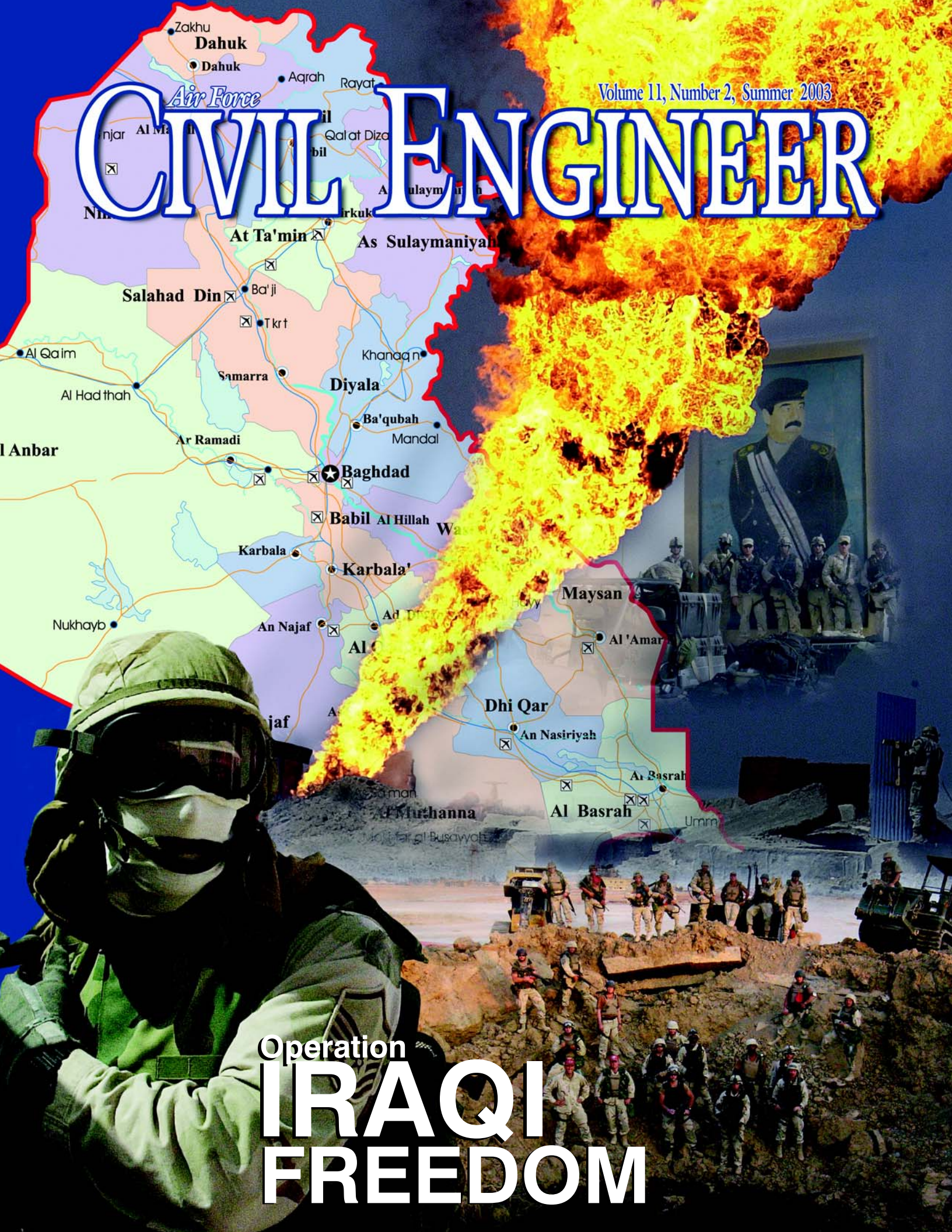
Volume 11, Number 2, Summer 2003

Air Force CIVIL ENGINEER



Operation IRAQI FREEDOM

From The Top

Photo by Keith Fred

Maj Gen L. Dean Fox

Back to the Bases

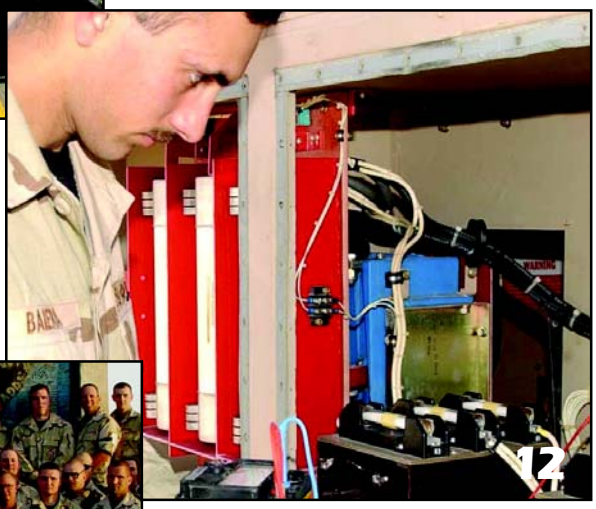
After 30 years of working side-by-side with many of you and observing first-hand the tremendous work Civil Engineers do worldwide, I am humbled, but very proud, to be the functional leader for such a fantastic team. It's a great honor to serve all of you as we all continue to serve our Air Force and this great country of ours.

Yes, I do mean that I intend to "serve all of you." That isn't belittling my position or grade — it's my simple philosophy for why higher headquarters exist. Over the course of my career, I've seen some MAJCOMs support their bases extremely well — getting the resources; providing policy, guidance and standards; and working to give the bases enough flexibility to get the job done. Unfortunately, I've also seen the "dark side" — MAJCOMs that thought they existed for some higher purpose, but they certainly weren't focused on their bases; MAJCOMs that failed to provide good facility standards; MAJCOMs that just passed money without thought for programming rules; MAJCOMs that didn't establish goals and a focus for their bases or didn't track simple metrics like housing occupancy rates or customer service; MAJCOMs that promoted little or no technical engineering support when they knew the bases didn't have the manning in many technical fields.

I've also seen the Air Staff up close and personal three times now, and I've seen different levels of success at what I think the Air Staff should be about — *supporting* the people and missions at base level through our MAJCOMs. That's why this first *From the Top* is titled "Back to the Bases." I challenge us all to look at everything we do across the very broad spectrum of engineering tasks and ensure what we're doing is delivering first-class support to the people and missions at base level. If we aren't, then let's re-examine our functions and get focused on our bases.

Again, I am honored and humbled to be The Air Force Civil Engineer. I am proud to serve our excellent leadership and our great nation. I look forward to serving with each of you — civilian, contractor, airman, NCO, officer, active duty, Guard and Reserve — in providing the best support possible to our people and missions!

