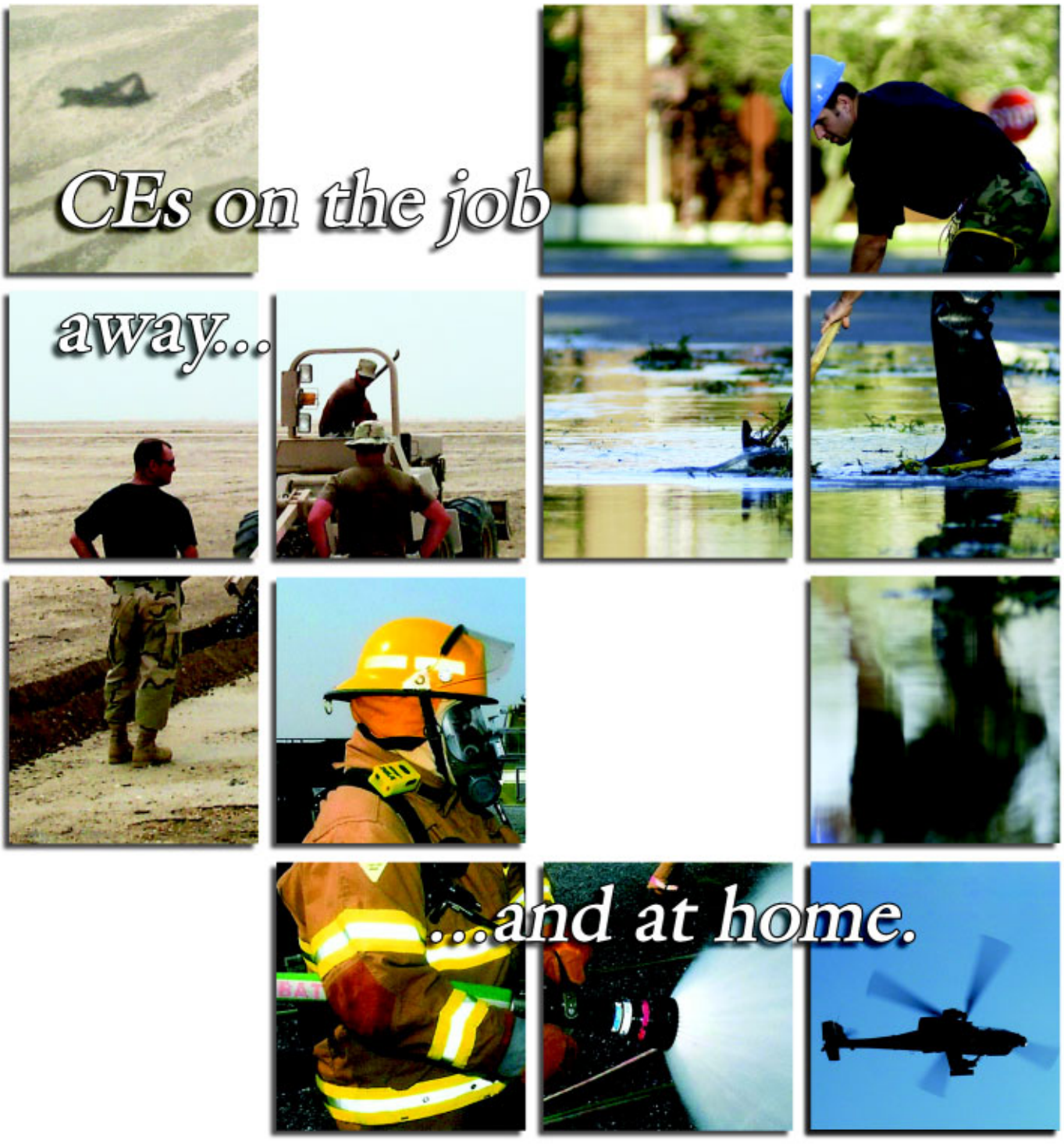
Air Force
CIVIL ENGINEER
Volume 11, Number 3, Fall 2003



From The Top

photo by Keith Fred

Maj Gen L. Dean Fox

Remaining the Best!

It's hard to believe another summer (construction) season has come and gone, and fall is upon us. We've had an extremely busy and productive summer; however, our Air Force family has experienced unusually high numbers of safety-related fatalities and injuries. As the winter and holiday season approaches, I'm asking each of you to please put safety first—*you are our most valuable resource*!

I'd like to update you on the "Back to the Bases" initiative we began this summer. I've met several times with the MAJCOM engineers and we've chartered a Back to the Bases Task Force to identify both "best practices" and areas for improvement in our base-level capability to support installation missions. I want to emphasize that this is not an inspection or staff assistance visit for the bases, nor is it a reorganization or manpower drill. The team won't leave a report card, and the report of the task force will not attribute any identified gaps or weaknesses to specific bases; it will, however, identify them as areas for the MAJCOMs, field operating agencies, and Air Staff to address. The results from the task force will be briefed at the CE Senior Leaders Conference in December.

Additionally, I'd like to take a moment to discuss "transformation" with you. The Air Force defines transformation as "a continuous process by which the Air Force achieves and maintains advantage through changes in operational concepts, organizations, and/or technologies that significantly improve its warfighting capabilities or ability to meet the demands of a changing security environment." Whether you are aware or not, we as engineers are in the midst of our own dynamic transformation, from the organization of our MAJCOM CE staffs, to the way we conduct our comprehensive planning, identify requirements, and program, prioritize and execute our programs.

I've seen major differences in how bases build, brief and use their base comprehensive plans. To some it's a living document that efficiently informs their customers and guides them on a smart path toward the future; unfortunately, others put little effort in and get little value out. Some bases and MAJCOMs have terrific cooperation toward identifying requirements that require technical expertise—pavements, electrical distribution (including airfield lighting), fuels, water, and wastewater—and their payoff has been great with healthy year-end funding in FY03. Some bases and MAJCOMs partner their programming and project execution very well to posture projects properly, keep commanders informed, maintain the right push on design and construction agents, and resolve issues early. Unfortunately, these bases and MAJCOMs that seem to have it "all together" may be the exceptions; these are some of the main areas the Back to Bases Task Force will study. If MAJCOMs aren't organized or focused toward properly supporting their bases, they will get feedback regarding how best to orient their support efforts or what "voids" need to be addressed by Air Staff, AFCESA, AFCEE or contract support.

As the task force conducts its visits, I need each of you to be candid in your discussions. Take the time to identify areas where you do things well and also where you need help. Each and every one of you is critical to the success of these initiatives that, I believe, will help us get Back to the Bases. By tackling this challenge as a team, we will guarantee that we remain the best engineers in the world's premier aerospace force.

Sallie and I wish you and your families a very safe and happy holiday season!

Features

8 Defusing Explosive Situations
10 Welcome to Baghdad
13 Containing Costs
14 GeoReach: An Evolution in Beddown Planning
17 Readiness Troops Break New Ground
18 Cleaning Up After Isabel
20 Light 'em Up!
23 Putting It On The Line
24 Instant "Motel": Just Add USAFE CEs
26 Reserve Power Building
27 Vandenberg Firefighters Join The Battle
34 September 11th: A Personal Remembrance

Departments

4 Interview
28 Education & Training
30 CE People
35 Unit Spotlight

On the cover ...

The images in the cover montage show CEs in action in Iraq (two photos upper left and photo lower right) and at Langley AFB, VA (upper right), and Maxwell AFB, AL (lower middle).

(official Air Force photos)

Please send story ideas, articles, photos, comments and suggestions to
cemag@tyndall.af.mil

Air Force Civil Engineer
Fall 03 • Volume 11 • Number 3

The Civil Engineer
Maj Gen L. Dean Fox

AFCESA Commander
Col Gus G. Elliott, Jr.

Chief, Professional Communications
Dr. Ronald Hartzer

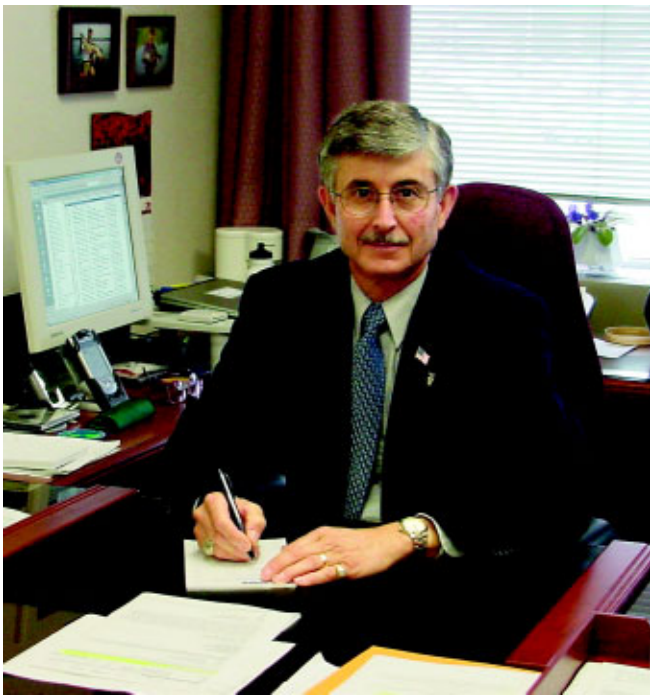
Editor
Teresa Hood

Graphic Designer
Guy Ivie

Air Force Civil Engineer is published quarterly as a funded newspaper by the Professional Communications staff at the Air Force Civil Engineer Support Agency, Tyndall AFB, FL. This publication serves the Office of The Civil Engineer, HQ U.S. Air Force, Washington, D.C. Readers may submit articles, photographs and art work. Suggestions and criticisms are welcomed. All photos are U.S. Air Force, unless otherwise noted. Contents of *Air Force Civil Engineer* are not necessarily the official views of, or endorsed by, the U.S. Government, the Defense Department or the Department of the Air Force. Editorial office: *Air Force Civil Engineer*, AFCESA/PCT, 139 Barnes Drive Suite 1, Tyndall AFB, FL, 32403-5319, Telephone (850) 283-6242, DSN 523-6242, FAX (850) 283-6499, and e-mail: cemag@tyndall.af.mil. All submissions will be edited to conform to standards set forth in Air Force Instruction 35-301 and The Associated Press Stylebook. *Air Force Civil Engineer* is accessible on the Internet from AFCESA's home page: http://www.afcesa.af.mil.

As the Air Force's first civilian command civil engineer, Mr. James R. Pennino oversees all aspects of civil engineering for the diverse facilities and missions of Air Force Materiel Command. Since his appointment on June 30, 2003, he has been...

Facing the Challenges



Mr. Pennino is the Air Force's first civilian command CE. ***(photo by Don Shelton, HQ AFMC/CEOM)***

***AFCE*:** Air Force Materiel Command is now the only major command to have a civilian command civil engineer. As a member of the Senior Executive Service, what strengths do you bring to the position and what is your vision for civil engineering in AFMC?

Mr. Pennino: I bring a strong background in Air Force civil engineering like other senior officers do, as well as private sector experience, which I feel was an important factor in my selection for the SES. I have over 21 years of total federal service time plus about 13 years of private sector time. I left federal service in 1984 and had three businesses in the 13 years I was out of federal service.

My vision for AFMC is threefold. First, I want to share the AFMC CE story with the rest of the Air Force and the rest of the CE community. I want them to realize that civil and environmental engineers at AFMC make as much a contribution to supporting the warfighter and our national defense as the other commands do, even though we don't have as large a deployment mission as other commands. AFMC's primary missions are industrial, acquisition and research, development, testing, and evaluation. We're doing the same thing that typical base engineers do but with a smaller workforce. Mainly CE is contracted with less people plus a small government oversight staff, or a small all-government workforce. When a contract is competitively bid, it doesn't matter whether a government entity or a contractor wins the bid, the resulting workforce is smaller and leaner. Therefore, we're doing more at AFMC bases with less people than at other commands.

The second part of my vision deals with streamlining processes. We have to be able to make it easier to do civil engineering work on bases where we are challenged by A-76 actions. I'm looking for ways to streamline operations and possibly get some of the regulations changed or relaxed.

The third part of my vision is to focus on people—mentoring, encouraging, and rewarding all people: civilians, military and contractors. I want to encourage them to be innovative and to streamline processes where possible. It's also important in AFMC that everyone is conscious of their cross-functional experience or, perhaps, lack thereof. When a base organization becomes contracted, it loses the diverse military experience that I believe is important in the Air Force. I'm concerned when civilians are put into CE leadership roles that they may not be totally prepared for. Therefore, cross-functional experience is important.

***AFCE*:** AFMC has a diverse mission. What are some of the unique challenges that the civil engineers face in the command, and what kind of special education and training do they receive to carry out that mission?

Mr. Pennino: A-76 is alive and well in AFMC. A-76 takes one of two forms: a private contractor wins the bid and performs the function, or a government organization "wins" it. What both situations have in common is that a small government civilian staff oversees the contract. The challenge is to provide adequate training to help civilians, who are put into management positions previously held by senior officers, adjust to their new duties.

The variety of facilities we construct and maintain poses another challenge to our AFMC engineers. Many of the facilities we support are similar to those of other commands. We have bases with flying missions as tenants, for example, Hill AFB in Utah and Eglin AFB in Florida, flying F-16s or F-15s. AFMC bases also have unique research, development, testing and evaluation, industrial, and acquisition facilities. Tinker AFB is a good example—Building 3001 is a mile long. It has a

huge plating shop inside the building that has a unique utility system that's critical for the facility. Wind tunnels, laboratories, and other AFMC-unique facilities all present positive, intriguing challenges to our engineers.

***AFCE*:** We've talked earlier about the changing nature of the workforce within AFMC. How has it changed in the past few years, and what does the future look like for AFMC civil engineers?

