (Photo by Meghan Bowen, APG News)**

## Letterkenny Returns \$2.5 million in Lean Savings

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Col. William A. Guinn, commander of Letterkenny Army Depot, presented a ceremonial check for \$2.5 million to John Chapman, executive director of Integrated Materiel Management Center, and Michael Hartwell, associate director for missiles at the U.S. Army Aviation and Missile Command. The check represents savings resulting from implementation of Lean Manufacturing techniques.

Letterkenny was tasked with resetting the PATRIOT and Avenger missile systems to fully mission capable status. The Lean process reduced a three- to four-week backlog of material to less than one day while concurrently increasing component parts processing 87 percent with just a 12 percent increase in manpower.

“This has been a win-win for everyone involved,” said Guinn. “The depot benefits by drastically improved production processes, the Soldier receives advanced training in the repair of a system they use, and the Army received quality work ahead of schedule and below estimated cost.”

(Submitted by Army Materiel Command, G5, Public Affairs Office)

## Letterkenny Army Depot partners in unique venture

Col. William Guinn, commander of Letterkenny Army Depot, and Team Letterkenny were recently recognized for their significant contributions to the Global War on Terrorism in a ribbon cutting ceremony at Aberdeen Proving Ground, Md. The Edgewood Chemical Biological Center and Letterkenny partnered to produce an extremely sophisticated filtration system that will remove toxic vapors and gases, sub-micron-sized particles and nuclear, chemical and biological agents.

LEAD is the Army's Center of Industrial Technical Excellence for Air Defense and Tactical Missile Ground Support Equipment. Since 2001, LEAD has been working with ECBC on a variety of chemical-biological detection systems including the M31A1 and M31A2 Biological Integrated Detection Systems, Joint Biological Point Detection Systems, Portal Shield Biological Detection Systems, and Dry Filter Detection Units. ECBC is the Army's principal research and development center for chemical and biological defense technology, engineering and services.

(Submitted by Army Materiel Command, G5, Public Affairs Office)



## Did you know...

The Communications-Electronics Command Executive Agent Theater Joint Tactical Network office provided support to the Republican National Convention in New York City from Aug. 30 to Sept. 2 as part of Northern Command's Joint Task Force, commanded by the New York National Guard.

(Submitted by Army Materiel Command, G5, Public Affairs Office)