Features



9 Airfield Engineering
12 Meeting the Challenge
15 Keeping the Show on the Road
16 Air Expeditionary Warriors
- Buzz and Boom
- Beddown at a Bare Base
- No More Bare Base

18 Fire in the Hole
20 Fueling the Fight
22 Engineering the Impossible
23 Taking the Reigns
26 Supporting the Warfighter
28 Securing a Safe Landing

Departments

4 Interview
30 Education & Training
32 CE World
33 CE People
35 Unit Spotlight

On the cover ...

(Bottom left) **Explosive ordnance disposal craftsman MSgt Joe Cross prepares to rope off a safe area near an uncontrolled natural gas fire in the Rumaylah Oil Field in southern Iraq, and *(at right)* inches closer to the fire as he clears a path for firefighters to approach and extinguish it (story page 18). *(Top right)* Airborne RED HORSE members pose in front of a portrait of Saddam Hussein near Tallil Air Base, Iraq. *(Bottom right)* ARHS members in a crater on a runway at Baghdad International Airport, Iraq, before beginning repairs (stories page 29).**

Please send story ideas, articles, photos, comments and suggestions to
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Air Force Civil Engineer
Summer 03 • Volume 11 • Number 2

The Civil Engineer
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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 on AFCESA's home page: http://www.afcesa.af.mil.

Maj Gen L. Dean Fox took office as The Civil Engineer May 19, bringing with him more than 30 years of experience in Air Force civil engineering, along with an open admiration and enthusiasm for its people. In this interview with *AFCE* magazine, General Fox discusses some of his priorities as he begins his tour and affirms his commitment to succeed in the mission by …

Putting People First

An interview with The Air Force Civil Engineer, Maj Gen L. Dean Fox

***AFCE*:** Tell our readers something about you. Where were you born and raised?

Maj Gen L. Dean Fox

Maj Gen Fox: I was born and raised in Georgia. I'm a military brat. My father was one of the last chief warrant officers in the Air Force. He flew on bombers in World War II and later finished his career in logistics. For part of my upbringing, we lived on a farm near Atlanta, where my dad worked in civil service.

***AFCE*:** You're only the second Air Force Civil Engineer to be a graduate of the Air Force Academy. How did you choose to go to the Academy?

Maj Gen Fox: I was sitting outside my high school guidance counselor's office one day, listening to him talk to another student about applying to the Air Force Academy. I said to myself, "He's talking to me. He's not talking to that guy. That's what I ought to do."

I was one of six children, and it would have been difficult for my parents to foot the bill for an education. I had a partial scholarship to Georgia Tech, but I would have had to go through a loan program or ROTC or some other avenue to complete my schooling, and I thought this Air Force thing sounded awfully good.

Honestly, I wanted to fly, but I graduated in 1972 when Vietnam was winding down, and they were pitching out pilots by the dozens. So I majored in civil engineering. There were a lot of engineering degrees open to us in those days, and that seemed to fit my desires. I'm an avid sportsman and like to be outside. The concept of surveying or building things or overseeing construction sounded neat to me.

***AFCE*:** Are those jump wings you're wearing? What's the story?

Maj Gen Fox: One of the summer options at the Academy was jump school. I went through Army jump training and qualified at Fort Benning between my freshman and sophomore years.

***AFCE*:** How will you define the Office of The Civil Engineer? What are your priorities as you begin your tour?

Maj Gen Fox: Looking back on the leadership that we have had in our business, I don't know that I need to define or redefine the Office of The Civil Engineer. Due to my paradigms and my personality, I will do things a little differently, but I look at it as taking the example of a long legacy of great leaders and applying what I've been mentored to do to the changing programs and the changing environment we face today.

My perspective, from the eight years I have spent as a major command civil engineer, is slanted toward taking care of people at base level, so they can take care of the mission. Our missions are flown from bases. The preponderance of our people work at, or are attached to, our bases, so we need to focus on that base-level mission and people.

I have a very strong opinion about the role of higher headquarters. They're necessary and should work to get resources, set policy and provide oversight so that things can be done better and easier at base level. They're not there to hinder progress; they exist to help progress. Whether it's a major command, a numbered air force, a field operating agency or the Air Staff, those higher headquarters, in my opinion, exist to support bases. Everything we do, whether it's resourcing or policy, needs

to be focused on helping civil engineers get the job done.

We need to look at our processes at the Air Staff and at major command level. Are those processes just something we've inherited from our predecessors, or are they value added. If they're not high value added, if they're not enabling people to get the job done and not easing the burdens on a limited work force, if they're not conserving resources or spending resources smartly, then we ought to look at those processes and change them.

Higher headquarters also exist to fill the voids at the bases, to bridge gaps where they no longer have a bridge themselves. As we downsized under Defense Management Review Decision 967, we lost a lot of technical capability and programming capability at base level. Many of our bases haven't identified their real requirements because they don't have the technical expertise or the manpower to do it. The major commands ought to fill that void, and the Air Staff ought to assist, through AFCESA if necessary, whether it's done by contract or another method.

***AFCE*:** Air & Space Expeditionary Forces have been a reality for five years now. What are the major challenges Air Force civil engineering faces today with regard to supporting and sustaining AEF deployments?

Maj Gen Fox: We have some Air Force specialties in the CE career field that are stressed. We have others that may not be formally coded as stressed but that have had, of necessity, long duration deployments. That's a challenge for the Air Force. We've worked the issue, and there are tradeoffs to buy back some additional manpower for those most stressed AFSs.

General Jumper has said that we are an expeditionary Air Force. It's a way of life now. The AEF concept has done what it was advertised to do in terms of predictability. When we're at war, however, many bets are off. We don't have the luxury of AEF buckets necessarily being confined to a set rotation. When the fight lasts a long time, we need more forces than are available in the AEF pairs currently on the bubble, and we have to robust them. We've gone outside the construct a little bit, but there's no question that we're expeditionary and are going to stay that way.

One lesson reinforced during the most recent conflict is that airmen are the best trained and the best qualified to support airfields. That's part of the benefit of the way we train our young CE troops. We have them organically organized at home station, working alongside civilians who may have far more experience and who may be great trainers and mentors day-in and day-out. The other services don't train on airfield lighting operations, power production, or generator support to airfield lighting. They don't train with our aircrews to know what safety clearances are and how to operate around the airfield. Our people are extremely well qualified to perform crash rescue, probably the best qualified in the world, because they train on it every day. Our explosive ordnance disposal troops know our Air Force munitions and are trained to handle them. There are so many areas where our young troops are ready to go to work on Day One in a contingency environment because they train at home station to do the same things they will do in the field. So, airmen supporting airfields is an absolute must.