Mr. Pennino: The structure of our workforce has changed dramatically over the past few years. Since 1995, we've gone from 7,300 government civilian and military employees to just over 3,900 today. We had 258 military officers and 2,724 enlisted—we now have 81 and about 1,000, respectively. We had 4,300 government civilians, now we have 2,850. Since the workload has only grown, we've replaced many of our losses with nearly 3,000 contractor equivalents. We have 10 main operating bases in AFMC, four that have contracted CE services to civilian firms. Three won against their private sector competitors and are "contracted" to the government: civil engineering at both Wright-Patterson and Edwards AFBs and environmental at Tinker AFB. At Eglin, Hill and Robins AFBs, all with large Air Expeditionary Force missions, the majority of the workforce is not contracted. Brooks AFB is a separate example, because all of the real property and the maintenance responsibilities were turned over to the Brooks Development Authority, a private authority of the City of San Antonio. Thus, the face of AFMC CE has changed dramatically, and as a base is re-competed every 5 years, an entity chosen as the most efficient organization, or MEO, could lose to the private sector or vice versa. This all ties into the first question and my vision for AFMC's future: improving efficiency and streamlining processes to do more with less.

***AFCE*:** As you're talking about some of AFMC's facilities, what are some of the MILCON projects that you have ongoing?

Mr. Pennino: We manage about $450 million of MILCON projects. We not only have common buildings found at typical bases, such as dorms and fitness centers, but at Edwards AFB we have a $21 million test facility complex for the joint strike fighter. At Robins AFB, we have a $50 million paint and depaint facility complex. These are depot-level corrosion control facilities that you can literally drive a C-5 into, have it climatically controlled, actually do the paint stripping down to bare metal, and then repaint it. We have large, very expensive wind tunnel and propulsion test facility projects at Arnold

775th CES troops set up an "Alaska shelter" during an operational readiness inspection at Hill AFB, UT. *(photo courtesy 775th CES)*

Engineering Developmental Center, Tennessee. Again, our needs provide a negative as well as positive challenge. You have to know how to design and build these highly technical facilities to bring them in on time and within budget.

***AFCE*:** Programming is critical to obtaining funding for new facilities. Some people have said that the programming experience in the civilian and military staffs is becoming a lost art. How is AFMC handling this challenge?

Mr. Pennino: My first job in the Air Force was as a programmer and I spent the next 13 to 14 years doing programming, until I became a major command chief of programs. Programming is really important but there is unfortunately less emphasis on it now. At AFMC, we have a special challenge because part of the loss of knowledge from the A-76 process has been in programming. We hold regular video teleconferences with the programming folks and our command chief of programs gives them updates on new policies and procedures. We also hold an annual programming workshop at AFMC. Our headquarters staff must be experts in policy, public law and interpretation of the AFIs so that if someone at an installation has a question, they'll know we provide credible answers. We're emphasizing programs as an important skill set in base organizations. We're even developing a programmer's guide that we hope to have published by the end of December 2003.

***AFCE*:** Let's talk about the readiness mission in AFMC. How have AFMC civil engineers supported the two most recent operations, ENDURING FREEDOM and IRAQI FREEDOM?

Mr. Pennino: Eglin, Hill, and Robins AFBs all have Unit Type Code missions, and they are the three bases that function like a typical civil engineering organization. During AEF cycle 3, a 15-month cycle that ended in June, our three core bases deployed over 500 civil engineers. Kirtland and Edwards AFB's (which are not core bases) explosive ordnance disposal units also provided great support to OIF and OEF. We also filled 100 percent of our taskings (not 100 percent of the people, of course). AFMC had 8 percent of the UTC taskings and we have met those. By next March, we will be back on the normal rotation cycle and in that tasking we have 7 percent of the taskings, but so far we have actually filled 7 ½ percent. I'm really proud of the fact that Materiel Command has done all that it can to meet the deployment requirements in support of the current events.

***AFCE*:** Let's talk a little bit about your foreign military sales construction program. How would you describe it and what types of projects are ongoing?

Mr. Pennino: The foreign military sales, or FMS, program is really unique to AFMC; no other command has it. When weapons systems are sold to a foreign country—Saudi Arabia, Jordan, or Egypt—the foreign government pays for these services through another government department. However, AFMC civil engineering has a branch within the construction division that supports any facility requirements for the systems or aircraft that the foreign government may need. We do site surveys and evaluate the current facilities, and if the country we're working with has their own construction capability, we stop there. But if they want us to manage the construction of those facilities, we can. We just closed the Saudi Arabian construction program, which had about $3 billion dollars in construction over the life of that program. Right now, the only active area is in Egypt, which currently has only about $200 million dollars of construction going on. It should pick up, however. We've had trips to Poland, Oman, Chile and the Czech Republic to do site visits recently.

***AFCE*:** How have you been partnering with the logistics community to deal with the issue of aging depots?

Mr. Pennino: Aging depots are a big problem in AFMC. The Air Force depots—Robins, Hill and Tinker AFBs—operate like a busi-

Mr. Pennino lines up a target with a .50-caliber Barrett weapon at the Silver Flag Range, Tyndall AFB, FL. *(photo by Maj Nav Singh)*

ness and that's where the problem started. Everything they do is reimbursable and they charge rates to the using commands. If Air Mobility Command brings in a C-5 to get stripped and painted, they are charged an hourly rate. Maintenance and repair of the physical plant is included in the rates, but over the last 10 years, the operations at depots have shown a loss. Depot leadership made difficult decisions on how to cover the losses; often funding earned for sustainment and restoration requirements was redirected to cover portions of these losses. Thus, over time, facilities and infrastructure deteriorated below acceptable limits.

The Air Force's recognition that the depots needed some major improvements led to the birth of the Depot Maintenance Reengineering and Transformation Initiative, called the DMRT, in January 2002. The Air Force agreed to infuse extra dollars into the depots to make them more efficient and more modern to reduce the depot maintenance process time. The Air Force program objective memorandum added $150 million per year over the FYDP beginning in FY05 for process improvements, technology improvements, or MILCON if related to improving the process. However, it could not be used for M&R, which remained a bill to pay from of the rates.

My predecessor, Brig Gen Dave Cannan, championed the infrastructure improvement initiative and we partnered with the depot folks to create a depot infrastructure improvement master plan, or DIIMP. Before this, there had not been a master plan for the improvement of depot facilities. Civil engineering has experience with all kinds of improvement plans and knows how to do long-range facility planning so we took the lead in the DIIMP. Of the $150 million per year, it looks like we're going to spend anywhere from $20-30 million a year in MILCON, depending on how the requirements prioritize. Fortunately, we've had a supportive and involved logistics community to make the DMRT successful.

***AFCE*:** AFMC manages the largest environmental budget in the Air Force. What is the status of your environmental program, and what innovations are your people implementing in this area?

Mr. Pennino: Materiel Command enjoys the best support for these programs from its senior leadership. All of the commanders are extremely concerned about environmental stewardship. The defense goals for our cleanup and restoration programs require that we have remedies in place by 2014; currently we have nearly 80 percent in place. That's a credit to our people and how well they work with the regulators. We typically have a very small number of open enforcement actions. Right now we have no actions and we've only averaged two per year in the last three years.

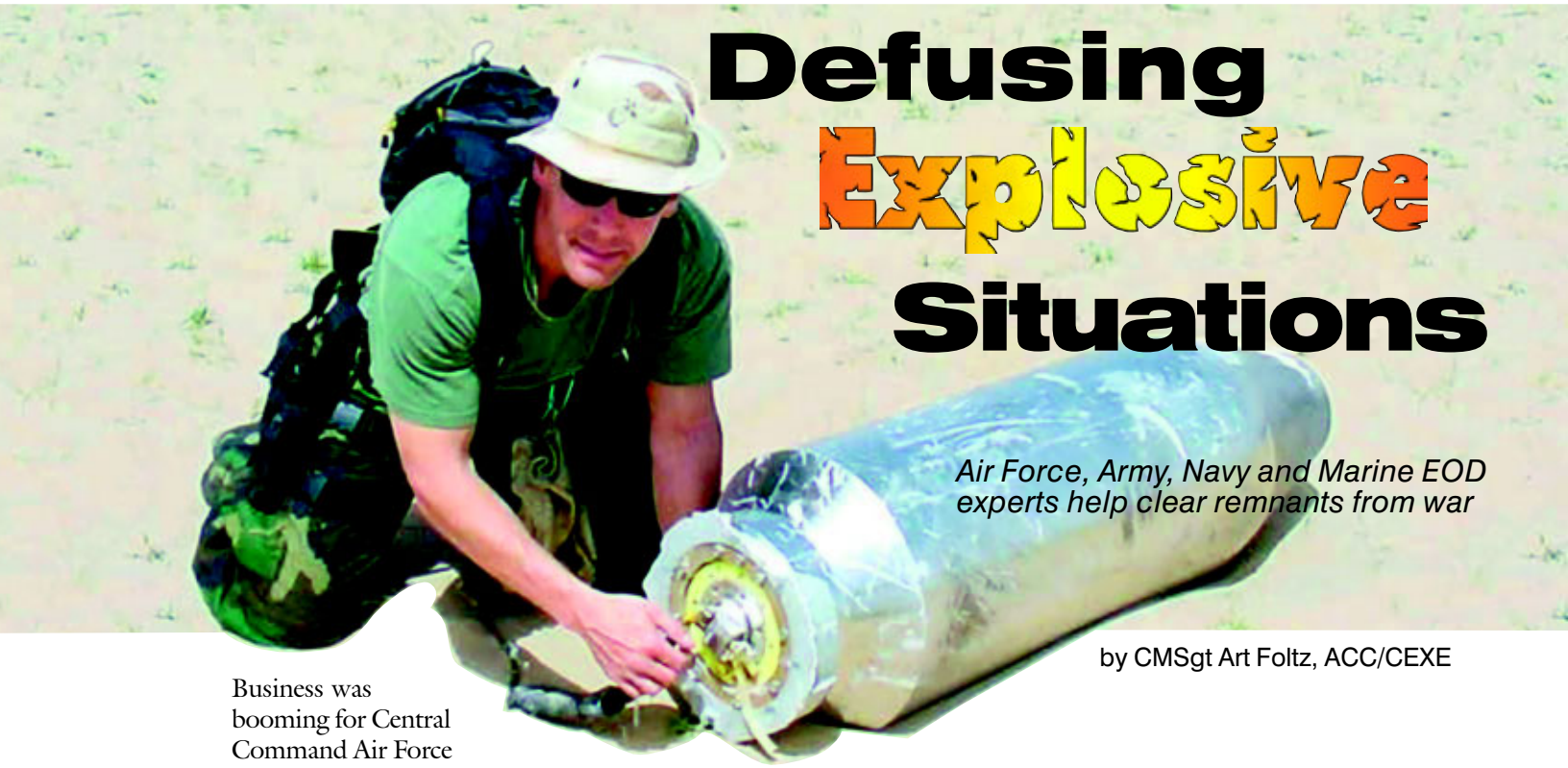
Our bases and our programs are huge. We maintain and preserve 112,000 acres of wetlands across Materiel Command and we have over 4,000 archeological sites. We have 19 threatened and endangered species on our bases. We have almost a thousand historic facilities that are eligible for the National Register. We have a phenomenal pollution prevention, or P2, program. Hazardous waste at our depots is a large challenge and we've reduced it by 53 percent across the command. We also have an innovative technologies initiative in the P2 program to develop new weapons systems that are environmentally friendly from the start.

***AFCE*:** Are there any other topics you'd like to address?

Mr. Pennino: AFMC is both a challenging and rewarding command to work in—even more so than other commands because of our deployment mission as well as the unique facilities we construct and maintain. We have warfighting bases, large base maintenance contracts, and huge environmental programs. We're winning all kinds of awards in the environmental, fire and emergency services areas. Two of our firefighters just won DoD awards. People in Materiel Command are doing great things and they're getting recognized for it. I'm just very, very fortunate and proud to be part of such a great team. I'm not out recruiting but I want to get the word out so that others—civilian and military—will want to work in Air Force Materiel Command. We have great things going on. I believe it's a pretty neat place to work, so come on, sign up!

Mr. Pennino inspects Robins AFB, GA, Hazmat/Hazwaste Management Facility (Building 359) with Mary Kicklighter. *(photo by Debbie Berry-Smith)*

Defusing Explosive Situations



Air Force, Army, Navy and Marine EOD experts help clear remnants from war

by CMSgt Art Foltz, ACC/CEXE

Business was booming for Central Command Air Force explosive ordnance disposal during Operation Iraqi Freedom. Teams from CENTAF EOD had more than their share of unexploded ordnance, or UXO, while accomplishing one of their main priorities—supporting joint operations to the fullest.

CENTAF EOD area-of-responsibility operations were managed from the Combined Air Operations Center at Prince Sultan AB, Saudi Arabia. With nearly 200 personnel poised at 25 locations in 13 countries, CENTAF EOD's functional managers CMSgt Art Foltz and MSgt Kenny Smith had their hands full orchestrating a broad spectrum of EOD requests for action.

CENTAF EOD's first joint mission at the onset of the ground invasion supported an operation dubbed Restore Iraqi Oil. Securing and returning the oilfields to the new Iraqi government for restoration efforts was high on the National Objectives priority list. As part of Restore Iraqi Oil, MSgt Joe Cross led a team assisting Navy EOD at the Rumaliyah and As Zubayr oilfields. The joint team's mission was twofold: 1) to clear UXO and booby-trapped explosive ordnance from paths around and to the oil wellheads, and 2) to safe explosive charges placed on the wellheads by the Iraqi military. The charges on the wellheads were designed to be detonated from remote locations and destroy the wells. The team destroyed over 5,000 UXO and explosive charges under harsh environmental conditions and the constant threat of enemy attack.

Concurrently with the Restore Iraqi Oil mission, CENTAF EOD provided a team from Al Jaber AB, Kuwait, to support the 1st Marine Expeditionary Force at Jalibah Airfield in setting up a C-130 operating base and forward ammunition and refueling point. Led by MSgt Daniel Jessup, the team destroyed over 2,000 UXO and mines left over from the Gulf War. The 3rd Marine Aircraft Wing was then able to safely bed down and conduct forward operations from the airfield.

Not all of the UXO came from the Iraqi forces. In support of Naval Forces Central Command, teams from Kuwait (Al Jaber AB), Saudi Arabia (Prince Sultan AB and Tabuk AB), and Turkey (Incirlik AB) responded to 12 errant Tomahawk Land Attack Missiles. The teams, with escort by host nation security forces, documented component serial numbers to help the Navy determine why the missiles strayed off target. When the render-safe procedure was completed on the warheads, all explosive components were destroyed to make areas immediately safe.

