U.S. ARMY SUSTAINMENT COMMAND (JAN. 8, 2008)

ARMY SUSTAINMENT COMMAND EMPLOYEE EARNS DISABILITY AWARD

Rhys E. Fullerlove

ROCK ISLAND ARSENAL. Ill.—**Bruce E. Beyer**, U.S. Army Sustainment Command, Rock Island Arsenal, Ill., was presented the Army's Outstanding Individual with Disability Award Dec. 4 at the Department of Defense Disability Awards Ceremony and Forum in Bethesda, Md.

Beyer is one of 16 DoD employees from various agencies honored at the ceremony. He earned the award for his contributions as a member of Army Sustainment Center's Logistics Enterprise Integration Team. Beyer played a key role in awarding and managing the Army's Logistics Civil Augmentation Program contract, under which contractors from the private sector are used to provide a broad range of field services to U.S. and allied forces during combat and training operations.

Beyer has used a wheelchair since 1982, when he fractured his neck in a bicycle accident. He was unable to continue his job as a tool and die maker, so he returned to college and earned a bachelor's degree in computer sciences from St. Ambrose University. He came to work at the arsenal in October 1988 as an entry-level production analyst.

Beyer is active in raising awareness of people with disabilities. He provides administrative and technical support to his church, and has represented the arsenal as a peer counselor for students in the Rock Island Milan School District.

Beyer was an instructor in the arsenal's Windmill Program, which trained managers in the challenges faced by disabled individuals in the workforce. He has also conducted seminars in assistive technology and advocacy for disabled individuals in Rock Island and Scott Counties.

AIR FORCE PRINT NEWS (DEC. 27, 2007)

AFMC TEAM WINS HAZARDOUS AIR FORCE COMPETITION

Rudy Purificato

BROOKS CITY-BASE, Texas—An Air Force Materiel Command team of bioenvironmental engineering and emergency management professionals won the Air Force's 2nd annual Chemical, Biological, Radiological, and Nuclear Challenge held Dec. 10-14 at Brooks City-Base, Texas.

Considered to be the Olympics for the two career fields, AFMC was one of eight Air Force major commands to participate in the week-long event with six realistic scenarios that tested the teams' capabilities to respond to chemical, biological, radiological, and nuclear warfare threats.

The AFMC team edged units from Air Combat Command, Air Mobility Command, Air Education and Training Command, Air Force Special Operations Command, Air Force Space Command, Pacific Air Forces, and U.S. Air Forces in Europe. An Air National Guard team also participated and captured the Team Spirit Award.

The challenge mirrors potential homeland security and war on terrorism threats. It was held at the Air Force School of Aerospace Medicine's Expeditionary Medical Support site at Brooks City-Base.

Each of the six scenarios lasted three hours, and all were different from last year's exercise, said Air Force Tech. Sgt. Shawn Petro, a bioenvironmental engineering instructor in charge of logistics for the exercise. One scenario was designed to test participants' capabilities to assess the health risk to an installation victimized by an unleashed chemical weapon.

"The vehicle-born improvised explosive device scenario was actually a [so-called] 'dirty bomb' that had detonated and caused casualties," Petro said.

There were also two head-to-head competitions where teams had to identify a chemical and biological sample within time limits. Teams also participated in a TV *Jeopardy* show-style quiz that tested their chemical, biological, radiological, and nuclear knowledge.

"What was different this year is that we included civil engineer emergency management members," Petro said. "We brought into the exercise the whole partnership with our emergency management responders. They help us identify hazards and are our base counterparts when responding to emergencies."

Purificato is with 311th Human Systems Wing.

AIR FORCE PRINT NEWS (JAN. 16, 2008)

MAINTENANCE UNIT COMPLETES UPGRADE OF 100TH A-10

Bill Orndorff

HILL AIR FORCE BASE, Utah—An upgraded A-10C, which took off in early January for Moody Air Force Base, Ga., represents another production milestone for the 571st Aircraft Maintenance Squadron.