The doctrine is in place. It says airmen are best qualified to operate airfields. Where we disconnect is when we have an Army installation in a contingency environment that just happens to have a large runway on it. My view is, if the Army wants to support the cantonment area, that's fine. But if the Air Force is going to fly airlift or tanker missions in and out of there, or if fighters are going to frequent that airfield, then the Air Force ought to be manning that airfield, because we operate differently in our airfield environments. It's roles and missions, but it's also expertise.

***AFCE*:** Coming from an operational background at U.S. Air Forces in Europe and Air Mobility Command, what is your assessment of how civil engineer support to operators and commanders measured up during Operations Enduring Freedom and Iraqi Freedom?

Maj Gen Fox: My assessment is that our troops perform absolutely superbly, once they're on the site. That's a key point. If the TPFDD (time-phased force deployment data) says we should be in there a week before the shooters, but we arrive a month after them, then we're fighting from a tough position and playing catch-up from Day One.

We constantly and consistently get feedback that our people are terrific. I can't tell you the number of colonels and general officers who were deployed as commanders who have told me, "That individual was absolutely fantastic. What a great engineer commander we had at my deployed location!" My response typically is, "They all are!" It wasn't the commander, necessarily. Hopefully he or she provided the right kind of leadership and guidance and structure, but those troops were fantastic. They were well trained, they know how to build and sustain tent cities, they know how to take care of the airfield, and they know how to operate from an austere location or a pretty decent contingency location. We all read quotes from the President of the United States and the Secretary of Defense saying, "You've done us proud."

AFCE: In contingency operations over the past five years, we have seen the Total Force become a way of life to meet civil engineer taskings. Are we where we want to be with regard to integrating the Air Reserve Component into civil engineer support operations?

Maj Gen Fox: I think we're a long way down the road toward where we need to be. The Air Force, in my view, does a great job deploying the Total Force. Many of our assets, from a weapon system and aircrew standpoint,

are in the Guard and Reserve. We can't get to the war, and we can't fight the war, without the Total Force.

What we did early on during OEF was to activate ARC teams and perhaps use them initially as partial backfill where we had broken the base at home station. By the next round, we were able to pick an ARC team in the bucket that could deploy. We need to put the ARC in the game. They need the same kind of predictability and stability that the active force does. They need to know that they're activated for a year, and they're not going to be jerked around.

Overall, the spin-off for civil engineering is tremendous, because we have some great expertise out there. We look at everything — RED HORSE, Prime BEEF, and the active, Guard and Reserve. We used it all. We haven't left anybody out of the game. We absolutely relied on the ARC to fill the gap in our stressed AFSs. We didn't have to dip down too far into subsequent AEF buckets for large teams, but for small teams like EOD and engineering assistants and fire protection we went well beyond, and we went to the ARC early, because we couldn't do the job without them. In some areas we find that our ARC members are a little more experienced than our young active duty people, because they've been around a lot longer and some are previous active duty themselves. What they bring to the fight is experience and know-how, and from their civilian jobs an expertise that is unequaled outside this country.

***AFCE*:** What can you tell our readers about the Eagle Flag initiative, its relationship to the training conducted at the Silver Flag Exercise Sites, and how that initiative is designed to better meet the training demands of mission support groups and wing commanders?

Maj Gen Fox: That's a great question, because I know there's a lot of eagerness out there about whether Eagle Flag seeks to supplant what we do at Silver Flag. I will tell you what some of our senior leadership has said and their vision of Eagle Flag. As one senior officer said, "Eagle Flag is not being created to teach cooks to cook." Eagle Flag is not there for functional training. It doesn't attempt to replicate or replace Silver Flag. If anything, we ought to be broadening Silver Flag to include other functional areas and improve their contingency support training.

Eagle Flag, in a nutshell, is to fill a void in leadership training, the essential leadership that we deploy to run a contingency location. Those leaders may not know how the disparate functions beneath them operate in a contingency environment. Eagle Flag training allows leaders to exercise command and control in an integrated expeditionary combat support environment. It's not to teach CE troops to put up tents or how to lay an emergency airfield lighting system. It's to teach our leadership and give them experience exercising the integration of those disparate functions.

AFCE: We have instituted significant competitive sourcing and privatization of housing and utilities over the past several years, and that trend promises to continue at least for the near term. In your view, what's the best way to manage those initiatives? How do we minimize the impact to our readiness posture?

Outgoing Air Force Civil Engineer Maj Gen Earnest O. Robbins II bequeaths the traditional sterling silver Civil Engineer badge on Maj Gen L. Dean Fox at General Robbins' retirement dinner, May 15.

Maj Gen Fox: First, to address our readiness posture, if we have a military need in a wartime environment or if there is a personnel requirement in support of a contingency mission, then we need to take that off the table for competitive sourcing. Our job is readiness. If we're going to adversely affect readiness through competitive sourcing or privatization, we need to fence that off.

Competitive sourcing and privatization have become a way of life in our business. That's frustrating to many of us. It creates constant change. It becomes an issue of resources. We don't necessarily do competitive sourcing or privatization because it's the cheapest way to do business. We support those initiatives because it becomes the only game in town. If we were fully funded to renovate or replace all of our housing, then I believe Air Force leadership would prefer to do that in-house. But we don't have the resources to do that.

There's a very strong push from OSD to divest ourselves of housing. The other services basically have agreed with OSD that it's not a core competency to

maintain military housing, so it's not business as usual in the housing field.

Housing privatization is complex, and we have 104,000 units in the inventory. Privatization is one of the tools that we will use to meet the goal to renovate, replace or excess/demolish all of our housing units in CONUS, except in the northern tier, by 2007. By 2008, we have to do the same in the northern tier, where they have a limited construction season. By 2009, we have to do the same overseas. There isn't enough housing MILCON resourced or available, and there won't be, to keep it all in-house, so privatization is a must if we're going to meet those goals.

My concern is, understanding that privatization is with us to stay, that we do it with good business sense from the Air Force and federal government perspective. We need to make sure that those business deals that are postured for 40-50 years are good business deals for the government.

***AFCE*:** What do you see in the future of the MILCON program and the way it is structured and used to meet base requirements?

Maj Gen Fox: The MILCON program has been broken for a number of years. There's been an attempt in the last few years to fix it, and hopefully there are better fixes forthcoming. In the days of very lean, austere MILCON programs, the program was actually pulled back from the MAJCOMs. There's now a centralized model used by the Air Staff, based on a point system, to determine which projects should be prioritized. My view is if the program doesn't serve the wing commander and the base, the process should be looked at.