One of the more interesting joint missions involved a virtual munitions museum of sorts— an ammunition supply point, or ASP, housing hundreds of thousands of Iraqi mines and ordnance from many nations of the world. Army EOD personnel found the ASP after their ground

Above: SGT Dennis Thompson, USMC, prepares to remove fuze from TLAM warhead during a joint USAF/ USMC EOD operation. *(photo by SSgt David Pinkham)*

Right: MSgt Roderick Baltazar inspects a cache of mines at an ASP discovered by the Army at Al Nasiriyah. *(photo by deplyed EOD team)*

forces captured and secured Al Nasiriyah, and Army Forces Central Command quickly requested CENTAF EOD support to inventory, catalog, and destroy the ordnance. Teams led by MSgt James Ford and MSgt Roderick Baltazar burrowed into the heaps of ordnance and began the tedious task of checking the stockpiles for booby-traps, followed by the exhilarating task of destroying literally thousands of the mines and ordnance. Sgt Baltazar described the ASP as "actually like an EOD wonderland because we got to see things we'd only seen in publications and pictures. This is exactly what we train for."

Those left behind at bases in the region also did their part. Support for joint missions often meant flight personnel drawing down below surge manning levels—a circumstance they accepted voluntarily. Loss of personnel meant those left behind had to perform at peak levels for extended shifts, and they met the challenges the situation demanded.

CENTAF EOD's job went much further than just supporting joint EOD missions. MSgt Smith also ensured that personnel and resources were quickly ready for other important tasks. In support of wing operations, EOD flights gave immediate response to hundreds of suspicious packages and UXO incidents. As the "go-to-guys," the flights evaluated force protection measures and recommended improvements, actions that ultimately made installations safer. Ensuring that wing operations remained operational for the launch and recovery of aircraft was also a major focus of the EOD flights.

The ASP was "like an EOD wonderland.... This is exactly what we train for."

A very important challenge met by CENTAF EOD was to set up flights at three Iraqi airfields: Baghdad International Airport, Kirkuk, and Tallil. The flights at Al Udeid in Qatar, and Ar'Ar and Tabuk in Saudia Arabia, split their resources to establish EOD capabilities at new bare base locations. Teams from the three new flights in Iraq were commonly greeted by myriad UXO on airfields, hastily buried weapon caches, and imposing amounts of poorly stored Iraqi ordnance but, as usual, situations were assessed and priorities set. All UXO affecting airfield operations was rapidly cleared; then attention was given to clearing beddown and munitions storage area sites. Daily, booming was heard from EOD destroying recovered UXO and mines—music to the ears of EOD troops and those leery of the items!

The EOD flights' tasks became even more complicated: Coalition Forces Land Component Command designated the three airfields as their collected ammunition holding areas, or CAHAs. Day and night, ordnance recovered by Army and Marine forces were delivered to the holding areas for destruction or release to other agencies. To ensure the safety of wing personnel and resources, EOD teams accepted the task of CAHA risk reduction by enforcing compatibility and quantity-distance standards. All of these teams are still locating and destroying some of the most lethal conventional ordnance ever built.

Most of the bases that were established during OIF are closed, and the troops that were called on to provide a safe operating environment during the air and ground war have returned to their on-call status. The EOD profession can be proud of their contributions to the overall Global War On Terrorism. Their actions saved many lives and protected numerous resources and brought about a quick victory in our quest to liberate the Iraqi people. The EOD troops that lived, breathed, and implemented the missions of OIF once again lived up to the axiom, "the difficult done immediately, the impossible by appointment."

CMSgt Art Foltz is the EOD program manager for ACC/CEXE at Langley AFB, VA.

Air Force EOD personnel at the CAHA established by CFLCC at Kirkuk. *(photo by deployed EOD team)*

Welcome to Baghdad

a day in the life of an EOD team

Editor's note: The following story is true. It was written by MSgt Joseph Kunkle, an explosive ordnance disposal technician, deployed to Southwest Asia. On Sept. 12, he, fellow EOD team member SSgt Justin Krowicki, and their Army security escort team had the day of their lives. Literally.

MSgt Kunkle sent an email to several friends describing his day. Because the message was not initially written for publication, it has been edited for flow and journalistic style.

approx. 0800 Baghdad time

The 447th Expeditionary Civil Engineer Squadron EOD team received a call from the Army requesting support for a convoy that had just been attacked in a local marketplace about six miles away. An improvised explosive device had detonated and multiple rocket-propelled grenades had been fired at the convoy. One of the RPGs took out an armored Humvee. The smoldering vehicle had munitions inside which had detonated and spread ordnance around the area.

We arrived at the scene and it was chaotic. Civilians and military personnel were everywhere and a burned-out vehicle was abandoned in the middle of the road. SSgt Krowicki and I searched for other IEDs, eliminated hazards from burning unexploded ordnance and conducted a post-blast investigation to help investigators determine the size and composition of the weapons used.

approx. 1000 Baghdad time

After completing our work, our Army engineers directed us to respond to a water treatment facility about four miles away that had been attacked the night before by mortar rounds. Six mortar rounds hit the facility, but two didn't detonate and were lodged in the roof. Using remote equipment, we were able to dislodge the mortars and safe them.

approx. 1345 Baghdad time

SSgt Krowicki and I received a report of multiple IEDs on a major highway and U.S. convoy route about 15 miles away. When we heard the location, we knew we would be in for an interesting time. The area was one of the worst in Baghdad, and this particular location was the worst place of all.

We arrived and noticed two large, burlap feed bags and one metal can along the side of the road. As we drove our armored Humvee through an apartment complex to get closer to the IEDs, people began pelting our vehicle with rocks, including some large ones coming from rooftops.

As we made it to our location, the rocks gave way to sporadic automatic gunfire from the apartments. We continued operating, taking cover during weapons fire.

The two burlap bags each contained about 50 pounds of explosives and the large metal can contained about 25 pounds of explosives. The metal can also contained a remote-control device with a wire running off into the distance. While SSgt Krowicki performed long-range recons and watched my back, my Army security escort and I traced the wire to a tunnel, and the Army secured the site. No one was found inside.

I returned to the metal container and rendered it safe, removing the remote-control device and cutting the two detonators from the explosives. I then found a buried wire running from the can to the two burlap bags. They were all designed to detonate at the same time, taking out an entire convoy as it drove by.

I followed the wire to the first burlap bag, cut out its two detonators, and performed a remote pull on the entire bag in case it was booby-trapped. I then moved to the second bag, where I found another wire leading to another tunnel. The escort and I repeated what we did the first time and the tunnel was secured.

As I was returning to the second bag, we came under increased gunfire from the front and rear. Bullets were flying past us and hitting right at our feet. We dove into a ditch with the other Army troops. When we tried to climb the sides of the ditch to return fire, we received additional gunfire, so we low-crawled down the ditch. We were in a crossfire. The Army called for help and within seconds, U.S. Army tanks, assisted by coalition soldiers, responded. Their help allowed us to finish our work on the IEDs and get the hell out of there.

approx. 1600 Baghdad time

As we convoyed out of the area, we received a call from an Army patrol unit about two "rocks" with protruding wires located in the median of another major convoy route about three miles away. We responded and found what the Army had described — "rocks" that looked like large pieces of curb with wires protruding from them.

Finding that odd, we continued our recon and realized the "curbs" were shaped like large projectiles about 120mm in size. I broke off a piece of the "curb" in my hand; it was plaster of Paris. The projectile was covered in the plaster and rolled in dirt and small rocks. It truly looked like a piece of curb. The ordnance was connected to a remote-control detonator, making it an IED. SSgt Krowicki safed both items and we looked forward to returning to base.

approx. 2030 Baghdad time

While en route to base, we received another call. Two IEDs had been located in a marketplace about six miles away. We arrived on scene and were met with sporadic automatic weapons fire. In between rounds, we talked to military police and Iraqi police to find out where the IEDs were. No one seemed to know. We finally determined that we were at the wrong location; the devices were one block away from us.

SSgt Justin Krowicki and MSgt Jospeh Kunkle, 407th ECES/EOD *(official Air Force photo)*

After we relocated and searched the area, we found wires in the dirt in the curb. I followed the wires, found a mortar slightly buried underground, pushed away some dirt, and found a remote-control device attached to the mortar. I rendered the devices safe, then followed the remainder of the wire and found buried explosives. There was something about the way the explosives were sitting, so I dug a little with my hand and found another mortar buried under it. I was about to safe the device when we started taking gunfire from across the street. While laying flat in the middle of the road for cover, I decided to blow the device in place. When our Army security team went after the shooter, I placed the charge and took off running for cover because I didn't want to take any more chances of being shot. It was a nice detonation.

approx. 2400 Baghdad time

As we were convoyed back to base, an IED detonated as we crossed an intersection. We were traveling at a high rate of speed so the IED missed us. We felt the blast overpressure, but nobody was injured.

Finally, our day was over; SSgt Krowicki and I had rendered safe seven IEDs designed to take out U.S. convoys and personnel traveling throughout Baghdad. It was a good day for us.

MSgt Kunkle and SSgt Krowicki are deployed from McGuire AFB, NJ.

These training photos shows examples of the types of devices that EOD teams deal with on a daily basis in Iraq. ***(official Air Force photos)***

Containing Costs

Range cleanup efforts get time- and cost-saving boost from improved recycling container.

by Mr. Hank Domme, 56th RMO

The Range Management Office at the Barry M. Goldwater Range, Luke AFB, AZ, recently devised an improved, cost-saving way to ship crushed metal to commercial recyclers. A new container was designed and built to ship crushed cast-steel, 25-pound practice bombs, or bomb dummy units, from BMGR to recyclers as the material was demilitarized. The custom-built containers paid for themselves within the first 30 days on the job.

After studying problems associated with shipments of crushed metals at their own and other ranges, the RMO decided to design and build specialized roll-off containers to handle the massive loads of metal leaving the range. The newly designed containers could handle an optimum load of crushed BDUs. They were also fully capable of maximizing truck gross vehicle weights while eliminating the lost space and reduced container capacity associated with the industry-standard roll-off containers normally used. These containers, typically designed to handle large bulky items, aren't optimally sized to handle the small, very dense masses of metal concentrated in a load of crushed bombs.

As a first step in the process, the RMO calculated the dimensions of a maximum load of crushed bombs. Then with input from the range residue removal, or R3, contractor and the recycler, they designed a container that met all of their weight and size specifications. After a desktop analysis proved the feasibility of the investment, $23,520 was dedicated to build eight custom containers.

RMO's design incorporated several special features: a full steel security lid designed to be lifted on the job site by an excavator; fixtures for the certifying technician's locks and security seals; a heavy-gauge bathtub steel body with a single door; welded-on serial numbers; wide ground-rollers for easy movement; and front and rear lift hooks.

The new containers are extremely durable. For example, when a winch cable on a roll-off truck slipped, a fully loaded container weighing 20,000 pounds slid back off the rails and landed behind the truck. The container not only survived the fall, it continued working through the 11-month run of residue removal.

Feedback from the R3 contractor was completely positive. Their productivity was enhanced, because empty containers were cycled through the job site and recycling mill more rapidly. Extensive work to add or remove materials to meet gross vehicle weight ratings on the transport trucks was also eliminated.

The single factor creating the largest bottleneck on the task was the number of trucks in the pipeline to the mill. The crusher turned product out at a higher rate than the trucks could complete the trip to the mill and back. Several times, trucks backed up temporarily and the R3 contractor held crushed product at the job site until the containers returned. Because the R3 contractor had a lot of other work, such as cutting targets and shearing bombs, this didn't create dead time for them. However, on a large R3 task like BMGR executed, with millions of pounds of BDU-33s to crush and ship, transportation time could become a limiting factor. Four more containers would have been beneficial.

Other large ranges planning extensive shipments of huge loads of crushed BDUs might consider a similar strategy to support the R3 effort. Product weights being shipped per truck increased dramatically. Most importantly, the RMO was able to generate significant savings for BMGR by creating a custom container that eliminated both container use fees and lost space-to-tare weight associated with shipping cast steel.

Hank Domme is the munitions disposal specialist for the 56th Range Management Office, Environmental Science Management, Environmental Plans, Luke AFB, AZ.

A custom container at BMGR being filled with crushed bombs using a skid-steer loader. *(photo by Dr. Brock Tunnicliff)*

GeoReach—An Evolution in Beddown Planning

USAFE civil engineers used modern geographical-based tools to plan beddowns for OIF.

by Capt Marc R. Vandeveer, USAFE/CEPP

During Operation Iraqi Freedom, engineers of the United States Air Forces in Europe used a new tool to take an evolutionary leap over the traditional beddown planning process. GeoReach, a process developed by the Air Force and based on geographical information systems, or GIS, information, was a key enabler for USAFE's expansive planning efforts for OIF.

USAFE's civil engineers have also used GeoReach to plan for potential noncombatant evacuation operations and humanitarian relief operation events throughout the U.S. European Command area of responsibility. Maps of more than 60 candidate forward operating locations, or FOLs, in 15 countries, both within and outside USAFE's area of responsibility, have been completed.

Planning for OIF in Turkey

The small USAFE GeoIntegration office had a tremendous impact on the overall process of planning for OIF. Tightly integrating dedicated GeoBase personnel into USAFE's beddown planning team and structure made using GeoReach and building a common installation picture possible. (See sidebar on GeoReach for a definition of a CIP.) As a result, USAFE's expeditionary planning process for OIF became much more efficient.

Initial planning efforts for OIF began in November 2002 and centered on the USAFE logistics planning team at Ramstein AB, Germany; the CE wartime structure planning cell; and EUCOM planners forward-deployed at the Office of Defense Cooperation in Ankara, Turkey. The northern option focused on Turkey supporting fighter, tanker, tactical airlift and special operations missions at several strategic locations. Several candidate FOLs were selected and the standard method of applying pros and cons to each site was done.

As the Air Force's role became more defined, an overall statement of requirements was developed, which outlined proposed locations, aircraft packages and expected personnel strengths. Maps were built highlighting typical critical factors such as aircraft parking plans, quantity-distance arcs for munitions, fuels storage locations, and ever-changing personnel beddown space requirements. GeoReach, with its built-in tools, quickly validated many of the requirements. Logistics, munitions and special operations planners became familiar faces in the CE planning cell as requirements were refined.