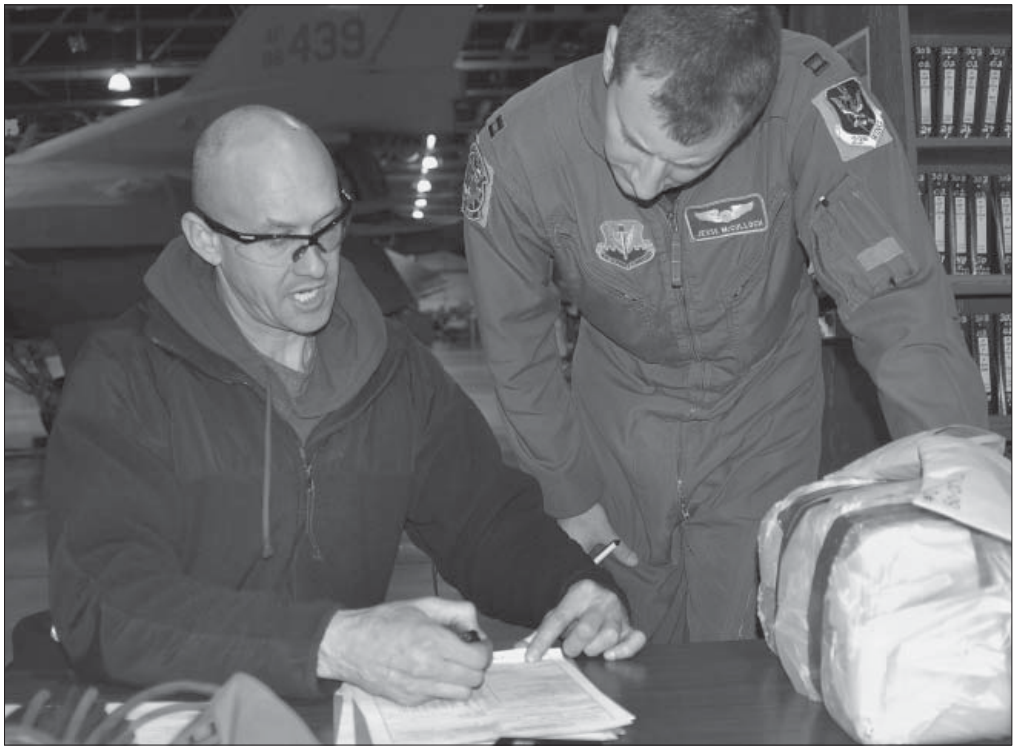
Aircraft 80-0172 is the 100th A-10 to go through the Precision Engagement Program, started in the 309th Aircraft Maintenance Group in July 2006. On average, the 571st technicians are upgrading each A-10 aircraft to the new A-10C configuration in less than 90 days.

"The 571st mechanics are successfully executing the A-10 Precision Engagement program," said Greg Hoffman 571st Aircraft Maintenance Squadron director. "While our overall modification time has been reduced, the increase in positive feedback from our warfighting customers has been our biggest success. Without giving them a quality aircraft to carry out their mission, we would have failed. The program was a challenge from the start, but with the support of Team Hill, to include our Lockheed Martin prime contractor, we have been able to get better each day."

The upgrade to the 100th aircraft, first built in 1980, will extend its service life for at least another 20 years. The aircraft was in the Pope AFB, N.C., inventory before the modification and transfers to Moody AFB as part of the base realignment and closure recommendations.

Precision Engagement evolved by merging several smaller, funded programs, into one large modification. The combination saved money for development, testing, and installation previously done separately. The A-10C has a number of avionics and weapons system upgrades, designed to extend its service life until 2028.

The modification includes a totally redesigned main instrument panel, smart weapons capabilities, and aircraft DC power upgrades. The A-10C cockpit receives two 5-by-5-inch multifunction color displays, a hands-on stick and throttle system with a modified F-15E right throttle grip, and a modified F-16 control stick grip. Other cockpit items include an up-front controller, new armament heads up display control panel, and a redesigned main instrument panel.



Andrew Selph and Air Force Capt. Jesse McCulloch discuss paperwork details that will send A-10 Aircraft 80-0172 to Moody Air Force Base, Ga. The aircraft is the 100th A-10 to receive the Precision Engagement modification, installed by the 571st Aircraft Maintenance Squadron.
Air Force photo by Bill Orndorff

Modified aircraft can now carry both the LITENING II and Sniper laser targeting pods, and have joint direct attack munitions and wind-corrected munitions dispenser capabilities. The direct current power will be doubled, and a more powerful computer will be added to the low-altitude safety and targeting enhancement system.

The A-10C has proven itself a formidable asset in the war on terrorism, Hoffman noted, as the Air National Guard's 175th

Fighter Wing from Baltimore, Md., deployed the modified aircraft to Iraq in September. Within hours of arrival, the new systems were put to the test by successfully destroying an insurgent safe house with a Global Positioning System-guided munitions system.

"You just can't get more proof that what you have done matters than to see the true end result of your efforts," Hoffman said.

Orndorff is with 309th Maintenance Wing.