Four-star MAJCOM commanders may submit 50 projects or more in a given year and get nothing, not even their number one priority. That's wrong. There are so many centralized "corporate buy" projects that we don't leave enough total obligation authority for the MAJCOMs to have any hope of having a current mission program. Setting aside new mission beddown projects for a moment, there are things that the Air Force wants to do that we need to reserve funding for, but beyond that, we need to look at a methodology to cut up the rest of the pie and tell MAJCOMs that they have a portion of the current mission MILCON so that they can expect to get their top three, four or five projects.

My role as the Air Force Civil Engineer will be to fight for redesign of the model. The Air Force Civil Engineer is the person who puts together the model and advocates for it with the leadership. We need to examine it and make recommendations on a smarter way to support the missions and the people at base level. For new mission beddowns, I'm a strong advocate of the view that acquisition programs need to resource the MILCON. That's the stated policy, and I think Air Force leadership is strongly on board for that. We need to work with the panel structures and the Air Force Board structure to continuously emphasize that and ensure they don't take away from dorms or fitness centers or dining halls to fix a beddown.

***AFCE*:** How are we doing with retention in civil engineering? Have we felt any fallout from Stop Loss?

Maj Gen Fox: Our estimates are that it won't be a major issue. Our concern is with heavy deployments and stressed career fields and lengthy deployments, but estimates right now are not showing that we're going to have a major adverse impact. There are some dynamics with the Guard and Reserve that we need to be concerned about. When we Stop Loss our troops, recruiting in the Guard and Reserve go down, because folks going off active duty are one of their best sources of recruitment. And it provides a tougher training requirement for the ARC, because they may be bringing in brand new folks who have to be trained from ground zero.

I think recruiting and retention is not nearly the painful issue that it was a few years ago. It's something

General Fox with five of his predecessors as The Civil Engineer, assembled at Maj Gen Earnest O. Robbins' retirement dinner, May 15. *Left to right:* Maj Gen (ret) Clifton "Duke" Wright, Maj Gen (ret) Earnest O. Robbins II, Maj Gen (ret) Eugene A. Lupia, General Fox, Maj Gen (ret) James E. McCarthy, and Maj Gen (ret) Joseph "Bud" Ahearn.

we're going to continue to watch, because we need to understand the effects of long deployments and multiple deployments. At this point our folks are proud to be wearing the uniform, they're proud of the missions they support and the recognition they get. I think the vast majority is willing to stick around and support their country.

***AFCE*:** You once served as the Assistant Executive Officer to The Civil Engineer and observed first-hand how the Director worked with Congressional committees and functioned in the joint arena with our sister services. How did that experience and your subsequent experience help prepare you for this job? What plans do you have for partnering with other services, government agencies and private industry during your term?

Maj Gen Fox: Yes, I had the opportunity as a young officer in the front office under Maj Gen Clifton "Duke" Wright and Maj Gen George "Jud" Ellis to sit in on a couple of hearings. I saw how they skulled and prepared for hearings and testimony. That observation was a good jumpstart for me. It told me what to expect.

A few years ago in Europe, when I took over as the USAFE Engineer, it was on the heels of a five to six year drawdown, with no money, no MILCON and no capital investment. Not one single house was renovated for six years. It was my good fortune to arrive basically at the same time as Gen Richard Hawley, who had come from the Pentagon, as I had. I had the benefit of working for General Hawley, Gen Mike Ryan and Gen John Jumper in the mid-1990s. I traveled back to D.C. with General Hawley to work the "Fix USAFE" program. We convinced Congress to reinvest in Europe, that we had completed the drawdown phase and would not be closing any more bases. We hosted a couple of Air Force Board visits and convinced them to begin turning the faucet back on. As part of that process, I had the opportunity to be a principal witness during hearings before Congress, together with Army Maj Gen Hans Van Winkle, who was the U.S. European Command civil engineer, and the NAVEUR Engineer. That was great experience.

General Fox examines the nozzle for the prototype FRE-Fire (First Response Expeditionary Fire vehicle) during an orientation visit to AFCESA in June. Explaining the equipment, which was designed for expeditionary operations, is Mr. Mike McDonald of the Air Force Research Laboratory at Tyndall AFB.

I have a long history of active participation with The Society of American Military Engineers as a post president, regional vice president and a national director. At some point during my term as The Civil Engineer, I hope to be nominated to be the president of SAME. That gives us another avenue to interface with the other services, in addition to the MILCON program.

We are a purple suit organization. We enhance each other's capabilities. The Army can't do its job without us. We help get them to the fight, we help supply them once they're in the fight, we provide close air support for them, and we provide a lot of their air platform intelligence, like early warning systems. We also work closely with the Navy. Some Navy missions interface with Air Force missions, and I think we do that better than we ever have. In the civil engineer arena, we clearly complement each other's capabilities.

One of the initiatives that I plan to work with the Corps and NAVFAC is construction timelines. We make a tremendous effort to build high-quality facilities. We do a good job with cost and with balancing the program, because we know we have to live within a certain number of dollars. By the time we leave a job site, we've met cost and quality goals, but did we provide the customer the facility on the timeline that we promised? I would submit that we corporately, between us and the Corps and NAVFAC, don't do a good job of that. One of my thrusts will be to sit down with the Corps and NAVFAC here in Washington, or out in the districts, to work on that.

***AFCE*:** Would you like to say something about your leadership style?

Maj Gen Fox: As I commented to the CE Chiefs' Group, part of leadership is working hard to make the work environment fun. I think I can get more out of people in the long term if they're smiling when they come in the door, and they're tired but smiling when they go home. I don't believe in beating on people, and I don't like to hear of people beating on people. We need to inspire our folks and make the workplace fun. There are enough external stressors in life — you don't need to be stressed just coming to work. We shouldn't make people sweat when they come in to give information, because that will stymie the process.

I love people. I know that missions are critical, but there are no missions without people. People are the root of all success. We talk about quality of life and people programs. I talk about mission and people. In my view, everything is people first. Pump them up, and they'll take care of the rest.

Airfield Engineering

Pavement team's mission takes them to the Tip of the Spear

by Maj Anthony J. Davit
HQ AFCESA

Having just returned from his fourth round of deployments conducting airfield evaluations in support of Operations Enduring Freedom and Iraqi Freedom, Maj Anthony Davit shares some of his experiences there as leader of one of AFCESA's Airfield Pavement Evaluation, or APE, teams.

Being an APE Team member has undoubtedly been the most challenging and exciting assignment of my Air Force career. Our latest round of airfield evaluations, which began in January 2003, took us to several beddown locations slated for use as support bases in the war against Iraq. It included airfields in Qatar, the Kingdom of Saudi Arabia and Iraq itself, where coalition forces ultimately conducted combat and airlift missions.