Pre-Deployment Site Surveys

In mid-January 2003, after two full months of planning, USAFE sent a pre-deployment site survey, or PDSS, team to Turkey. USAFE's team was part of a larger, 150-person Air Force/Army team evaluating candidate FOLs, seaports, aerial ports of debarkation, railways, and highways to be used in Turkey. In addition to planners from USAFE, the overall Air Force team members came from Third Air Force and Sixteenth Air Force. The team was divided into two smaller teams responsible for Western and Eastern regions, each to cover three bases within their region.

GeoReach played a huge role during these critical site surveys. Location books were developed for each FOL, which contained all relevant data and maps to bed down the proposed missions. Without ever engaging the host nation, teams arrived at their respective regions with 70-percent-beddown solutions in hand.

USAFE's PDSS team comprised an engineer, an engineering technician, a beddown planner and an electrician. The team traveled with minimum baggage: location books, electronic planning references, maps, a

laptop containing the GIS software, a portable color printer, and a Trimble global positioning system, or GPS, backpack.

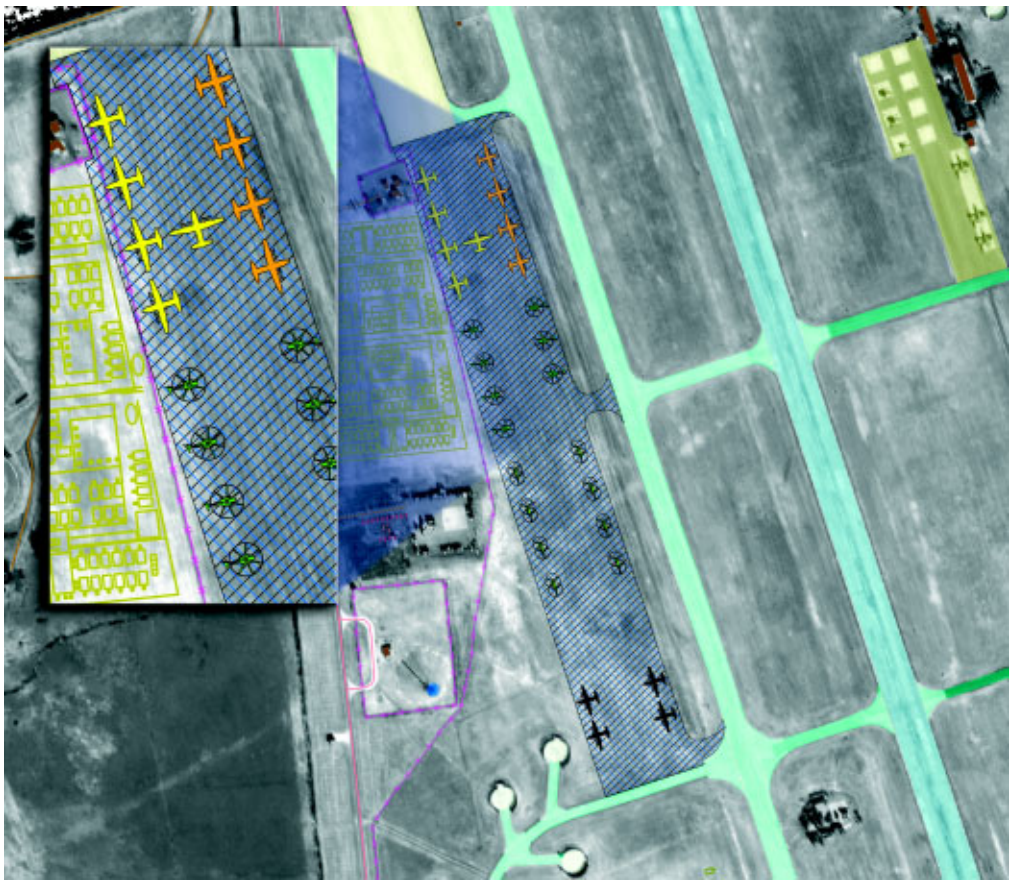
After a short stop at Incirlik AB, USAFE's team met the other PDSS team members and departed for their respective candidate FOLs. Politically imposed time restrictions placed on the team allowed only a day and a half at each of the three assigned locations. Coordinating all the requirements with host-nation counterparts would have been impossible without a detailed plan in hand.

The GPS system really shined during this real-world field test and, not surprisingly, engineers became a focal point of the entire planning effort. The ability to get spatial data points, elevations and boundary lines sped up the planning effort considerably. Drainage lines, electrical substations, water utilities, wastewater discharge points, and hazardous gas lines were all mapped accurately to within one meter in only a single day. In the evening, data were downloaded into the GIS software, mapped and presented to the team members. Functional requirements were easily de-conflicted and a comprehensive plan was usually completed by the early morning hours. A color printout of the revised beddown proposal was presented to the host-nation representative the next day.

The speed at which the GeoReach tool allowed the USAFE PDSS team to refine beddown plans based on host-nation restrictions and requirements boosted team credibility tremendously during the negotiation process with host-nation officials. The Eastern survey team, for example, conducted a joint initiative with the Army Patriot battery planners. The Army's planning tools automatically provided latitude and longitude data, which were based on the threat and the asset to be protected. Using GeoReach, candidate locations were immediately evaluated for terrain, safety and populated areas as detailed satellite imagery was integrated. A site visit to the location became a formality rather than a necessity. Deploying with predetermined beddown plans from the initial GeoReach process, and with GIS software and tools to make real-time mapping changes, was absolutely essential to the success of the planning effort.

Deployed Base CE and Commanders' Conference

Upon returning to Ramstein AB, the USAFE team began disseminating their findings to the personnel who would ultimately deploy forward. A CE beddown conference in February brought in the lead team planners for each FOL to explain the data compiled during their survey trips. USAFE's GeoBase office established a secure server to store and make available all GeoReach data and maps. This allowed lead teams to share beddown data over a secure Web site with their respective follow teams from continental U.S. bases.



Previous page: Air Force PDSS team, with GPS equipment used to survey site in Turkey, photographed with members of Turkish Air Force. (L-R) TSgt Michael Williams; TSgt Harun Aydin, TAF; MSgt David Gutschow; TSgt Scott Ensign II; Maj Derek Scott; Capt Ali Nedim Karabulut, TAF. *(photo by TSgt Scott Ensign II)*

Left: Aircraft parking and tent city layout overlaid on high-resolution scale satellite photograph. *(graphics created by Mr. Steve Hames and TSgt Scott Ensign II)*

GeoReach and the Internet achieved unprecedented economies of scale and versatility for force beddown planning. As deployed planners updated requirements, maps and data points were immediately updated and available to all deployed personnel involved. Issues of operational security and organizational control were solved by password-protecting the beddown plan Web site while making the FOL map available to everyone.

After the CE conference, more-refined plans were presented to the wing and group commanders. All personnel were informed of the GeoReach Web site and anyone with secure Internet protocol network access and the password could review the beddown plan in its entirety.

One of the more important elements of using GeoReach in OIF was the reach-back capability it gave deployed commanders. USAFE's GeoIntegration office, headed by Jane Goldberg, took the lead in making changes as commanders identified new requirements. Within USAFE, it was also realized that once the teams deployed, there would be a transition into a supporting role.

Last-Minute Changes

Unfortunately, a vote by the Turkish parliament halted efforts to deploy full teams forward and many missions were diverted elsewhere. GeoReach was still indispensable because all of the alternate locations were already mapped, making the diversion relatively easy. Had the teams deployed to their original destinations, the transition from GeoReach to Expeditionary GeoBase would have taken place very smoothly. Following establishment of secure Internet protocol network access, on-site engineers would have had access to all the resources necessary to continue planning.

"Lessons Learned" included the finding that personnel trained in the use of geographic information systems are essential. Many deploying units still rely on AutoCad, but that will change: more people will be trained at Silver Flag; GeoBase resources will grow at the home station units; and GPS units and software will be included in deployable team kits. The software modules currently built into GeoBase and those envisioned for inclusion will evolve into one-stop shopping for all beddown needs. It will be possible for complete Harvest Falcon kits to be "dropped" into GeoBase and bounced against data points and elevation data. It's not hard to envision a future operational readiness inspection using GeoReach to meet the force beddown planning requirements.

With the vision of GeoBase, "One Base, One Map" now closer to realization, the way ahead at USAFE has become very exciting. Other functional counterparts have shown tremendous interest. One objective is to use Expeditionary Site Mapping as the "data warehouse" (after integrating USAFE/LG's "Contingency Playbooks") for USAFE's basing and beddown decisions. Based on recent OIF planning efforts and current interest, GeoReach is destined to be the visual rallying point for compiling all expeditionary site survey requirements into a single integrated process. The net result will be smaller Air Force pre-deployment survey teams, thus reducing the number of airmen exposed to hostile conditions. Just as AutoCAD replaced drafting on paper, GeoReach provides a similar evolutionary shift in beddown planning.

Capt Marc R. Vandeveer is a command plans and requirements manager for USAFE, Ramstein AB, Germany. He was involved in beddown planning during OIF.

What is GeoReach?

GeoReach is one of the four main components of the Air Force's GeoBase program. GeoBase's objective: "one installation, one map" through a consistent, comprehensive GIS platform for established bases and airports worldwide.

GeoReach refers to the pre-deployment, planning phase of the Expeditionary Site Mapping Process. It combines tabular and geo-referenced data to provide commanders with intelligence to assess forward operating locations (FOLs) and, in doing so, to minimize basing risks. GeoReach is executed by combat and mobility Air Forces after candidate FOLs are selected.

GeoReach develops a common installation picture, or CIP, for candidate sites. CIPs consist of mapping features—airfield surfaces, roads, buildings, or fuel and munitions storage—extracted from the best available imagery. CIPs are used in conjunction with base planning tools for beddown optimization. The focus on CIPs has made force beddown planning more dynamic and flexible.

The Expeditionary Site Mapping Process consists of four steps:

1) Locate – Decision makers locate optimal sites to consider for troop beddowns.
2) Collect
   a. Image – Collect most current imagery within specifications from government-furnished or commercial imagery.
   b. Map – Create CIP from source imagery.
3) Enable – Post planning CIP to secure Internet protocol network.
4) Assess – Determine beddown feasibility of the site using planning CIP.

Readiness Troops Break New Ground

by SrA Minka Stoyanov, 2nd CES

Two of the first readiness civil engineers in Iraq were part of a RED HORSE team that landed at Tallil AB as U.S. Army units were securing it and the war was still in progress. These engineers and those in the two Prime BEEF teams that soon followed began quickly to set up camps at two other locations and set new milestones for the Readiness career field.

For CE readiness troops, Operation IRAQI FREEDOM was another real-life test for years of extensive disaster-preparedness planning. There have been many changes in the career field since the last true possibility of chemical and biological warfare during Operation DESERT STORM. These changes include new equipment and concepts of operation, as well as the migration of the entire career field into Air Force civil engineering.

"What we've done here is going to be talked about at our schoolhouse at Fort Leonard Wood for years to come," said MSgt Jerry Chandler, 407th Expeditionary Civil Engineer Squadron Readiness Flight superintendent. "We're probably the first team in a long time to actually practice our goal of base survivability in an actual combat zone," he said.

To ensure that coalition forces were warned and protected despite manpower shortages, CE readiness crews used high-tech tools: computerized plotting, warning and reporting software, and new detectors.

The Joint Warning and Reporting Network Block (v. 1D) software was successfully loaded onto the secure internet protocol network to instantly share information between all the "need-to-know" groups: the Combined Air Operations Center and its alternate; the Air Combat Command CE contingency response cell, the ACC crisis action team; the Air Force installations, logistics and engineering CAT rear cell; and 13 area-of-responsibility, or AOR, installations.

Minutes after missile launch and impact, accurate maps of impact points and suspected downwind hazard areas were viewed at all levels of the Air Force nuclear, biological and chemical defense command structure. "This was the first Air Force operational use of JWARN during actual hostilities, and it worked as developed," said CMSgt Chip Runnels, readiness manager, ACC.

The readiness teams employed the Air Force's new full-spectrum threat response plan to prepare the three initial bases for any form of attack or disaster, from chemical strikes to major accidents. Automated networks of chemical/biological detectors were set up throughout the bases to promptly warn airmen of an attack by weapons of mass destruction. A three-person rapid response team was always on call.

"Our responsibility is to ensure the survivability of the base," said TSgt Chuck Newcomb, 407th ECES. "We do this by warning and reporting as well as keeping commanders informed of the dynamic threat to this base."

In behind-the-scenes activity, the ACC CE and supply community made sure that all Air Force deployers were equipped with the latest JSLIST chemical protective suits. "Personnel at the Pentagon, Wright-Patterson AFB, Langley AFB, Scott AFB and Tyndall AFB worked in CATs and support cells around-the-clock to make sure the deployer could go into the AOR with the required chemical protective gear," said CMSgt Runnels.

The readiness teams learned new techniques and concepts by working alongside British troops and the Army's Chemical Corps everyday. "The biggest challenge has been understanding the different missions of the many forces assigned to Tallil," Sergeant Newcomb said. "But even if there's no common language, we all understand survival."

A1C Dianna Burtless and Amn Jonathan Johnson, deployed with the 407th AEW, train with the M256A1 chemical vapor detection kit at Tallil AB. ***(Photo by Maj Jon Anderson)***

SrA Minka Stoyanov is a readiness technician with the 2nd CES, Barksdale AFB, LA. She recently redeployed from Tallil AB in Iraq.

Cleaning U

Hurricane Isabel hit the Eastern Coast of the United States Sept. 19. Several Air Force bases were in the storm's path, but the hardest hit was Langley AFB, VA.

Damage to the base is estimated at about $200 million. Isabel left 121 facilities with roof damage and another 283 with water damage. Downed trees accounted for other major damage: about 800 on Langley's main base, 360 on the base's golf course, and 140 at an off-base housing area.

"The storm did a lot of destruction in a short time," said Lt Col Richard Wheeler, 1st Civil Engineer Squadron commander. "Langley's landscape was noted for its large shade trees and you just can't imagine the way the base looked after the storm passed."

After the storm, CEs from Langley AFB and Shaw AFB, SC, and RED HORSE members from Hurlburt Field, FL, began the cleanup—restoring commercial power; removing water from flooded facilities; extracting downed and damaged trees; and conducting detailed facility assessments.