NAVY NEWSSTAND (JAN. 23, 2008)
LEAN THINKING TO IMPROVE IKE'S EFFICIENCY, STREAMLINE PROCESSES

Mass Communication Specialist Seaman Zachary Martin, USN

Aboard the Nimitz class aircraft carrier *USS Dwight D. Eisenhower* (CVN 69) (Ike), manufacturing jobs and repetitive processes are an everyday occurrence. A new program is expected to cut waste and eliminate defects involved with those processes.

As part of the new Continuous Process Improvement (CPI) program, a business practice known as lean will become part of everyday jobs aboard Ike.

The concept of lean is deceptively simple: Eliminate repeated steps in a process, streamline supply chains, and produce 100 percent defect-free products with every job.

Developed and made famous by multi-billion-dollar companies like Toyota and Honda, the strategy also deals with reducing overproduction, human error, wasted inventory, transportation time, wait times, and effectively reducing costs across all processes.

Ensign Stephanie Chelone, current aircraft intermediate maintenance department IM2 division officer and soon-to-be head of CPI aboard Ike, said the lean process is something Ike's sailors can accomplish every day by lean thinking.

"Lean thinking is all about cutting the fat," Chelone said. "We look at ways to eliminate the eight forms of waste."

Those forms are transportation, excess inventory, motion, waiting, overproduction, overprocessing, defects, and underutilization of employees.

"Transportation is best described as the movement of essential tools or other aspects of a job. When there is too much, wasted time [it] becomes a huge factor," Chelone said. "I have guys in my shop who use spray paint, and they have to walk all the way across the hangar bay to get it. Then they have to walk all the way back to put it away. When you look at it, it's about 25 wasted minutes just for a can of paint. We fixed this by putting paint and other items in a storage locker in our spaces."

Motion is the physical movement of people between steps of their job. Henry Ford, of the Ford Motor Company, recognized the benefit of arranging workspaces in a logical order, and his ideas gave birth to the assembly line. Instead of walking across a huge warehouse several times to build a car, Ford arranged his workers in a logical line to cut wasted steps.

"Let's say it takes you 742 steps to do a job. Lean is designed to reduce those steps, which reduces time, which reduces cost," Chelone said.

Another problem—waiting—is something all of Ike's sailors can relate to, and the impact on work efficiency is larger than many people realize.

"So you wait for an hour in line for chow," Chelone said. "It may not seem like much, but multiply it by five days a week and several thousand people, and you begin to see the big picture of how waiting and doing nothing affects work."

Overproduction, too, causes great waste in both time and inventory. A printing job, for example, may be produced before an order is actually placed with the intent of "staying ahead of the game." If the order is for only 50 flyers, and the time and expense to create 5,000 were spent, then there's a problem.

Another part of Navy life is overprocessing. Basically, this is the idea that decisions require too many sign-offs or approvals, slowing down the production process.

Defects cause waste in massive proportion as well, Chelone said. Even a 99 percent acceptable rate is not high enough over the course of several thousand jobs.

Capt. Dee L. Mewbourne, Ike's commanding officer, recognizes this too, with his planned incremental availability goal of "Do it right the first time."

Doing it right the first time revolves around having the right people for the job. Underutilizing employees is essentially having five people for a two-person job, where

there may be another job requiring those extra personnel, Chelone explained.

"Essentially, the lean system comes down to deciding what steps, people, or movement in a process add value to the finished product, and removing those that don't," Chelone said.

"The value-added time is really only a very small percentage of the total time involved," she added.

Martin writes for USS Dwight D. Eisenhower *Public Affairs.*

NAVY NEWSSTAND (JAN. 24, 2008)
NAVY EMPLOYEE NAMED ENGINEER OF THE YEAR

Darrell Waller

PORT HUENEME, Calif.—Naval Facilities Engineering Command's Engineering Service Center (NAVFAC ESC) has selected its 2007 Engineer of the Year.

Douglas F. Burke, a materials engineer in the ESC's Waterfront Materials Division, was acknowledged for his outstanding leadership and service as an integral member of NAVFAC's team of life-cycle facilities experts and is widely regarded as the Navy's foremost expert in the field of concrete materials.

Burke initiated and has represented the Navy in the development of a novel methodology to predict the future performance of concrete structures. This innovative technique has garnered national support within the concrete industry.

"This revolutionary technique exemplifies NAVFAC's strategic plan to translate sustainability goals for construction and repair of facilities into quantifiable action throughout the Navy," said NAVFAC ESC Commanding Officer Capt. Gregory J. Zielinski. "More importantly, it will provide the military with an effective tool to accurately predict the service life of new and existing structures, saving millions of taxpayer dollars."

Burke has led the evaluation of numerous strategically critical facilities, including bridges, piers, and dry docks for the Navy. Early use of the innovative methodology aided in the development and validation of the 100-year performance life for the Navy's new floating modular hybrid pier. Application of the methodology will lower life-cycle costs of new construction and allow engineers to optimize the selection of remediation strategies for existing facilities.