Our contingency support in theater actually began in October 2001, shortly after the shocking events of September 11th. The Air Force Civil Engineer Support Agency deployed two APE Teams in support of OEF. I led the first team and Capt Jim Chrisley led the second. Little did we know that for the next 18 months one of us would be deployed virtually nonstop, heading teams to evaluate airfields throughout the U.S. Central Command area of responsibility. Together we have evaluated every airfield supporting OEF and are well on our way to doing the same for OIF. We've evaluated international airports, unprepared landing zones, bomb-damaged airfields and brand new airfields in various countries, many of which end in "-stan."

While deployed we worked for the Combined Forces Air Component Commander C7 Civil Engineer staff. According to CFACC priorities, they conveyed to us the airfield evaluation priorities and coordinated intertheater airlift for our team and our automated dynamic cone penetrometer, or ADCP, testing vehicle. Airlift coordination was by far the most difficult piece of the puzzle, especially traveling with our truck, an oversized pick-up on a Ford F-350 chassis with a core drill in the bed that carries all of our equipment and supplies. Competing priorities, uncertain aircraft availability, and complications like diplomatic clearances led to continuous shuffling of timelines. Each day's flying mission schedule was released at midnight, and we frequently found ourselves waiting for days, checking regularly to see if we had been loaded on a manifest. During the latest trip our team flew on 19 C-130s, both U.S. and host nation, a couple of C-17s, and finally a C-5 for the trip home.

Our evaluations were critical, because most military bases outside the United States were constructed for light aircraft only. Many would support only limited operations of large-frame airlift aircraft. Our work determined how many aircraft passes could be supported on these marginal airfields, and if needed we made operational recommendations, such as altered take-off and landing patterns or displaced thresholds, to allow an airfield to support a longer-term mission.

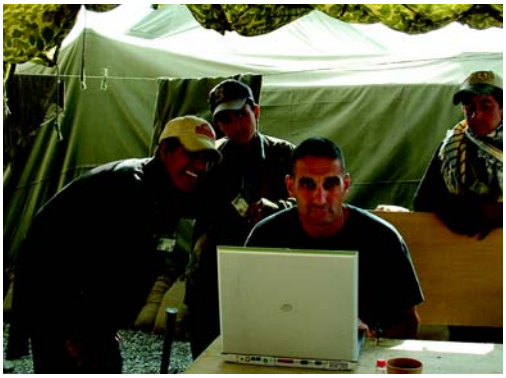
Was it exciting work? You bet. At the Iraqi airfields, we flew in just days after the U.S. Army had secured each field. Although we felt secure with the Army and Marines guarding those bases, there is always a pucker factor when you're working alone, isolated on a runway in the middle of a formerly hostile foreign airfield.

In eastern Afghanistan, near the Pakistani border, we evaluated rudimentary landing surfaces in the middle of nowhere to support anticipated Army special operations forces. We encountered some interesting construction techniques and materials at former Soviet air bases. We faced a constant communications challenge to stay in touch with the C7 staff and AFCESA and to transmit

(Above) **TSgt John Boyd, Maj Anthony Davit and SSgt Dan Torres evaluate an unpaved airfield in Afghanistan.** ***(Top)*** **Maj Anthony Davit uses the automated dynamic cone penetrometer for pavement tests at a base in the Kingdom of Saudi Arabia.** ***(HQ AFCESA photos)***

our classified reports to those who were anxiously awaiting them.

Was it a grueling assignment? Sure, at times. The fine, powdery soil and dust storms in the region made for difficult working conditions at some locations. At Tallil Air Base, Iraq, we conducted the evaluation in MOPP gear in extreme heat. Since 9/11, we have staged out of bare bases under some pretty primitive conditions, sleeping on mosquito-netted



(Top) **Pavement team members deployed to support Operation Enduring Freedom in Oct. 2001 were *(left to right)* MSgt Scott Melton, Maj Anthony Davit, TSgt Jody Root, TSgt Joel Jones, Capt James Chrisley and MSgt Steven Russell. *(Above)* Local children appear fascinated with Maj Davit's work.**

cots in stuffy hangars and eating our share of MREs with the earliest deployed contingents. We've long since learned to carry a several-day supply of water and MREs in our truck. When you're in remote areas on the front lines, if you're not carrying it with you, you're not eating or drinking it. We've had to maintain our vehicle and equipment on the fly as best we could. We kept things greased up, crossed our fingers, and got creative when necessary.

What keeps us motivated? Knowing that the work we do is absolutely critical to the decision makers determining beddown locations and operational priorities. The input I received from numerous wing and group commanders was, "The success of operations at this location depends on your findings and the information you give us."

Incorporating new technologies into our kit bag is always gratifying. At another location in Iraq, we used global positioning system equipment for the first time to define the boundaries of the runway, taxiways and ramps. We also employed our expertise to advise RED HORSE engineers who were involved in constructing runway and ramp projects at several locations in theater. Recommendations regarding improved material handling and material quality control can make all the difference in the success of a pavements project.

Sometimes we get to exercise our regular civil engineering skills, as well. Our team members frequently assisted the C7 staff and deployed engineers at various locations. On this most recent trip, the C7 staff needed an officer to help the wing commander at a location in Saudi Arabia do beddown planning. Since our team was awaiting airlift flow for our equipment, I dusted off my planning skills and helped the wing commander do preliminary layout for the 4,000-person base camp until the Prime BEEF team officer-in-charge arrived.

Last but not least, we've had the opportunity to meet some fascinating and extraordinarily dedicated people who, like us, were exerting their best efforts to accomplish the Air Force mission. At two different locations I met host nation engineering officers who had studied at the Air Force Institute of Technology and took special interest in the work we were doing.

Pavement evaluations: The road ahead

There are many units today that perform different levels of airfield pavement evaluations. These include Special Tactics Squadrons, Global Assessment Teams, Contingency Response Groups and RED HORSE. The greatest concerns about airfield pavement evaluations that came to light as a result of OEF and OIF involve training of those teams and clarification of the level of evaluations that they are best able to perform.

AFCESA Engineering Technical Letter 02-19 outlines the requirements to become certified in contingency airfield pavement evaluation and contains most of the information necessary to do the different levels of evaluation. This leaves the question of which organization will perform what level of evaluation. The three types of evaluations, Expedient (100 passes of a C-17), Sustainment (5,000 passes) and Permanent (over 50,000 passes), require different levels of field testing. Classification of evaluation is driven by the mission and time allotted for field work and analysis. While Expedient evaluations require minimal testing, Sustainment and Permanent evaluations require extensive testing with specialized equipment that only AFCESA owns.