Civil Engineer Maintenance, Inspection and Repair Teams were brought in from Dover AFB, DE, to provide electrical service and from the Air Force Civil Engineer Support Agency, Tyndall AFB, FL, to provide heating, ventilation and air conditioning support.

Air Force Contract Augmentation Program task orders totaling $14.5 million were issued to help with repairs; pump water from flooded basements; provide carpet cleaners; and clean and sanitize basements and water-damaged areas.

"The immediate restoration of the base went quickly," Wheeler said. "The civil engineer teams have cleared all downed trees and are removing stumps and dangerous overhanging limbs."

The base was open to family members just three days after the storm and the flying mission resumed a week after Isabel hit.

1Lt Tina Carlsen, 1st Fighter Wing Public Affairs, Langley AFB, VA, with contributions by MSgt Michael A. Ward, HQ AFCESA, Tyndall AFB, FL. Far right photo by SSgt Dawn M. Bolen; all others by TSgt Ben Bloker.

p After Isabel

Light 'em Up!

CEMIRT helps Expeditionary Civil Engineers bring power, lights and navaids to Iraqi airfields

by MSgt Timothy L. Collins
HQ AFCESA/CEMIRT

Above: CEMIRT technicians work with a 407th ECES team to replace an isolation transformer on a runway at Tallil AB, Iraq. *(photos by deployed CEMIRT team)*

Three coalition air bases in Iraq recently benefited from visits by a crew from the Civil Engineering Maintenance, Inspection, and Repair Team at Tyndall AFB, FL. The five-person team was initially tasked to repair power generators and emergency airfield lighting systems, or EALSs, at Tallil AB, Iraq, in late May.

Once the word got out they were in theater, other CE units in Iraq jumped at the chance to take advantage of the skills CEMIRT brings to the fight. The group, led by MSgt Timothy Collins, went to two other locations in Iraq, Kirkuk AB and Baghdad International Airport, before returning home in early July.

Tallil AB

Tallil's airfield consisted of two large runways without permanent lighting systems. The initial Prime BEEF team deployed to this location had installed an EALS, but the system was experiencing problems with visibility, stabilization and alignment. Even under normal circumstances the lighting intensity was too dim to be safe and effective. Contributing to the dilemma were daily dust storms that severely limited visibility.

The team's electrical experts, TSgt Chris Jordan and SSgt Travis Poling, and the rest of the crew adjusted the voltage regulators to increase output to compensate for voltage drop and accommodate the overall length of the runway. The system now was capable of operating at all three light intensity levels to maximize visibility for pilots. By design, the regulators actually perform more efficiently on most runways with higher output voltage applied.

One major problem the team found was that the precision approach path indicator lights were way out of adjustment. PAPI systems project a beam of light to pilots indicating the appropriate approach glidepath angle for safe touchdown at a predetermined runway reference point, or RRP. The team saw immediately that readjusting the lights alone would not solve the problem: The constant, high desert winds had caused rapid soil erosion beneath the PAPI cabinets. Even if readjusted, in a short period the system would again be inaccurate and jeopardize safe aircraft landings.

To counter future damage from the environment, the CEMIRT team first constructed new, elevated stabilizing platforms and then made adjustments for optimal PAPI performance. In making the adjustments, the team considered several factors: the system's alignment to the airfield; the system's distance from the threshold; and elevation differences between the threshold, the runway crown at the RRP, and the cabinets' center-beam PAPI light projection.

The CEMIRT team also found that the airfield lighting fixtures and aboveground cable were taking a tremendous beating from aircraft departures and landings. Ballast weights and sandbags used as anchors were no match for the powerful jet engine blasts.

The team worked with on-site technicians to drill holes and anchor each fixture with 10-inch spikes. They dug more than 20,000 feet of trench and buried the high-voltage cable six to eight inches deep along the runways. The team ensured that no fixture exceeded a maximum distance of 10 feet from the usable runway. Proper alignment for true runway centerline was also accomplished. By the time the team was done they had essentially performed a complete reinstallation of the EALS.

While at Tallil, the team also inspected and repaired several mobile emergency power and tactical quiet generators. The harsh environment

CEMIRT technicians and 506 AEG/ECES engineers survey to pinpoint visual navigation aid locations at Kirkuk AB, Iraq.

had taken a toll on the generators and many were either malfunctioning or inoperable. CEMIRT's power experts, TSgt Lonnie Bacon and TSgt Stephen Burns, worked with the 407th ECES technicians and the rest of the team to repair most of the generators with only a few units left inoperable due to unavailability of parts.

Kirkuk AB

Unlike Tallil, this air base at one time had a permanent lighting system. However, long-term neglect and weather had made the system inoperable. Most of the cabling was damaged or pulled out of the ground and the extremely outdated fixtures were broken. Again, an EALS had been installed for nighttime operations and this system was also experiencing problems similar to those at Tallil.

An additional concern was the inoperability of the PAPI visual navigation aids. The team found and replaced burned-out mercury switches in the tilt circuit that had caused the PAPIs to shut down randomly. After a complete inspection, CEMIRT wasted no time in deciding that a complete reinstallation of the EALS was necessary.

Although the team used lessons learned from their Tallil experience, this project had some additional challenges. Unexploded ordnance was encountered throughout the immediate runway area but EOD teams quickly responded and did a tremendous job disarming or removing the dangerous UXO.

The project was also hindered by limited equipment. For proper placement of runway edge fixtures, the team had to use flat tip shovels to remove weeds and brush that had grown through the asphalt for nearly 4,000 feet of runway. Progress was slowed by the daily in-bound air traffic but was made up by working longer hours, daylight to dark. Surprisingly, within two weeks the lighting system was operating at full capability and the primary runway was capable of receiving the heaviest of allied aircraft.

CE Maintenance, Inspection and Repair Team

http://www.afcesa.af.mil/Directorate/CEM/

The Civil Engineer Maintenance, Inspection and Repair Team, or CEMIRT, operates from the Field Support Directorate at the Air Force Civil Engineer Support Agency at Tyndall AFB. CEMIRT provides intermediate and depot-level repair support on power generation, electrical distribution, and aircraft arresting systems. It also provides technical support for heating, ventilating and air conditioning (HVAC) systems.

CEMIRT has nine 7-person specialized Prime BEEF teams. These teams provide commanders with power production and electrical expertise during wartime or for military peacetime operations and for natural disaster recovery or humanitarian efforts.

Power production and electrical support is provided to bases from three regional offices. The Northeast Region office at Dover AFB, DE, supports bases in the Northeastern United States, Europe and Southwest Asia. The Western Region office at Travis AFB, CA, supports bases in the Western United States, the Pacific basin, Southeast Asia, Alaska, Australia and the Indian Ocean area. The Southeastern Region office at Tyndall AFB, FL, supports bases in the Southeastern United States, Central America and the South Atlantic region. Tyndall is also the home of the CEMIRT HVAC team and the aircraft arresting system overhaul shop.

Baghdad International Airport

When the CEMIRT group arrived in Baghdad, they found that flying units were using a 50-foot wide taxiway as a minimum operating strip. There was a big push to open the large military runway for heavier air traffic—a runway that had suffered battle damage during both DESERT STORM and IRAQI FREEDOM and had been out of commission for approximately 12 years.

The 1st Expeditionary RED HORSE group was nearly finished with heavy bomb damage repair to the runway, and establishing a reliable airfield lighting system was the next critical step to opening it. The 447th ECES airfield lighting technicians and the CEMIRT crew worked together to perform maintenance and repairs to the existing lighting system. Although the system was operational, it was not dependable because of commercial power outages and other factors. To achieve the required reliability meant installation of an EALS.

Ironing out all the problems at Tallil and Kirkuk made the EALS installation at Baghdad a breeze—if you don't count all the surveying, calculating, and labor that went into it! Fortunately, on-site engineers provided the surveying support and the installation was rapidly completed.

On July 1, the Baghdad International Airport military runway was reopened for air traffic, day or night. CEMIRT's work also helped reopen Baghdad International Airport to commercial air traffic, which was a shot in the arm for improving the economy of the recovering nation. More importantly, airfield operations could be conducted safely.

Summary

The team had a very busy and productive seven weeks in the theater. They not only made critical repairs, but also made important contacts with technicians in the field. Engineering assistants and technicians at Tallil, Kirkuk and Baghdad airfields took advantage of the learn-by-doing situations and received training from the CEMIRT crew as they worked side-by-side. CEMIRT personnel also gained invaluable insight into problems "only" encountered in the field during wartime. Back at home, they can begin to apply lessons learned to prepare for future support missions.

MSgt Timothy L. Collins is superintendent of electrical systems, CEMIRT, HQ AFCESA, Tyndall AFB, FL.

Above right: TSgt Stephen Burns (C) and SSgt Travis Poling (R) of CEMIRT work with 477th ECES technicians to drive grounding rods for a series circuit adapter used for operating PAPI cabinets along a runway at Baghdad International Airport, Iraq. Right: CEMIRT crew chief MSgt Timothy L. Collins views an airfield light vault at Kirkuk AB, Iraq. The vault had been neglected and vandalized sometime before occupation by allied forces.

Putting It On The Line

by Capt Corey Norcross and TSgt Daniel Hagen, 60th CES

Refueling aircraft was nothing new to the 384th Air Expeditionary Wing, a joint-service tanker wing deployed to Shaikh Isa AB, Bahrain. At the end of February 2003, business was brisk and it was about to skyrocket. With a potential war looming, aircraft were coming to the area of responsibility in droves and the number of flying sorties was increasing exponentially. Additional fuel and in-flight refueling were the top requirements, but the 384th Fuels Management Flight was short of personnel and had only half of the authorized refueling trucks.

The 384th FMF realized some creative thinking was needed to ensure that they were ready to fuel the fight. They called on the 384th Expeditionary Civil Engineer Squadron for help and they jointly came up with an innovative solution: the expeditionary hydrant loop refueling system. It proved to be a mission enhancer, and guaranteed that the 384th AEW could provide unhindered support to Operation Iraqi Freedom.

Setting up a standard expeditionary aircraft refueling system using an R-14 Air Transportable Hydrant Refueling System alone would have reduced two needs—more trucks and more manpower. However, host-nation restrictions and site and equipment conditions meant that the closest bulk fuel source was more than 1,000 feet from the flight line. This distance made it impossible to use a traditional system because the R-14 requires a nearby fuel source in order to operate correctly.

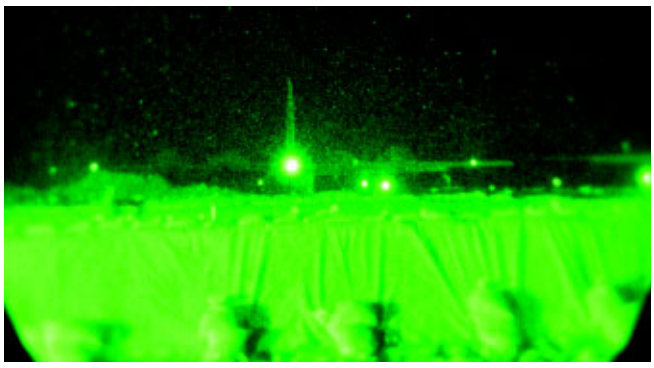
With requirements identified, limiting factors accounted for, and on-hand resources inventoried, SMSgt Kenneth Wallace, MSgt Giles Silver and others on the fuels team began to brainstorm with members of the 384th ECES. Their brainstorming had a positive result—the development of the first-ever expeditionary hydrant *loop* refueling system. The design used six pieces of fuels mobility support equipment (two R-14s, two R-22s, and two FFU15s) and 3,100 feet of six-inch diameter hose line to provide direct refueling capability to four aircraft parking spots. The R-22, a portable fuel transfer pump system, was used to pump the fuel from the source through the FFU15, a fuel filtration system, to the R-14 for delivery to waiting aircraft.

TSgt Daniel Hagen, SrA Adam Fredline and SrA Alan Vong of the 384th ECES Liquid Fuels Shop worked with other 384th ECES craftsman and joint-service labor pools to help the fuels team turn the design into a reality. Heavy-repair personnel graded a flat, rock-free road from the bladder farm to the refueling points. They placed 360 feet of conduit under four road crossings—excavating, cutting asphalt, and backfilling with 75 tons of sand and base course. After the pathway was ready, fuels troops, with the help of Marines and medical personnel, pulled the 3,100 feet of hose line into position. It was time for a test—Success! Fuel transfer was accomplished. The only remaining issue was protection of the hose and equipment so CE personnel placed 40 Bitburg concrete barriers in front of the equipment and hose as a blast shield.

The hydrant-loop refueling system was up and operational in less than 10 days. At full capacity, this system provided a total of 1,200 gallons per minute, with up to 600 GPM to any one refueling point. The system was constructed using only 21 percent of the flight's on-hand FMSE and operated 24 hours a day with no more than six personnel.

The impact to the wing's success was greater than ever imagined. In the first 20 days of OIF, 5,341,080 gallons of fuel was issued through the expeditionary hydrant loop refueling system—more than 33 percent of the wing's 16,139,661 gallons of total fuel requirement, and 20 percent of all fuel issued for OIF. This much fuel would have required over 1,180 R-9 refueling trucks (6,000-gallon capacity) and corresponding fill-stand operations, or more than 118 fuel-movement operations per day. "It saved our bacon. There is no possible way we could have done it with refueling trucks," said Col David Kramer, commander of the 384th AEW. Because of the success of the hydrant-loop refueling system no more than 14 refueling trucks were ever needed at any one time to support the wing's mission. With a total team effort, the 384th AEW brought the fuel to the fight!

Capt Corey Norcross is chief of programming and TSgt Daniel Hagen is foreman of the Liquid Fuels Maintenance Shop, 60th CES, Travis AFB, CA. Both were deployed with the 384th ECES, Shaikh Isa AB, Bahrain.