In the future, NAVFAC will employ the methodology to meet sustainability goals and validate that new construction complies with the Navy's performance objectives.

Burke is a 1998 recipient of the George W. Goethals Medal, the highest honor presented by the Society of American Military Engineers, for his leadership in developing a new national standard for coated steel reinforcing.

Burke received his bachelor of science in civil engineering from Oregon State University and a master of arts from California State University, Northridge, in test and evaluation engineering. He is a registered professional engineer in California and Oregon and has authored numerous technical papers on concrete durability.

For more news from Naval Facilities Engineering Command, visit <www.news.navy.mil/local/navfachq/>.

Waller writes for Naval Facilities Engineering Service Center Public Affairs.

ARMY NEWS SERVICE (JAN. 25, 2008)
PEO AMMO RECOGNIZES ANNISTON MUNITIONS CENTER SPARTAN MISSION, TOLBERT WINS AMC AWARD

Miranda Myrick

ANNISTON ARMY DEPOT, Ala.—The leadership of Anniston Munitions Center, a tenant activity at Anniston Army Depot, acknowledged the efforts of more than 200 people at its quarterly recognition ceremony Jan. 23.

Lt. Col. Garry McClendon, ANMC commander, hosted the ceremony at the depot's Physical Fitness Center the same day his organization hosted a visit by Brig. Gen. William Phillips, commanding general of the Joint Munitions and Lethality Life Cycle Management Command and the Program Executive Officer Ammunition.

Phillips presented ANMC with the Superior Unit Award, something he said very few organizations ever receive. "This is a really big deal," he said. "General [Benjamin] Griffin [commanding general of Army Materiel Command] wanted to make sure you were recognized."

McClendon said he likes to recognize the employees because they work hard to accomplish the mission in the safest way possible. "And it doesn't hurt to do this in

front of all these other folks so that they see what a great organization this is to work for," he added.

Unlike previous ANMC recognition ceremonies, McClendon acknowledged more than just his employees this time. Players in the Spartan missile motor burn operations, which occurred at Anniston June through November 2007, were also recognized for their role in the unique mission.

The last of the 22 Spartan rocket motors, which had been in depot storage for almost 32 years, was successfully destroyed on Nov. 10, 2007. Because these rocket motors had exceeded their shelf life and were no longer usable, there was a hazard for further deterioration.

The team was presented with a piece of metal from a burned Spartan, which was mounted to a plaque that will hang in the ANMC headquarters building.

"We need to make sure all of our missions are as safe as the one we just completed," said McClendon.

Phillips, who was on the installation to receive an ANMC operations update and tour the facilities, said safety is a matter important to everyone. "We are all safety officers," he said. "If you see a co-worker doing something unsafe, correct it."

The general told of the dangers that ammunition handlers face. He told of one soldier who loaded ammunition into a Bradley tank and was killed because he was not following proper safety procedures. And he had more stories like that one where people were injured or died because they weren't careful.

"What you do is dangerous," said Phillips. "Don't get complacent."

McClendon recognized others on his ANMC team for accomplishments in other areas such as retirement, Lean Six Sigma, Employee of the Month, leadership, and the Commander's Award for Excellence.

"No other depot does it any better than you do," Phillips told the crowd. "It's important we go through a recognition ceremony like this because of all your hard work on the ground to get the job done."
The chief of ANMC's maintenance division, **Clifton Tolbert**, was presented the Louis Dellamonica Award for Outstanding U.S. Army Materiel Command Personnel of the Year Award for 2006.

This award was one of only ten presented throughout the Army.

"He gives more than he gets back," said Phillips of the honoree.

The certificate of achievement, signed by Griffin, said Tolbert "serves as an inspiration to others, and his accomplishments reflect great credit upon himself, the U.S. Army Materiel Command, and the Department of the Army."

"I take ammo very seriously," said Tolbert. "The soldiers' lives depend on it."

Tolbert, who retired from the Army as a first sergeant, began working at ANMC in 1978 as a temporary preservation packager. His wife, Janice, and son, Duane, were at the ceremony to participate in the occasion.

He thanked his ANMC team for the high-level achievement. "This is our award, not just my award," he said.

Myrick is with Tank-Automotive and Armaments Command–Life Cycle Management Command (TACOM–LCMC).

ARMY NEWS SERVICE (JAN. 25, 2008)
CELEBRATING 65 YEARS OF SERVICE TO THE TACOM LIFE CYCLE MANAGEMENT COMMAND

Margaret Compton

The year 2007 marks 65 years that Acquisition Specialist **John Bruce** has been employed at the Detroit Arsenal, in Warren, Mich.