Pavement evaluations and the calculated data should be comparable. Publishing long-term Pavement Classification Numbers based on two or three DCP tests can give mission planners and operators an inaccurate picture of an airfield's mission capability. Having multiple teams

Team members dressed to blend in with the local population for their own safety while conducting pavement evaluations in Central Asia.

evaluating the same airfield only clouds the picture even further. HQ AFCESA is working this issue within the Air Force and with other services and will develop guidance and formalized training for contingency airfield pavement evaluators.

An outstanding team, sterling support

It has been an exciting, challenging and rewarding time for the AFCESA APE teams. The team members who have deployed over the last 18 months would like to thank all of the deployed CE units that adopted us along the way and provided support to us while we performed our global mission.

As I prepare to leave AFCESA for my next assignment, I would like to express my admiration and thanks to the APE team members with whom I have served for the past two and a half years. They have conducted the mission in outstanding fashion and are true Air Force heroes in my eyes. I extend my appreciation to Capt Jim Chrisley, MSgt (ret) Scott Melton, MSgt (ret) Jerry Spivey, MSgt Steve Russell, TSgt John Boyd, TSgt Jody Root, TSgt Joel Jones, SSgt Dan Torres, SSgt Greg Welch and SSgt Jason Whitman. I also want to thank our home station AFCESA pavements staff, who provided sterling support to each of our deployments: Mr. Jim Greene, Mr. Dick Smith, Dr. Randy Brown and MSgt Vince Thomas.

If you are interested in becoming a member of this elite team, please contact Mr. Jim Greene at DSN 523-6334 or Mr. Dick Smith at DSN 523-6084 in the HQ AFCESA pavement evaluation section.

Maj Tony Davit is formerly the Airfield Pavements Evaluation Section chief at HQ AFCESA, Tyndall AFB, FL. He is now the Operations Flight chief for the 56th Civil Engineer Squadron, Luke AFB, AZ.

(Above and inset) **SSgt Greg Welch and MSgt Scott Melton patch a core hole on an airfield as interested locals observe. Everywhere the team went, the local populace was curious about their work.**

APE Teams Perform a Specialized, Global Mission

Airfield pavement evaluation teams have a unique mission in the Air Force, performing detailed airfield pavement structural evaluations at both peacetime and contingency locations. The AFCESA APE Teams are responsible for all contingency and peacetime structural pavement evaluations at 180 Air Force facilities worldwide. Additionally, the teams perform runway friction characteristics surveys, monitor pavement condition inspections, perform pavement research, and develop criteria, standards and policy.

The AFCESA Airfield Pavements Evaluation Section is composed of two Air Force officers, two senior NCOs, four junior NCOs, one Air Force civilian and two contractors. The section was originally formed in 1973 and has been performing its specialized mission for 30 years.

Methodology differs slightly between contingency and peacetime evaluations. During contingency operations, teams employ various evaluation tools, including automated and manual dynamic cone penetrometers, electronic cone penetrometers and coring equipment. The data collected is fed into the Airfield Pavement Evaluation software developed by the U.S. Army Engineering Research and Development Center at Vicksburg, MS, also known as the Waterways Experiment Station.

During peacetime evaluations an additional piece of equipment, a Dynatest 8081 heavy weight deflectomter, is employed. The HWD output is loaded into the Layered Elastic Evaluation Program software developed by WES. These tools, coupled with each team's experience and technical expertise, determine an airfield's long-term capabilities. Those capabilities are published in a detailed Airfield Pavement Evaluation report as Allowable Gross Loads and PCNs for each airfield feature. Airfield drawings, visual surface survey data, testing methods and assumptions, and a detailed listing of physical properties of each airfield feature are also included.

Meeting the Challenge

Expeditionary civil engineers handle whatever comes their way

by SSgt Pamela Smith
320th AEW/PA

In a contingency environment, a CE unit must do more with less, come up with creative solutions to complex problems, and complete critical projects on condensed timelines. The 320th Expeditionary Civil Engineer Squadron has met the challenges at their deployed location in Southwest Asia and locations downrange, and learned to tame the beast known as contingency engineering. Here are their stories …

Home, home, on the downrange

Members of the 320th ECES forward deployed from the 320th Air Expeditionary Wing to Kandahar Air Base, Afghanistan, in January to rebuild a tent city there known as Air Force Village. The U.S. Army is responsible for overall base operating support at Kandahar, but the Air Force provides fire protection and occasional assistance for specific projects.

"We sent a 20-man team to Kandahar to build up that area to meet bare base standards," said SMSgt John Little, 320th ECES Chief Enlisted Manager. The task required the CE team to build five hardback tents and a storage area for medical supplies. They also rebuilt the floor of the medical tent and relocated 16 TEMPER tents.

"It was a challenging task. We had to relocate the tents in a systematic order," Sergeant Little said. "Our electricians had to access the conglomeration of electrical cables strung throughout the site. They had to figure out how to simultaneously power two Air Force sites with only enough assets for one."

The crew worked to keep power outages to a minimum because the special operations, pararescue and medical missions couldn't be interrupted. "Each mission had to get permission from its higher headquarters to stand down so we could make the final move to their new facilities," Sergeant Little said. "They received authorization from higher headquarters to shut down operations for 48 hours to get moved. Our guys worked two 18-hour days to get them relocated and powered back up."

Sergeant Little said CE also installed 1,500 feet of perimeter fence and much needed shower and latrine trailers. "When we got there, (the people assigned to Kandahar) were taking three-minute combat showers and using buckets to shave and brush their teeth," he said. "When we were done they had modern amenities and the capability to take a 10-minute shower."

Sergeant Little said his crew wasn't alone in the build up of Kandahar. All permanent party personnel had a hand in the move. "I was especially impressed by the Kandahar firefighters who stepped up to assist with the relocation. We worked with Army engineers and the CE guys assigned to Kandahar to take care of things," he said. "We came together as a team."

That teamwork extended beyond Kandahar to Bagram AB, Afghanistan, where members of the 320th ECES forward deployed to an area that is still littered with land mines, mortar attacks, and stray bullets to repair and maintain environmental control units. "We've sent teams there on various occasions to support and maintain the ECUs," Sergeant Little said. "We've also brought units back here to work on them."

The sergeant said that regardless of the mission, his troops are always ready to step up and face the challenge. "They jump at the chance to go (downrange)," he said. "It's an outstanding experience for them to

SrA Marco Baeira, 320th ECES, uses a megohmmeter to check for breakdown within a high-voltage step-down transformer. ***(Photos by SSgt Pamela Smith)***

see other portions of the Air Force mission."