A U.S. Marine Corps KC-130 aircraft assigned to the 384th AEW prepares to depart Shaikh Isa AB, Bahrain, on a night operation in support of Operation Iraqi Freedom. *(photo by Amn Bridget T. Rapp)*

Instant "Motel": Just Add USAFE CEs

Eight months before the first bombs fell on Baghdad, Headquarters U.S. Air Forces in Europe civil engineers were intimately involved in support planning for the coming war in Iraq. The task: bed down and sustain more than 30,000 troops and 200 aircraft at eight forward operating locations within the European Command area of responsibility.

by Capt Shawn D. Larcher and Maj Aaron Young
USAFE/CE

RAF Mildenhall engineers built this tent city at Bourgas, Bulgaria, to support tanker operations. ***(photos by Maj Aaron Young)***

Months before Operation Iraqi Freedom kicked off, HQ USAFE/CE activated the contingency support structure known as the "EN Staff," which parallels the Joint/A Staff structure to work CE issues for USAFE A-4. There are seven EN teams: EN-1, manpower/personnel; EN-3, civil engineering crisis action team; EN-4, logistics; EN-5, planning; EN-6, resources; and EN-7, environmental; and EN-SS, special staff.

The EN-5 team handled beddown planning. They collected information on proposed air bases from site survey information and took advantage of USAFE's expeditionary site mapping tool, GeoReach, to refine tent city layouts and aircraft parking plans. GeoReach merges satellite or aerial photographs with computer-aided drafting plans and tabular data to create scale plans for aircraft parking or facility construction. It helps engineers make preliminary decisions about a location's suitability for a particular mission without even setting foot on the base.

The EN-4 team handled logistics. They identified engineer force packages and coordinated war readiness materiel requirements with HQ USAFE/LG. Together, they developed WRM requirements, the Prime BEEF and RED HORSE team requirements, and concept of operations based on the projected force packages.

Bed Shortfall

Because of the size and scope of the deployment, planners faced a WRM housekeeping shortfall of more than 26,000 billets. EN-4 planners negotiated a deal with Central Command Air Forces planners to earmark three Harvest Falcon kits for USAFE. The team dug through USAFE stocks and found 184 Alaska small shelter systems, or ASSSs, in Luxembourg. Networking with their counterparts in Pacific Air Forces and Air Combat Command, they acquired 383 ASSSs, 303 medium general purpose tents and four 275-person Harvest Eagle kits. The EN-4 planners were also able to purchase 213 Army-type, modular, general-purpose tent shelters from the Defense Logistics Agency.

But despite the planners' efforts, the bed shortfall still stood at 13,000. That's when the EN-4 staff tapped into the Air Force Contract Augmentation Program, or AFCAP, a contracting vehicle that allows the Air Force to quickly mobilize contractor employees to provide support in forward-deployed locations. For this deployment, the awarded task orders included procurement of temporary facilities, utility systems, construction materials, support equipment, and leased construction vehicles.

Strategic Advantage

Because of its location and strong allied support during previous operations in the area, Turkey offered strategic advantages as a deployment location. A European Command team, including USAFE engineers, negotiated host-nation basing agreements with the Turkish general staff. After the Turkish government granted approval, EN-5 planners and staff members from Third Air Force and Sixteenth Air Force conducted site surveys. The survey information allowed EN-4 and EN-5 planners to adjust beddown plans to fit the sites.

Through their AFCAP task orders, EN-4 procured more than 935,000 cubic yards of construction materials and leased more than 200 construction and general-

Ramstein AB engineers constructed tent floors to support one of the many missions at Constanta, Romania.

purpose vehicles. It was all in place when the engineers arrived, allowing the small deployment teams to make substantial gains in site preparation, tent erection and support contracts.

At the same time, EN-5 coordinated with deployed engineers to provide aircraft parking aprons. The 202nd/203rd RED HORSE Squadron advance on-site team was a huge asset, providing assistance with airfield pavement and lighting designs. The EN-7 environmental experts "fast-tracked" water well and distribution systems construction, and purchased packaged wastewater treatment systems. The EN-3 crisis action team coordinated the requirements between the teams and the downrange customers, and tracked the suspenses, while the rest of the supporting EN staff helped keep the internal "war machine" running smoothly.

Permission Denied

Unfortunately, not long after the process was completed, the Turkish Parliament passed their final vote and refused the United States permission to base OIF forces in Turkey. The USAFE beddown plan changed overnight, and forces and aircraft were quickly diverted to Romania and Bulgaria, countries originally slated for smaller roles.

More than 4,000 combat forces, originally awaiting access into Turkey, deployed to Romania in less than one week. Fortunately, hotels in Constanta were available for billeting, which streamlined the base operating support requirement.

Ramstein AB's engineers, diverted from Turkey at the last minute, rolled in to support intense airfield operations. They quickly adapted the Cold War-era base, making significant improvements to the infrastructure, such as building office space, installing back-up power, and executing many force-protection and quality-of-life projects.

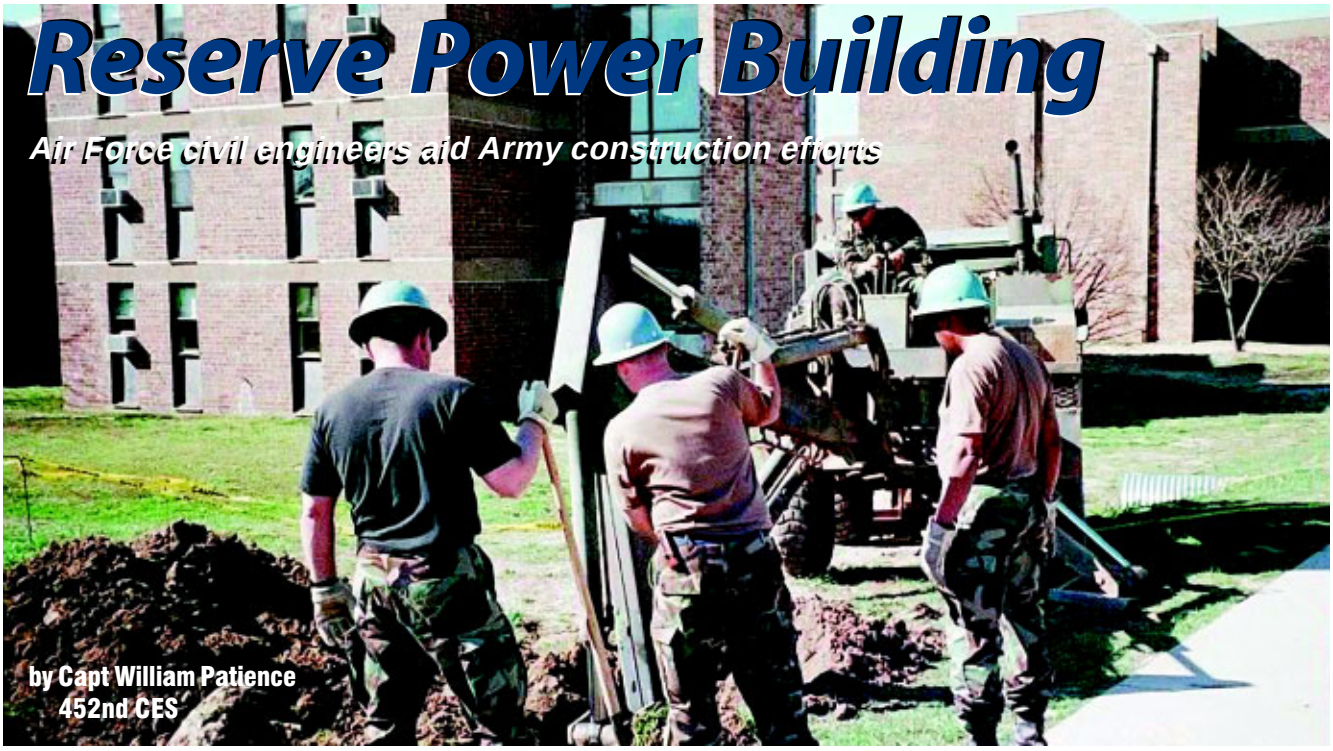
RAF Mildenhall's engineers capitalized on their experience from previous deployments to Bourgas, Bulgaria, during Operation Enduring Freedom. They used 27 modular, general-purpose shelter tents to accomodate the increased population. Quickly establishing base operating support and supporting the flying mission earned them the tag of "the best CE unit I've ever seen" from the deployed commander.

USAFE's role in OIF may not have gone as originally planned, but engineers at all levels demonstrated their flexibility, supporting dynamic requirements and enabling more than 6,000 OIF combat sorties to be flown. One of the deployed wing commanders specifically singled out CE reachback support as one of the successes of OIF—he was simply amazed at the quality and timeliness of support received.

Capt Shawn D. Larcher is the chief of contingency planning and Maj Aaron Young is the chief of the Contingency Operations Branch in the Readiness Division, USAFE Civil Engineering.

Reserve Power Building

Air Force civil engineers aid Army construction efforts



by Capt William Patience
452nd CES

SMSgt Keith Hobson, TSgt John Duggan, SMSgt Charles Russell and SrA Elmer Perkins (L-R) use a "C" track to dig around water pipe. *(photo by MSgt Carl Jones)*

Army construction recently received a boost from Air Force manpower when the 452nd Civil Engineer Squadron deployed a team to Fort Leonard Wood, MO. The 29-person team from March ARB, CA, arrived at the United States Army Maneuver Support Center in late March 2003 to help with ongoing base construction projects. Two weeks later, the team went home with recognition from the Garrison Commander and the satisfaction of accomplishing more than they were assigned.

The reserves from all branches have a role other than supporting active joint operations. During their annual tour, reservists support Department of Defense projects to reduce manpower costs. Air Force Reserve Command interfaces with units throughout the services to see who needs support. The 452nd CES team's efforts saved the Army between $70,000 and $100,000 in construction costs.

The 452nd CES team's main assignment was to complete the first part of an outdoor lighting project at Specker Field, an area of the post where safety concerns required increased lighting. The local Air Force points of contact, Maj Dino Kirkikis and CMSgt George Carter, 366th Training Squadron, Detachment 7, originally scheduled for a second team to complete the last half of the project.

But the crew from the 452nd CES made scheduling another group unnecessary. The team completed the first part of the project: digging a 2,400-foot trench; routing electrical conduit; pulling the electrical wires; and pouring cement for light poles. Then they moved on to the second part of the project: assembling and standing 28 poles and rewiring all the lights from 277v to 480v along with grading, forming up, and placing over 300 feet of sidewalk. As a side project, the team did rewiring in the Detachment's main building.

The Air Force team's hard working ways did not go unnoticed. SFC David Gann, 1st Engineer Brigade, approached the group for help with a K-Span building project in a training area on base. Rain on the Sunday before the 452nd CES team's final week onsite gave them the "break" they needed. While the light pole forms and holes dried out on the lighting project, the team began the construction of a K-span building. The engineers prepared the site with heavy equipment, erected nine 3-piece K-Span sections and assembled three additional sections on the ground.

How did the 452nd CES team accomplish so much during their two-week assignment? Aside from basic hard work and thorough planning, staffing with a mix of electrical, structures, and heavy equipment expertise was key. Steady staffing throughout the project's different phases meant team members often worked outside their area of primary expertise.

Cross-training became important. The reserves have a variety of skills and experience. Sometimes a team member gets to use civilian expertise, but sometimes a graphic artist like SrA Elmer Perkins is pounding nails. The younger troops enjoyed the cross-training and the senior crew enjoyed training the younger troops. "This is one of the best stateside projects I have ever had," said Air Force TSgt Jim "Mac" McCauley, a Vietnam veteran.

Capt William Patience is the chief of readiness for the 452nd CES, March ARB, CA.

Vandenberg Firefighters Join The Battle

by Staff Sgt. Rebecca Danét
30th Space Wing Public Affairs

Vandenberg firefighters returned home Oct. 31 after nearly six full days fighting a major wildfire in Southern California. The 108,204-acre fire in Simi Valley, between Los Angeles and San Diego (about 130 miles south of Vandenberg), threatened thousands of homes in the area. It took 1,449 firefighters eight days to contain the blaze, which destroyed 37 homes.

Firefighters from Vandenberg's Engine 9 fire crew deployed as part of a strike team from the Central Coast. Bill Hinds, a battalion chief with Santa Barbara County, lead the group, which included crews from Santa Maria, Carpinteria, Summerland, Lompoc and Santa Barbara. The Central Coast strike team was part of the initial attack on the Simi Fire.

"It's a pleasure to work with [the Vandenberg crew]," Hinds said. "I give them an order, they know exactly what to do. I don't have to worry about them. I'd take them wherever I went."

The size and speed of the blaze created a fast-paced learning experience for the Vandenberg team. "Every time you go to a fire you learn something new," said Vandenberg firefighter Ralph Arguijo. "Sometimes it's hose deployment… other times it's fire behavior. You learn a lot by seeing how it burns and what the wind does."

"We got into a situation Saturday night where we had fire in front of us, fire behind and it was leaping across the road," said Vandenberg fire captain Bill Burch. He and Arguijo were working behind the engine on a hand line while Vandenberg fire engineer Greg Leptich was on the pump. "That's when Greg started hollering, 'Hey, we got fire in front of us,'" Burch said. "Ralph and I were working the fire behind and we had to literally make a quick retreat. We put a hole in a section of the hose so we could get the water out of there fast." He added, "Greg barely had time to shut down the pump. We took off until it blew back and then we went right back to our equipment."

Exhausted strike team members finally got a break after spending 40 hours fighting the fire. In a base camp away from the action, a group of high school students passed out candy, gum and other refreshments.

"You know firemen, we're supposed to be tough guys," Burch said, "But it was really touching to see these kids come in and be so gracious. The community spirit has been amazing."

Peggy Weak, a second grade teacher at Walnut Canyon School, summed up that spirit in a letter she sent to the firefighters: "As I read and listen to the stories my students share, I realize how many of them very nearly lost their homes," she wrote. "All of us appreciate your bravery, skill and determination."

Above: Flames of the Simi Fire, one of many catastrophic fires plaguing Southern California, engulf the tinder-dry brush. ***(photo by SMSgt Dennis W. Goff, 146th Airlift Wing, Channel Islands ANGS, CA)*** **Left: Vandenberg's Engine 9, with a strike team from the Central Coast, makes a stand along the Old Road in Newhall, CA, on Oct. 29, 2003.** ***(photo by William G. Hartenstein)***

AFCESA At Your Service

Did you know that the Defense Logistics Agency's Defense Supply Center, Philadelphia, offers Air Force customers a maintenance, repair, and operations program for materials and services? The Prime Vendor program gives federal agencies a full range of competitively priced services. Customer-oriented teams fulfill regional contracts with integrated suppliers to support installations worldwide. Available work and materials cover a wide range of needs, including supplies, tools and services for building, painting, plumbing, paving, roofing, snow removal, and electrical and HVAC work.