Except for a short time in 1946 when the command was headquartered in Detroit, Mich., Bruce spent most of his 65-year career at the Warren location and about six years at the missile plant in Sterling Heights, Mich.

Considering he had planned to work in California, after service in WWII, even Bruce is amazed that he spent his post-military career in Michigan, let alone 65 years on the job. From the time she picked him up at the train station in Detroit in 1946 as a favor to his uncle, Lt. Col. Robert Bruce, Jean, who later became Mrs. John Bruce, was the reason his career took a turn from California to Michigan. The couple, married for 42 years, has two daughters, and today, Bruce has three grandchildren and two great grandchildren as well. One daughter lives a few blocks away from Bruce and the other daughter lives in Rochester Hills, Mich.

As a graduate of UCLA, Bruce majored in accounting so it was a natural fit when he came to work at the command and started in resource management in TACOM's building 1. Back then, there were no intern programs, so you pretty much received your training from a more experienced employee, Bruce said.

Starting at the bottom (Bruce literally started in the basement of building 1), he worked himself up from a GS-8 to a GS-15 in the course of his career. Today, building 1 no longer exists, but one of the memories Bruce has of being in that location was hearing the pellets from the shotguns of the hunters who were shooting quail in what were once cornfields, across the street from building 1.

Today, Bruce is working on the BRAC (Base Realignment and Closure) team, which he says is a little different experience because he gets to work with all the Services, not just the Army.

"It gives you a different perspective," Bruce explained. "You find so many similar problems exist across all Services," he says. "I really enjoy working with so many."

For most people, it is hard to imagine working as long as Bruce has. Most people are thinking and talking about retirement around the age of 50. Retirement is a fleeting thought with Bruce. What motivates him to do it every day?

"I like the challenge of getting up every morning and coming to work to do something new. I enjoy what I do, and I think if you aren't happy and always fighting the job, it's a hardship; and when you enjoy what you do it's a benefit."

Longevity runs in the Bruce family. He has a brother who is two years younger and has recently retired after 58 years in Los Angeles city government. Bruce celebrated his 90th birthday last year. He attributes his good health to a positive outlook.

"I think if you have good mental health, good physical health follows," he said. What does Bruce do in his spare time? He is a ham radio enthusiast and likes to talk with people all over the world through the radio.

Compton is with Tank-Automotive and Armaments Command–Life Cycle Management Command (TACOM–LCMC).

AIR FORCE PRINT NEWS (FEB. 1, 2008)
SCIENTIST DEMONSTRATES BENDABLE ELECTRONICS

Molly Lachance

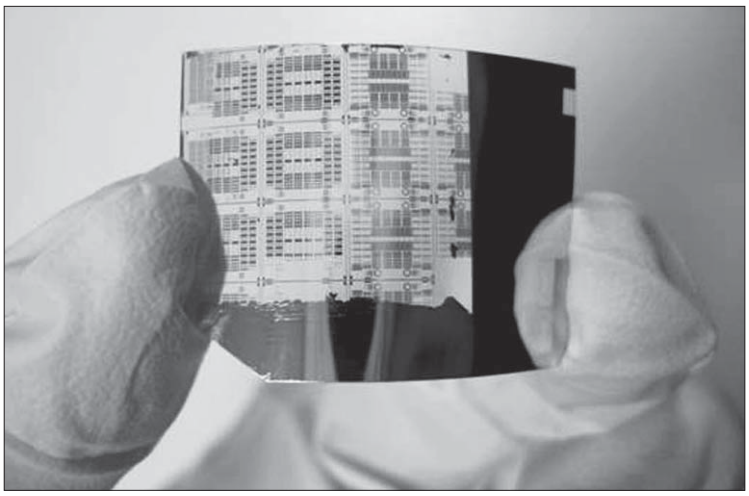
ARLINGTON, Va.—Air Force Office of Scientific Research officials recently have provided research funding for fast, bendable electronics to attach to unevenly shaped objects like airplane bodies or engines.

A research team led by Dr. Zhenqiang Ma of the University of Wisconsin-Madison has developed super-flexible silicon chips that can withstand impact and severe vibration.

By adding pressure to the chips, Ma and Max Lagally have increased chip performance to speeds 50 times faster than previous efforts.

Ma is also working on flexible photodetectors, or optoelectronics, which are applicable for high-speed photography.

"When the optoelectronics are arranged in a hemispherical or spherical shape, the half space or the entire space of interest can be put under surveillance without a moving lens," Ma said.