This deployment has given members an opportunity to work on their war/contingency skills and learn to think on their feet. "They have to think ahead," Sergeant Little said. "They have to be prepared because they can't run down the street to Wal-Mart and buy construction tools they may need. This prepares them for the future and shows them what expeditionary is all about."

And force protection for all

Back at the 320th AEW, the 320th ECES Explosive Ordnance Disposal Flight has been working hard to ensure the safety of 320th AEW personnel and assets.

"Our job is twofold," said MSgt Mitchell Bolin, 320th EOD superintendent. "We're assigned here for aircraft support and force protection. We've got the capability to protect people and the environment from weapons of mass destruction. People assume we're just a bomb squad, but we do more than that."

Sergeant Bolin said the flight's biggest challenge to date has been educating host nation authorities on 320th AEW force protection needs. "We had a hard time convincing them of our need for barricades and the search pit," he said. "But through multiple briefings and demonstrations we were able to convince them." The search pit issue has been a major force protection concern since opening the base a couple years ago.

While the day-to-day threat here is minimal, EOD stays busy with training and is vigilant about their commitment to protecting the base populace. "We do hands-on training twice a week on weapon systems that our government knows to be in Iraq and Afghanistan," he said, adding that this type of training is priceless for his young troops and unique to deployment during wartime.

We've got the power

To the average person, accessing power is as simple as flipping a switch. Not the case if you work for the 320th ECES Power Production section. Then it becomes a little more complicated.

This nine-person shop is responsible for setting up, producing and maintaining electrical power generation throughout the 320th AEW. The shop is additionally tasked with maintaining equipment downrange.

"The power we supply is made up of 10 separate configurations that enable the base populace to access voltages from 120 all the way up to 4,160 volts with either 50 or 60 cycles, depending on the user's requirement," said TSgt John Lagassey, NCOIC of Power Pro. "We're providing approximately 95 percent of the power to this installation."

"Since the arrival of the new rotation, which began in early November, outages have dramatically decreased," said Eric Busse, site supervisor and a civilian contractor from Readiness Management Support, L.C. "Prior to November, there were several power outages per month, so we implemented new maintenance programs that drastically cut the number of outages. Our maintenance program consists of testing everything from mechanical to electrical components such as diodes and step down transformers."

Contractor and Air Force personnel in the section strive for the utmost reliability. "Most people don't understand that Harvest Falcon (bare base) generators were not designed, nor were they packaged, with the intention of being a long-term primary source of power," Sergeant Lagassey said. As most maintainers of technical fields know, even with all of the preventive measures in place, outages are a reality that comes with the job."

The base's unique power configuration gives airmen in the shop a wealth of hands-on experience and an array of challenges to meet customers' power requirements. "One of the biggest advantages for airmen here is frequent interaction with the customer from an operational standpoint," said Lagassey, "rather than the readiness one they're accustomed to at their home stations."

Fire in the box

The 320th ECES Fire Protection Flight frequently participates in joint exercises with firefighters from the host nation military and international airport fire department. "During these exercises the teams have to overcome language barriers, general operational philosophies and develop trust in each other's abilities," said CMSgt George Herrington, base fire chief.

SrA David Dottavio *(left)* and TSgt Gregory Tesch, both of the 320th ECES, put a tent frame together as they prepare to extend the base dining facility Feb. 21.

The group of approximately 30 firefighters trains at a local burn pit where they use a group of trailers, which simulate a C-130 Hercules, and a mock wheel and wing area. At the conclusion of each exercise, the group is briefed by their respective supervisors on how well they did and on areas of improvement. "This is a once-in-a-lifetime experience for these airmen," said Lt Col Rodney Croslen, 320th ECES commander, who often accompanies the fire department for the joint exercises.

Though the main objective of each department is similar, to put out the fire, the specifics of how they do it often vary. Despite differing

philosophies, leaders from all the departments say the joint training exercises are successful and should be maintained.

"It's important to coordinate with all of the agencies, understand each other, and work together," said Yahya Alsiyabi, chief fire officer at the international airport. "We are all here working together for the safety of the airport."

CE leads the way

Members of the 320th ECES have been hard at work building up tent city as the 320th AEW prepares to expand. "One of our biggest projects has been preparing aircrew trailers for incoming personnel," said TSgt Michael Scaife, 320th ECES Engineering Flight chief.

Thirty-six, six-person living trailers were constructed to house additional aircrew members assigned to the 320th AEW. Three new latrines and a laundry facility were also set up in that area. Project manager SSgt Jason O'Hare came to be known as "trailer man."

"Jason became the trailer expert," said Sergeant Scaife. That included planning, designing, inspecting and closing out. "This has been a challenging, yet rewarding, experience," said Sergeant O'Hare. "It's amazing to look around and realize you had a part in changing the landscape of the base."

The CE squadron focused on a variety of other projects as well, such as placing concrete personnel bunkers throughout the base and working to relocate the vehicle search pit for further increased force protection posture.

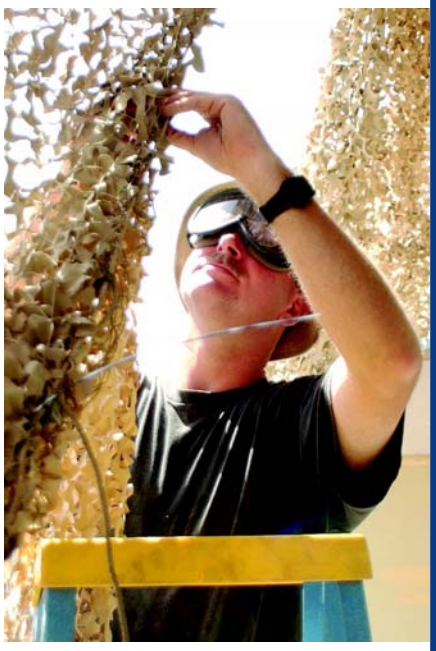
"We just off-loaded 165 force protection barriers," said SMSgt Harold Hollis, chief of 320th ECES Operations Flight. "We're clearing the fence line of obstructions in order to place the barriers; in turn the barriers aid in providing additional security for the camp."

Members of the Structures shop also built a "sun screen" for the expeditionary medical squadron to use over its CAT scan room in order to redirect the sun in hopes of alleviating excessive overheating in the facility.

"If the CAT scan machine gets too hot, it shuts down," Sergeant Hollis said. "Then (the med techs) have to restart the process from the beginning." These medical assets are critical since our deployed location is the hub for all medical support and evacuation of patients returning from the front lines.

The challenges never cease, but that is the nature of contingency engineering. Projects and tasks are always in a state of flux. The 320th ECES has had to be flexible to meet them, and has done so magnificently.