Base-level customers benefit from a variety of supplies and services, no long-term commitments, fast response, reduced lead-time, increased flexibility and capacity, and reduced costs (contractors compete for jobs over $2,500).

For more information, contact the Air Force Civil Engineer Support Agency logistics manager at DSN 523-6411, visit DLA's website at http://www.dscp.dla.mil/gi/mro/ or contact the MRO representatives at MROPV@dla.mil (supplies) and dscpmroservices@dscp.dla.mil (services).

A-Gram List

- 03-15—Computer-Based Prime BEEF Homestation Training
- 03-16—AFIT's CESS Offers a New Water Quality Management Course (WENV 541)

Visit the AFCESA public Web site at www.afcesa.af.mil/Library/Publications.

Technical Publications

Newly Released

Available at http:/www.afcesa.af.mil/Publications/ETLs/default.html

ETL 03-02, *Design Criteria for Prevention of Mold in Air Force Facilities*

AETC Offers New Course

The J4AZP3E271-002, Pavements, Maintenance, Inspection, and Repair, course has been revised by AETC. The curriculum includes soil fundamentals; rigid pavement maintenance and repair; flexible pavement maintenance and repair; pavement inspection; and health hazards/concerns. The Community College of the Air Force (CCAF) awards 3 semester-hours of credit to military personnel completing the course.

The J6ANU3E271-000, Pavements, Maintenance, Inspection, and Repair (Internet-provided), course will continue to be offered to 3E251/71 military and DoD civilian personnel equivalents upon request. CCAF awards 1 semester-hour credit for this course.

Please refer to the AETC Education Training Course Announcement at **https://etca.randolph.af.mil** for more information.

DoD Firefighter Certification System Earns Dual Accreditation

This past June, the DoD Firefighter Certification System was officially accredited by the National Board on Fire Service Professional Qualifications, or ProBoard. The DoD program has been accredited by the other national accreditation body, the International Fire Service Accreditation Congress, or IFSAC, since 1993. With recognition of the DoD's firefighting training program by both IFSAC and ProBoard, graduates will be eligible for certification in nearly every state in the United States.

According to Mr. Donald Warner, chief of Air Force Fire and Emergency Services, the DoD firefighter certification program is now the largest accredited agency in both IFSAC and ProBoard. "The primary advantage of being dual-accredited is that we can now influence the quality of training nationwide," said Mr. Warner. With accreditation by ProBoard, the DoD has gained input into state firefighting programs and can be assured that their standards are met by contracted agencies.

Meeting the criteria of both IFSAC and ProBoard provides the DoD with standardized written and performance tests, ensuring that the evaluation process is unbiased. Adhering to the requirements of both agencies provides a quality control element for the DoD's firefighter training process.

The Fire Protection Division of the Air Force Civil Engineer Support Agency, located at Tyndall AFB, FL, serves as the DoD executive agent for matters pertaining to certification of all military, civilian and contract firefighters across the globe. They're chartered with the responsibility for administering the Firefighter Certification System for over 25,000 DoD firefighters.

SMSgt Laurent McDonald, Air Force fire protection career field manager, Air Force Fire Protection Division, HQ AFCESA, Tyndall AFB, FL

Continuing Education

AFIT
Civil Engineer and Services School

Wright-Patterson AFB, OH

Course No.	Title	Off	Start Dates	Grad Dates
ENG 464	Energy Management Technology	04A	26 Jan	30 Jan
ENG 466	Energy Management Policy	04A	02 Feb	06 Feb
ENG 555 (S)	Airfield Pavement Construction Inspection	04A	09 Feb	13 Feb
ENV 021	Intro to Installation Restoration Program (IRP)	04A	22 Mar	26 Mar
ENV 022 (S)	Pollution Prev. Program Operations & Management	04A	12 Jan	16 Jan
ENV 220 (S)	Unit Environmental Coordinator	04A	26 Jan	30 Jan
ENV 417	Envir. Restoration Project Management	04A	29 Mar	02 Apr
ENV 419	Envir. Planning, Programming & Budgeting	04B	16 Mar	18 Mar
ENV 521 (S)	Hazardous Waste Management	04A	23 Feb	27 Feb
ENV 531	Air Quality Management	04A	12 Jan	16 Jan
MGT 101	Intro. to Base CE Organization	04B	02 Feb	27 Mar
MGT 102	Intro. to Base CE Organization for Reserves	04A	29 Mar	09 Apr
MGT 421 (S)	Contracting for Civil Engineering	04A	01 Mar	12 Mar
MGT 423 (S)	Project Programming	04A	05 Jan	16 Jan
MGT 436 (S)	Maintenance Engineering	04A	23 Feb	27 Feb
MGT 445 (S)	Housing Privatization	04A	29 Mar	01 Apr
MGT 580	CE Advanced	04A	12 Jan	16 Jan
MGT 585	Contingency Engineer Command	04A	05 Jan	09 Jan
Seminar (S)	Stormwater Management	04B	19 Feb	19 Feb

Registration for resident courses, which are offered at Wright-Patterson AFB, OH, begins approximately 90 days in advance. Students should register for CESS courses through the new online registration process. Registration for the satellite offerings (marked with an 'S') closes 25 days before broadcast. For satellite registration, course information, or a current list of class dates, visit the CESS website at: http://www.afit.edu.

366 Training Squadron

Sheppard AFB, TX

Course No.	Title	Start Dates	Grad Dates
J3AZR3E051-003	Cathodic Protection	26-Jan/17-Mar	06-Feb/30-Mar
J3AZR3E051-007	Airfield Lighting	13-Feb	24-Feb
J3AZR3E051-008	Electrical Distribution Sys. Maint.	06-Jan/10-Feb	03-Feb/09-Mar
J3AZR3E051-010	Bare Base Electrical Systems	19-Dec/06-Feb/17-Mar	12-Jan/20-Feb/30-Mar
J3AZR3E051-012	Fire Alarm Systems	26-Jan/20-Feb/17-Mar	19-Feb/16-Mar/09-Apr
J3AZR3E051-013	Intrusion Detection Systems (IDS)	06-Feb/17-Mar	26-Feb/05-Apr
J3AZR3E071-001	CE Adv. Elec. Troubleshooting	19-Dec/28-Jan/26-Feb	27-Jan/25-Feb/24-Mar
J3AZR3E472-000	Liq. Fuels Storage Tank Entry Spvsr.	01-Mar/15-Mar	11-Mar/25-Mar
J3AZR3E472-001	Liq. Fuels Sys. Maintenance Tech.	02-Feb	13-Feb
J3AZR3E451-004	Fire Suppression Systems Maint.	05-Jan/28-Jan/23-Feb/15-Mar	26-Jan/18-Feb/12-Mar/02-Apr
J3AZR3E471-101	BB Water Purification & Distr. Sys.	07-Jan/28-Jan/25-Feb/17-Mar	16-Jan/06-Feb/05-Mar/26-Mar
J3ARR3E453-002	Pest Management Re-Certification	05-Jan/09-Feb	09-Feb/13-Feb
J3AZR3E050-001	CE Work Estimating	26-Jan/22-Mar	13-Feb/09-Apr
J3AZR3E052-013	CE Advanced Electronics	07-Jan/11-Feb/22-Mar	04-Feb/10-Mar/16-Apr
J3AZR3E072-002	Troubleshoot. Elec. Power Gen. Eq.	12-Jan/18-Feb	03-Feb/10-Mar
J3AZR3E072-113	Bare Base Power Generation	12-Jan/23-Feb/29-Mar	05-Feb/18-Mar/22-Apr
J3AZR3E151-013	HVAC/R Controls Systems	07-Jan/23-Feb/29-Mar	11-Feb/26-Mar/30-Apr
J3AZR3E151-014	Direct Expansion Systems	05-Jan/12-Feb	05-Feb/16-Mar
J3AZR3E151-015	Indirect Expansion Systems	02-Feb/17-Mar	20-Feb/05-Apr

Ft. Leonard Wood, MO

Course No.	Title	Start Dates	Grad Dates
J3AZP3E571-003	Engineering Design	05-Jan/02-Feb/08-Mar	16-Jan/13-Feb/19-Mar
J3AZP3E571-005	Construction Materials Testing	20-Jan/17-Feb/22-Mar	30-Jan/27-Feb/01-Apr
J3AZP3E971-003	Advanced Readiness	05-Jan/15-Mar	09-Jan/19-Mar
J3AZP3E971-005	NBC Cell Operations	26-Jan/02-Feb/23-Feb/08-Mar	30-Jan/06-Feb/27-Feb/12-Mar

Indian Head, MD

Course No.	Title	Start Dates	Grad Dates
J5AZN3E871-001	Adv. Access and Disablement	05-Jan/26-Jan/17-Feb/08-Mar	16-Jan/06-Feb/01-Mar/19-Mar
J5AZN3E871-002	Advanced EOD Course	05-Jan/08-Mar	16-Jan/19-Mar

Gulfport, MS

Course No.	Title	Start Dates	Grad Dates
J3AZP3E351-001	Low Slope Maint. & Repair	26-Jan/23-Feb/15-Mar	05-Feb/04-Mar/25-Mar
J3AZP3E351-002	Fabrication Welded Pipe Joints	26-Jan/01-Mar	06-Feb/12-Mar
J3AZP3E351-003	Metals Layout Fab. & Welding	05-Jan/09-Feb/15-Mar	23-Jan/27-Feb/01-Apr

Additional course information is available at https://webm.sheppard.af.mil/366trs/default.htm or https://etca.randolph.af.mil. Students may enroll on a space-available basis up until the class' start date by contacting their unit training manager.

Two Out of Twelve Ain't Bad...

... It's Outstanding! Two CEs are among the Air Force's 12 Outstanding Airmen of 2003

Outstanding at Osan in 2003

SMSgt Keith Finney, 51st Civil Engineer Squadron, Osan AB, Korea, was selected as one of the Air Force's 12 Outstanding Airmen for 2003. He received his award in September in Washington, DC.

SMSgt Finney attributes his success to his coworkers and was surprised that he was selected.

"Men and women who work in my element are the main push and the reason why I won this award. This isn't just an individual thing; those around me were a part of it."

Leadership and job performance in primary duty, significant self-improvement, and base or community involvement make up the criteria for this award, which are noted on the Air Force 1206.

SMSgt Finney, chief of heavy repair, was the "Best of the Best in Asia-Pacific region" this year for senior NCOs. He also coordinated all requirements for the bedding down of 1,500 personnel during several 2002 exercises. During the Typhoon Rusa floods, he led damage control teams that prevented more than $500,000 of damage on base.

He still finds time off-duty for community involvement and self-improvement "because I want to learn about something, enjoy and be a part of it," he said.

"Keith is an outstanding leg of the topnotch triad of civil engineer superintendents," said Maj Anthony Bridgeman, 51st CES Operations Flight commander. "I believe no other air base has a higher operations tempo and that civil engineers have the most complex tasks, yet he successfully rises to the challenges."

SMSgt Keith Finney, 51st CES, Osan AB, Korea. *(official Air Force photo)*

2Lt Renee Lee, chief of internal public affairs, 51st Fighter Wing, Osan AB, Korea

Outstanding Efforts Rewarded

SrA Harold Tolbert, 9th Civil Engineer Squadron, Beale AFB, CA, is one of the Air Force's 12 Outstanding Airmen and he still isn't used to winning. Even though he's won many awards, "I'm still shocked every single time," he said.

SrA Harold Tolbert, a 9th CES heating, ventilation, air conditioning and refrigeration apprentice, repairs an HVAC unit. *(photo by Airman Brandi Glass)*

SrA Tolbert, a CE heating, ventilation, air conditioning and refrigeration apprentice, was cited for his contributions to the quality of life for Air Force personnel on Prince Sultan AB, Saudi Arabia. During a 4½-month deployment there, he kept the AC going for 1,400 buildings on base in 120 degree-plus temperatures. His efforts also averted a potential "disaster" on the base—the shutdown of the only dining facility.

His superior work ethic during deployment was often "rewarded" by additional duties, including those of noncommissioned officers. But he doesn't think he did anything special. He attributes his award to his supervisors, especially Dennis Tolliver, chief of facility maintenance for the 9th CES. SrA Tolbert said he "just got put in the right place at the right time. I did what everyone else does; I just got noticed."

Involvement outside of his job also contributed to SrA Tolbert's award. He is a drummer at his church and teaches bible study classes. He also volunteers for Habitat for Humanity and coaches basketball at a youth center. He said he's gotten more than he's given.

One person may be especially proud of SrA Tolbert: his stepfather, retired Air Force CMSgt Glenn Snell, who helped raise him. "He says he was in for 29 years before he retired and he's never known any of the 12 Outstanding Airmen of the Year. It was real good to get this for him," said SrA Tolbert. "It would be nice if I could follow in his footsteps."

Teresa Hood, Air Force Civil Engineer *magazine editor*

Air Force Firefighters Dominate DoD Awards

The Air Force continued its domination of the DoD Fire and Emergency Services awards, winning five out of six award categories for the second year in a row.

Air Force firefighters won the top awards for military firefighter, military fire officer, civilian fire officer, fire department of the year and the heroism award.

The awards were presented Aug. 27 during the DoD Fire and Emergency Services Training Conference Awards Banquet in Dallas, TX.

The winners are:

- A1C Gregory White, 86th Civil Engineer Group, Ramstein AB, Germany — DoD Military Firefighter of the Year
- TSgt Michael Rosser, 96th Civil Engineer Group, Eglin AFB, FL — DoD Military Fire Officer of the Year *(Rosser has since been promoted to master sergeant and is now assigned to Kunsan AB, Korea.)*
- Ms Cindy Litteral, 21st Civil Engineer Squadron, Peterson AFB, CO — DoD Civilian Fire Officer of the Year
- The 18th Civil Engineer Group Fire Department, Kadena AB, Japan — DoD Fire Department of the Year
- Mr. Robert Young, Tinker AFB, OK — DoD Firefighter Heroism Award

Mr. Young received the heroism award for saving an 8-year-old boy who had fallen into a farm pond. On April 29, Young and another off-duty firefighter received a phone call from a neighbor who said the boy was missing and feared he may have fallen into the pond.