The flexibility of super-thin silicon transistors, such as the one pictured, could lead to electronics attached to unevenly shaped objects like airplane bodies or engines. Air Force Office of Scientific Research officials recently have provided research funding for fast, bendable electronics to attach to unevenly shaped objects like airplane bodies or engines. Courtesy photo

He said he relates the successes in his research to his progress with new forms of semiconductor material, particularly nanomembranes.

"We have developed a number of innovative methods to manipulate these flexible nanomembranes so that their electrical properties can be tailored at will," Ma said.

The Air Force could have a number of new uses for his research with flexible electronics and optoelectronics, Ma said. These uses include compact antennae attached to airplane bodies and missiles, flexible sensors that detect mechanical changes, and 360-degree air surveillance applications.

The research is timely and relevant for the Air Force and the Department of Defense, as well as for the semiconductor material and device component industries, said Dr. Gernot Pomrenke, an AFOSR program manager.

"The ability to synthesize and manipulate extremely thin films of solid-state materials enables wholly new approaches for improving performance and reducing the size, weight, and power in defense and commercial systems," Pomrenke said.

By funding research like this, AFOSR officials continue to expand the horizon of scientific knowledge through its leadership and management of the Air Force's basic research program.

Lachance writes for Air Force Office of Scientific Research Public Affairs.

ARMY NEWS SERVICE (FEB. 1, 2008)
INSTITUTE NAMES ARMY FIRE SUPPORT SYSTEM OUTSTANDING U.S. GOVERNMENT PROGRAM

Jess Smith

WASHINGTON D.C.—The Advanced Field Artillery Tactical Data System was named the Institute for Defense and Government Advancement 2008 Outstanding U.S. Government Program at its Network Centric Warfare Awards ceremony at the Ronald Reagan Building and International Trade Center Jan. 23.

"I am proud to say that our team has leaned forward and has taken on the challenges of network-centric warfare to include engaging with Future Combat System and Net-Enabled Command Capability to pre-position our program as an integral part of the Army's Future Force," product director Ted Hom said. "We are leveraging advancements in technology and continue to provide state-of-the-art equipment to our warfighters."

The Network Centric Warfare Awards are awarded annually to honor, recognize, and promote initiatives in the U.S. Department of Defense, coalition governments, and defense industry that exemplify the principles of network-centric warfare and support information age transformation, according to IDGA.

The AFATDS product director reports to the U.S. Army Project Manager for Battle Command, an office within the U.S. Army Program Executive Office for Command, Control, and Communications–Tactical.

Deployed throughout the Army and Marine Corps, AFATDS is an automated fire support system using 21st century command, control, and communications technology to increase the accuracy of fires and reduce the timeline from the sensing of targets to the delivery of fires.

As the primary fire support system supporting Army battle command, AFATDS provides expert operators and commanders with situational awareness, battle management, target analysis, and target engagement tools. It provides fully automated support for planning, coordinating, and controlling mortars, field artillery cannons, rockets, guided missiles, close air support, attack helicopter and naval gunfire for close support, counter-fire, interdiction, suppression of enemy air defenses, and deep operations.

Integrated within the fires components of joint command centers for the U.S. Air Force and U.S. Navy, as well as the Army, AFATDS is known as a "multi-Service" system.

"The extraordinary information requirements required to perform fire support command and control and the sharing of this critical fires information throughout the tactical and operational network directly drive the need for a flexible, robust and networked solution," said Hom. "That's what AFATDS provides."

Over the past two years, the AFATDS system architecture and suite of software applications has evolved to support the Department of Defense's migration strategy to the Net-Enabled Command Capability (NECC) while simultaneously complementing the U.S. Army's move to consolidate battle command (BC) servers and services among its array of systems.

This makes AFATDS a cornerstone program to enable the tenets of "net-centric" warfare, according to Hom.

"The tenets of net-centric warfare are critical to the AFATDS mission due to the complexity of executing scalable precision munitions on the right target at the right time while reducing collateral damage," said Hom.

The new capabilities implemented within the AFATDS program stress service-oriented architecture, seamless networking, and information dominance. This addresses capabilities in the physical, information and cognitive domains with a common set of capabilities for both NECC and BC system-of-systems.

The Advanced Field Artillery Tactical Data System has been in use during combat operations since the beginning of Operations Iraqi Freedom and Enduring Freedom as the primary system to manage and execute joint fires (naval, air, cannon, missile, mortar, and attack aviation) in support of the land forces commander.

Smith is a contractor for the Army's Project Manager for Battle Command.

AMERICAN FORCES PRESS SERVICE (FEB. 12, 2008)
RESEARCH AGENCY CELEBRATES 50TH ANNIVERSARY LOOKING TO FUTURE

Donna Miles

WASHINGTON—Fifty years after President Dwight D. Eisenhower created the Defense Advanced Research Projects Agency in response to the Russians' surprise Sputnik launch, the agency continues to advance technologies and systems that give revolutionary advantages to the U.S. military.

Eisenhower's guidance to the new agency when it stood up in February 1958 was clear: Keep the U.S. military ahead of its enemies technologically and prevent any future technological surprise from another nation. That meant forging ahead with innovative, sometimes even radical, concepts that might be too risky for the private sector to take on alone.

Fifty years later, DARPA continues following that charge, pushing the envelope toward what Anthony J. Tether, its director since 2001, describes as "the far side" of science and technology development.

Speaking at DARPA's 25th Systems and Technology Symposium in Anaheim, Calif., in August, Tether contrasted DARPA's work with that of the Services, which tend to concentrate on "the near- and mid-side" and improving "concepts and systems that we know about."

DARPA focuses on new and sometimes radical concepts and systems, many considered higher risk because their feasibility isn't known, he told participants.

"We search for those ideas worldwide that may make a tremendous difference and whose time has come to bring them to the near side as fast as possible," Tether said. "DARPA bridges the gap between fundamental discoveries and new military capabilities, and has been doing so since our beginning."

In its earliest days, DARPA—which initially had no "Defense" in front of its name—focused on accelerating the development of U.S. space launch and satellite capabilities. The agency developed the Saturn V rocket that enabled the United States to launch the Apollo missions to the moon.

DARPA also developed the first surveillance satellites that gave U.S. presidents intelligence about Russian missile program activities. "DARPA was not only preventing surprise, but was now creating surprise for our adversaries," Tether said.

DARPA branched out to other fields, too. It began the information revolution by creating the ARPANET that led to today's Internet. The system began by interconnecting computers at four university research sites in the late 1960s. By 1972, it had grown to include 37 computers. Now, Tether pointed out, the Internet it led to is approaching one billion connections.

DARPA developed technologies that revolutionized warfare: stealth aircraft, advanced precision munitions, and the Predator and Global Hawk unmanned aerial vehicles used in Iraq and Afghanistan today.

But not all of DARPA's past accomplishments are as well known, Tether said. He cited the development of new materials such as gallium arsenide, used in high-speed circuits, and new metals such as beryllium that are stronger than steel but lighter than aluminum.

Other advances include solid-state photon detectors that led to today's night-vision capabilities and microwave and millimeter-wave monolithic integrated circuits, or MIMICS, that enable cell phones and miniature global positioning system receivers to work. DARPA's work in lithography

enabled a microchip smaller than a thumbnail to hold 100 billion transistors. The agency also developed the computer mouse, an effort to make computers more user-friendly.

Meanwhile, Tether said recent DARPA accomplishments are giving U.S. forces fundamentally new capabilities. He's a firm believer that the key to success in future military operations rests in the network, and has the agency busy developing several network-centric capabilities.

One that's already deployed, the Command Post of the Future, enabled computers to serve as virtual command posts that enable commanders and platoon leaders to conduct operations from wherever they happen to be.

Another "game changer" is the Network Centric Radio System, a technology that enables previously incompatible radios to communicate with each other. "An Army soldier can now talk to a Marine, or to an Air Force aircraft or a Navy ship," Tether said.

Yet another DARPA technology Tether said is making a difference is the WASP micro air vehicle that weighs less than a pound and can be launched with a simple hand-throw. The device has a camera that sends high-quality video to the warfighter, providing real-time information on locations important to them.

"Marines use WASP today," Tether said. "They call it their guardian angel. It watches over and protects them."

Tether ran down a laundry list of other technologies under development at DARPA he said could prove to be "future game changers" if they're successful. One aims to extract high-quality military jet fuel from U.S. crops. Another could lead to a machine capable of translating foreign language speech and text as well as, if not better than, an experienced linguist.

Other technologies DARPA is seeking to develop include an aircraft able to refuel and remain airborne autonomously for five years or even longer, and an autonomous ground vehicle able to remove forces from harm's way and save lives on the battlefield. Another is to create a prosthesis to replace an arm lost in combat that's so capable "the soldier could learn to play … the piano," Tether said.

One project seeks to develop a computer able to process more than a billion million instructions per second. Such a high-speed computer would be revolutionary, Tether said. "This new capability will dramatically reduce the time it takes to design, test, and bring an idea to reality, giving us a great strategic and tactical advantage over the rest of the world," he said.

Fifty years after DARPA's inception, Tether said, he's proud to report that the agency has stayed true to its original charter. It's remained "an organization willing to take a bet on an idea long before it is proven," he said. It's "a place for people with ideas too crazy, too far out, too risky, even considered by some as bad, that have turned out to be major game changers for the U.S."