Despite a water temperature of about 45 degrees, they dove in and searched the pond. After a few minutes, Mr. Young located the boy, pulled him out of the water and administered CPR until emergency medical services members arrived. As EMS members loaded the boy into an air ambulance, they were able to detect a faint pulse—amazing since rescuers estimated the boy had been underwater for about 20 minutes. The child fully recovered and is home with his parents.

Mr. Young was also awarded the Oklahoma State Medal of Valor by the state house of representatives.

The Army claimed the sixth DoD award when Ms. Elizabeth Sweeney, Fort Monmouth, NJ, was named Civilian Firefighter of the Year.

TSgt Rosser is the first DoD firefighter to win two DoD-level awards. In 1997, he received a DoD firefighter award while assigned to Rhein-Main AB, Germany.

MSgt Michael A. Ward, HQ AFCESA public affairs, Tyndall AFB, FL

L to R: Brig Gen Pat Burns, ACC CE; Mr. Robert Young, Tinker AFB, OK; A1C Gregory White, 86th CEG, Ramstein AB, Germany; CMSgt Gene Rausch, 18th CEG, Kadena AB, Japan; TSgt Michael Rosser, 96th CEG, Eglin AFB, FL; Ms. Cindy Litteral, 2st CEG, Peterson AFB, CO; CMSgt James Podolske, HQ AFCESA, Tyndall AFB, FL.

CEs Win Awards

Civil engineers received three awards in the previous quarter for their efforts in various fields.

The 823rd RED HORSE Squadron at Hurlburt Field, FL, received the Air Force Association's Theodore von Karman Award, which honors the most outstanding contribution in science and engineering. The 823rd RHS was cited for executing the largest permanent and contingency engineering construction effort of Operation ENDURING FREEDOM—the most aggressive RED HORSE project in its 37-year history. Their award also reads, "A world-class combat engineer unit, the 823rd RED HORSE Squadron flawlessly supported combat efforts in Afghanistan, Qatar, Oman, UAE, Kyrgyzstan and Pakistan."

L to R: Gen John P. Jumper, Air Force Chief of Staff; Col Benjamin Anderson, Commander, 823rd RHS; John Politi, Chairman, Air Force Association. ***(photo courtesy AFA)***

Maj Patrice A. Melancon, 810th Civil Engineer Flight, Naval Air Station Joint Reserve Base, Fort Worth, TX, won the AFA's Gen Edwin W. Rawlings Award for management. The award recognizes Air Force personnel who make significant contributions to environmental issues but spend less than half of their duty time directly involved. Maj Melancon earned the award for her initiatives in pollution prevention, recycling, environmental compliance, and resource protection.

The U.S. Department of Labor inducted SMSgt George Hirner, a member of HQ Air Force Reserve Command civil engineer directorate, into the 2003 Job Corps Hall of Fame in Washington, DC, in July 2003. For his distinguished career and continual path of self-improvement, he was named one of Job Corps' most successful graduates. SMSgt Hirner, a full-time reservist in the Active Guard and Reserve, serves as both the command aerospace expeditionary force CE functional area manager and the CE command deployment manager.

2003 Major-Selects

Keith D. Ayotte
Peter A. Berube
John C. Blackwell
Stephen K. Blake
Brian A. Brech
Bradley M. Bugg
Jennine S. Carter
James C. Chrisley
Sarah J. Christ
Gary J. Dorman
Marvin T. Ee
Ryan M. Elliott
Stephen T. Finn
Curtis L. Fryman
Christoff T. Gaub
Robert S. Grainger
Vincent A. Greener
Daniel A. Guinan
David F. Hargy
Michael J. Harner
Larry R. Harris
Eldrick L. Hill
Karlo M. Jajliardo
Matthew P. Jefson
Lori E. Kabel
James F. Kennedy
Shawn D. Larcher
Dwayne T. McCullion
Michael D. Miller
Andrew J. Muser
Donald R. Ohlemacher
Bryan C. Opperman
Aaron G. Orluck
Wade J. Rawlins
Laurie K. Richter
Christine Y. Rilovick
Charles P. Roberts
Roland E. Secody
Christopher W. Sipe
Susan R. Smith
Yvonne S. Spencer
Thomas A. Taylor
Allen L. Thibeaux
Shawn C. Thompson
Kyle E. Torster
John E. Tryon
Jason A. Warnick
Bradley D. Waters
Randy C.A. Whitecotton
Mark D. Workman

Key CE Personnel Changes

Col Timothy A. Byers became The Civil Engineer, Headquarters Pacific Air Forces in June, replacing Col David DeFoliart, who retired in August. Col Byers was previously the Commander, 8th Mission Support Group, Kunsan Air Base, Republic of Korea.

Col Marvin N. Fisher, formerly the 21st Mission Support Group Commander at Peterson AFB, CO, is now The Civil Engineer, Headquarters Air Force Space Command. Col Fisher replaces Col Gordon R. Janiec, who retired in October.

Paul A. Parker, a member of the Senior Executive Service, has been appointed director of the Air Force Center for Environmental Excellence, replacing Mr. Gary M. Erickson, who retired in July. Mr. Parker came to AFCEE from Headquarters Air Education and Training Command, where he was the Deputy Civil Engineer.

Eulberg Promoted

Col Delwyn R. Eulberg was promoted to the rank of brigadier general effective Sept. 26, 2003. General Eulberg is director of Installations & Mission Support, HQ Air Mobility Command, Scott AFB, IL.

AFCESA Change of Command—Col Gus G. Elliott, Jr., (R) accepts the AFCESA flag from Maj Gen L. Dean Fox at the change-of-command ceremony held at Tyndall AFB, FL, on August 1, 2003. Col Elliott, a career civil engineer, succeeded Col Bruce R. Barthold, who retired after 30 years of active-duty service in the CE field. *(photo by Lisa Carroll)*

Prime BEEF/RED HORSE Origins Discussed

The origins and history of Prime BEEF and RED HORSE are featured in a new biography of former Air Force Brig Gen William T. Meredith. Brig Gen Meredith was chairman of the Civil Engineering Manpower Study Group that led to the formation of Prime BEEF in the early 1960s. The book covers his service with the Corps of Engineers during World War II and his experiences as commander of the 554th RED HORSE Squadron during the Vietnam War.

The book, entitled "*Lead, Follow, or Get the Hell Out of the Way*," is available online or through local bookstores.

(No Air Force endorsement of this book is implied.)

2003 Lieutenant Colonel-Selects

Scot T. Allen
Myron H. Asato
John M. Balzano
Barton V. Barnhart
Rick A. Blaisdell
Anthony S. Bridgeman
Thomas J. Carroll III
Brian P. Duffy
Jeth A. Fogg
Douglas M. Hammer
Markus J. Henneke
Joel N. Holtrop
Crinley S. Hoover
Patrick J. Kelly
Gus S. Kirkikis
Kathryn L. Kolbe
Gregory P. Long
Phillip M. Moessner
Jeffrey A. Moss
Anthony E. Muzereus
Edwin H. Oshiba
James P. Page
Kathyleen M. Pare
Peter A. Ridilla
Gregory E. Rollins
Gregory J. Rosenmerkel
Peter A. Sartori
Dorothy R. Schanz
Navnit K. Singh
Mark P. Smekrud
Andrew A. Thorburn
Jeffrey M. Todd
Nelson Toy
Neil D. Wentz
Douglas P. Wise
Kevin K.Y. Wong
Timothy S. Wood

September 11: A Personal Remembrance

commentary by MSgt Gregory G. Noll

Thursday, September 11, marked two years since the terrorist attacks on the United States. For many Americans, this date will always have a special meaning. Some will remember their lost friends and loved ones; others will view it as a generational equivalent to December 7, 1941. And, unfortunately, others will simply forget.

On September 11, 2001, I joined 82 other emergency responders at Harrisburg International Airport where Pennsylvania Task Force 1, one of 28 federal urban search and rescue teams, assembled in preparation for our response to the World Trade Center. We would remain in New York as part of the rescue effort until September 19. Those eight days forever changed how I now look at the world, our country and my family.

There are certain things that I will always remember. People talk about the images, the pictures, the video. But what the images couldn't capture are some of the things I remember most: the smells, the sounds and the emotions of being there.

I remember that Saturday, September 15, was one of our better days. It was a clear, beautiful day and we could see the F-16s and F-18s in the blue sky over Manhattan. We spent most of the day working on Tower 1. That day the bodies of two firefighters and a civilian were found in our area. It was a good day.

I remember asking numerous FDNY firefighters, "How did your company make out?" The answers were rarely good.

I remember the posters and the photographs of the civilians who were missing. The names and faces were different, but the words were always the same. Pictures of missing parents with their kids were always the toughest. And while one could hope, nothing could change reality as the days passed.

I remember coming home and seeing my wife and family. Words can't convey the emotions I felt as my wife and two boys ran to me. I thought that I would pick up where life had been on September 10. The reality was quite different; there will never be another September 10. Eventually life returned to a "new normal," but not until many weeks had passed. Thankfully, my best friend—my wife—supported me when I needed it most.

In the weeks and months that followed, I had conversations with FDNY friends who survived the collapse or who were off-duty. Firefighter Phil McArdle of HazMat Company 1, Squad 288, arrived on the scene just after Tower 2 collapsed, and narrowly avoided being killed when Tower 1 fell. Of the 23 men who responded that day from his station, 19 were killed. It was a story repeated many times over in FDNY, NYPD and the Port Authority Police Department.

Later that fall another good FDNY friend told me that, given the increasing terrorism threat, he accepted the fact that he would probably die on the job. I feel the same way. Terrorism is not just a big city or a metropolitan problem—it is a war against all of us and everything that America represents. I believe that we all must fight against terrorism; I also believe it is a fight worth dying for.

Several months ago, I overheard part of a conversation. A woman said she was sick and tired of hearing about September 11. She wished that both September 11 and Iraq would just go away, there were so many other things that were more important in her world.

With all due respect to that woman and those who share her opinion, there is something that must be remembered: The freedoms that we have in this country were bought with the sacrifices that many men and women have made in our history. That includes the responders who died on September 11, as well as those serving today in Iraq, Afghanistan and other places around the world.

I will not forget.

MSgt Gregory G. Noll, an IMA Reservist (89 CES/CEF, Andrews AFB, MD), has been a firefighter for over 33 years. He was a member of PA Task Force-1, one of the first federal urban search and rescue teams responding to the World Trade Center attacks on September 11, 2001.

Pennsylvania-based rescue workers used Riley the rescue dog to search the remains of Tower 1. *(photo by the author)*

96th Civil Engineer Group

Parent Unit:
Air Armament Center
(Air Force Materiel Command)
Location:
Eglin Air Force Base, FL
Commander:
Col William P. Macon
Assigned Personnel:
557 military and 463 civilians

The 96th Civil Engineer Group at Eglin Air Force Base, FL, is at the forefront of Air Force civil engineering. Located along the sugar-white beaches of the Emerald Coast, Eglin is home to the Air Armament Center, 5 wings and over 45 associate units, making it the largest base in the Air Force. The 96th CEG supports 11.6 million square feet of physical plant spanning Eglin's 724 square miles and 3,450 facilities. The group comprises two squadrons, two divisions and a consolidated commanders' support staff.

The 96th Civil Engineer Squadron is the Air Force's first emergency services squadron, composed of Fire, Readiness and Explosive Ordnance Disposal. The EOD Flight has provided support to 172 active weapons development projects, including most recently the Massive Ordnance Air Burst, or MOAB, weapon.

The 796th Civil Engineer Squadron is a more traditional CE squadron, responsible for operations, maintenance, repair and construction of base infrastructure systems and facilities. The "Rat Pack" runway maintenance crew recently completed an innovative overhaul of BAK-12 units on the 12,000-foot runway and was lauded by Air Force Materiel Command for their ability to keep the airfield operational. The unique test mission at Eglin not only presents the typical challenges of managing a vast infrastructure network, but also requires engineers to handle dynamic, state-of-the-art construction projects. Current projects include construction along Eglin's beachfront of a 300-foot tower, designed to allow testing of precision-guided munitions without destroying the target.

With the largest Prime BEEF program in the Air Force, civil engineers at Eglin have provided invaluable support to Operations Enduring Freedom and Iraqi Freedom. Since Sept. 11, 2001, Eglin AFB has deployed more than 350 civil engineers to more than 22 different locations. With firefighters on the ground first in Iraq or engineers bedding down the first joint task force in Uzbekistan, the 96th CEG truly exemplifies the Air Force distinctive capability of "Agile Combat Support."

Recent Awards: The 96th CEG's accomplishments at home have been no less impressive. In 2002, they received the AFMC Curtin Award for the Outstanding Large CE Unit. The Readiness Flight earned the AFMC Col Frederick J. Riemer Award in both 2001 and 2002. In 2002, the Operations Flight won the AFMC Maj Gen Clifton D. Wright Award, and the Resources Flight won the AFMC Maj Gen Robert C. Thompson Award.

Whether at home or abroad, personnel of the 96th CEG set the benchmark across the Air Force. Through ingenuity and a commitment to excellence, the men and women of the 96th CEG embody the rally cheer, "Engineers Lead the Way!"

Unit Spotlight

Firefighters responding to emergencies wear a fire-resistant suit, breathing mask and oxygen tank with a combined weight of 70 pounds. Often, their response requires dragging hundreds of feet of fire hose into an atmosphere that can, at times, reach 2,000 degrees, while sucking oxygen from a mask. In the photo above, Maxwell AFB, AL, firefighters train with Montgomery, AL, city firefighters using the Air Force Fire Training Simulator, where more than 2,000 degrees of heat radiates from 16 propane burners. At right, Maxwell AFB firefighter Chris Taylor cools off after a training exercise. As part of the mutual aid agreement between the base and the city, the base trains and certifies Montgomery firefighters to respond to aircraft fires. Joint training gives the firefighters a chance to learn from each department's diverse routines.
(text by 1Lt Marcella Keiter, Maxwell AFB; photos by Carl Bergquist)

October was fire prevention month and fire departments continued to train in a number of ways to improve their firefighters' responsiveness.

Vandenberg firefighters battle Simi Fire, p. 27.
Remembrance of 9/11 by Air Force firefighter, p. 34.
DoD Firefighter Awards, p. 31.