Tether pointed to the strategic and tactical dominance the United States has achieved in many areas during the past 50 years. "If the technology was a game-changer, chances are that DARPA had a role," he said.

The threats the United States faces today are far different from those of 50 years ago, Tether said. Gone is the Soviet threat, replaced by new adversaries and threats such as those that launched the Sept. 11, 2001, terrorist attacks. "The urgency of maintaining technological surprise is as acute as ever," Tether said in a statement released for DARPA's 50th anniversary observance.

"In this time of uncertainty, DARPA's mission remains constant: anticipate all challenges and discover the technical means to conquer those challenges," he told attendees at the 25th Systems and Technology Symposium. DARPA continues its work aimed at "helping our nation prepare for an uncertain future, using the power of ideas to bridge the gap," he said.

Tether, the agency's longest-serving director, said in an anniversary statement he's honored to lead it into its sixth decade. "Everyone at DARPA feels a personal commitment to continuing to deliver revolutionary technologies in support of our men and women in uniform," he said.

Miles writes for American Forces Press Service.

ARMY NEWS SERVICE (FEB. 12, 2008)
SUGGESTERS CLAIM ARMY AWARD—A FIRST FOR TOBYHANNA

Jacqueline R. Boucher

TOBYHANNA ARMY DEPOT, Pa.—Three Tobyhanna electronics mechanics took top honors in the annual Army-wide suggestion competition after discovering a way to save about $150,000 a year.

Tim Kime, **David Voorhees**, and **Andy Martino** were named the 2007 Department of the Army Civilian and Military Suggesters of the Year—a first for Tobyhanna Army Depot. The winners will attend an award ceremony, hosted by the Secretary of the Army, March 27 at the Pentagon.

"The suggesters' idea on the Zero Azimuth Position Sensors [ZAPS] highlights their innovative thinking and dedication to making the Army more efficient," said Col. Ron Alberto, depot commander. Tobyhanna employees submitted 261 suggestions last year; 82 were adopted. A monetary award of $3,939.99 was granted for the winning suggestion.

"The suggestion program gives employees an opportunity to present a better way to do business and to be recognized for their efforts," said Patricia Patelunas, Tobyhanna's suggestion program manager. "I think the suggesters should be very proud of their accomplishment."

Patelunas explained that a suggestion is an idea that benefits the Army or other U.S. government activity. Submissions must present a problem and proposed solution. Instead of discarding a $3,356 basic sight assembly scanner, Kime, Voorhees and Martino proposed, via the Suggestion Program, to reclassify the ZAPS from a component to a part, thereby authorizing them to repair the broken sensor.

Through the process of trial and error, the three men devised a plan to save time and money by fixing the scanners at the depot. They realized the heat generated by the laser caused the light transmitting diode to fail. Research showed that eight out of 10 times, only a $20 diode needed to be replaced to bring a broken scanner back online, but because of the ZAPS classification as a component, repairs were unauthorized.

"It really was a common sense approach," Kime said, noting that it seemed like a no-brainer to spend $20 to save $4,000. Electro-Optics/Night Vision Division works on an average of 225 scanners a year. The unit consists of 14 parts, including the sensor and a glass prism and lens.

Getting the reclassification accepted would solve the problem, according to Voorhees. He explained that if an item is classified a component, it doesn't get repaired; however, a part can be repaired. "A component is something you use and throw away," Voorhees said. "Renaming the ZAPS provided an avenue for us to make necessary repairs saving thousands of dollars for each item."

"I never expected the idea to go as far as it has," Martino said. "We were just doing our job—there was a problem and we resolved it." He explained that the hardest part was just figuring out what the problem was and then how to fix it. Martino was reassigned to the communications system directorate's satellite communications division before the suggestion was approved.

The ZAPS is used in the basic sight assembly scanner of the Bradley Fighting Vehicle. The scanner is a mirror assembly that moves quickly left and right. Once the zero azimuth position is found, the mirror is adjusted to move equally left and right from the center.

According to the mechanics, the ZAPS allows the technician to find the center of the moving mirror, letting the cross-hairs of the night vision system to line up. Without ZAPS, the system would sight slightly left or right of the target.

"They [Kime, Martino, and Voorhees] could have just as easily gone about doing business as usual, but decided to work together and submit their idea in hopes of improving the process," Patelunas said. "It shows that employees here really do care about the jobs they do.

"The suggestion program is an excellent avenue for all employees to present better ways of doing business and to improve the quality of life at the depot," she said.

Boucher works at Tobyhanna Army Depot.