"The praise for our unit does not come from within but from those who have seen and benefited from the tireless efforts of our squadron," said Colonel Croslen. "There is a high standard upon which we pride ourselves, and it has been a truly rewarding tour to witness the bottomless potential of our troops fully realized."



SSgt Virgil Deaton, 320th ECES, uses zip ties to join two pieces of camouflage netting together. Sergeant Deaton was covering the "sun screen" his shop built and set up over the CAT Scan Complex near the 320th Expeditionary Medical Squadron.

For most, Christmas Day brings festivities, presents and feasting. What it brought the 384th Expeditionary Civil Engineer Squadron, however, was a tasking unlike any they'd had before.

Photos show the 384th ECES team at work breaking rock in order to clear enough land to build a parking ramp to expand the flying mission at their forward deployed location. *(Photos courtesy 384th ECES)*

Keeping the Show on the Road

Prime BEEF Team Digs Expedient Ramp Project

by 1Lt Charles Hassell
60th CES

The tasking was to construct a 385,000-square-foot expeditionary aircraft parking ramp at a forward operating location by a must-have completion date of Feb. 28. The ramp was needed to support Operation Enduring Freedom and the inevitable commencement of Operation Iraqi Freedom. We needed a quick method for building it.

The task itself seemed simple — we had 66 days to clear enough land then build a 228 by 1,688-foot asphalt ramp that would support the weight of the aircraft. The challenge was that 80 percent of the area to be excavated was not soft soil — it was solid rock. Most of the site needed to be excavated down 6 to 7 feet, but some areas needed as much as 12 feet.

The Heavy Equipment Shop, led by TSgt Luke Lansing, dove into the excavation with joy normally associated with children opening Christmas presents. The six-person shop used excavators, bulldozers, front-end loaders and dump trucks to take on the daunting task. About a week into the project however, it became evident that it was going to take a combined effort and more equipment to finish on time.

Capt Corey Norcross and SMSgt James Ferrell were in charge of the excavation phase of the project. They requested every shop in the 384th ECES offer up troops to help run dump trucks so that Sergeant Lansing and his crew could concentrate on working the heavy machinery. They also brought in help from U.S. Navy Seabees stationed nearby and contracted help from United Gulf Asphalt. Their excellent leadership and the combined efforts of contractor, Navy and 384th ECES troops moved 90,000 cubic meters of rock and sand and expended 30,000 man-hours of labor.

MSgt Kevin Hamilton and I directed the contract portion of the expedient ramp project. It was broken into four phases, each about 228 by 400 feet. As excavation was completed in each phase, we directed the contractor to lay 18 inches of select fill and pave the asphalt layer. The first and second phases were completed mere hours before the planes scheduled to park on them arrived.

The 384th ECES had worked 24/7 from Dec. 25 to Feb. 27 to complete the mammoth project, saving $5 million in construction costs in the process. Lt Col Patrick Smith, 384th ECES commander, had crusaded for the project to finish on schedule, and at 4 p.m. on Feb. 28 the last of the asphalt was laid.

CE changed the entire scope of the 384th Air Expeditionary Wing's capabilities by adding 50 percent more available parking space to accommodate the base's increase in aircraft. This gave the wing flexibility to bring in different missions and expand the current one.

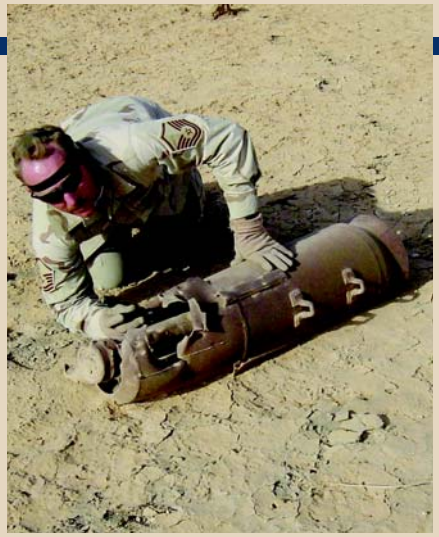
In just two months, the 384th ECES Prime BEEF team rose to the challenge of this awesome task, saving both time and money while providing agile combat support. This is just one way CE personnel have lived up to the 384th AEW motto: "Keeping the show on the road."

1Lt Charles Hassell was the SABER chief for the 60th CES, Travis AFB, CA, prior to this deployment. He is now a student at the Air Force Institute of Technology.

Air Expeditionary Warriors

Civil engineers help stand up a captured Iraqi air base

U.S. forces used Tallil Air Base in southern Iraq as a logistics hub for coalition forces engaged in combat operations and to funnel humanitarian supplies. CEs helped bring the airfield up to operational standards.



MSgt Mike Hague inspects a Soviet-style, 500-pound bomb to verify type filler and fuzing prior to preparing the ordnance for disposal by detonation at Tallil AB, Iraq. *(Photo courtesy HQ ACC/CEX)*

Buzz and Boom

The buzz on Tallil Air Base in southern Iraq is everyone guessing when they are going home. But the boom on base is coming from one job that won't be done for another 10 years.

Every few hours at Tallil AB an explosion echoes across the desert. Newcomers to this key base near An Nasiriyah, Iraq, look startled. The veterans know it's just the explosive ordnance disposal crews at work clearing old munitions.

"This is probably the worst place that I've seen in 20 years for doing this job," said MSgt Mike Hague, a member of the Airborne RED HORSE EOD team. And he's been to some littered war zones, including all over Iraq as a U.N. inspector and in Vietnam on an MIA-POW mission.

The unexploded ordnance at Tallil is a mess created during the first Gulf War. The air base is located in the former southern no-fly zone, meaning that it's been mostly abandoned for the past 12 years.

"This air campaign we didn't drop any ordnance here. We knew it would be a logistical base," said Sergeant Hague. But 12 years ago, U.S. bombing scattered much of the Iraqi weapons stockpile, and the Iraqis never bothered to clean up the unexploded ordnance.

Sergeant Hague's six-man EOD team divided the base into 200 square meter sectors. Then they spent three days on all-terrain vehicles inspecting each sector, marking the map when they located UXOs. Their goal was to make the base safe for a burgeoning population of U.S. troops.

After several weeks, they had destroyed most of the 500 UXOs they marked on the map. This was done by setting off C-4 explosive charges, sheltered by sandbags and dirt, next to the old ordnance. But the base will not be clear of UXOs for another 10 years, according to Sergeant Hague, because there is no easy way to get to buried munitions.

"It's impossible to find everything because of trash," said Sergeant Hague. Mine detectors are fooled by all the old car parts, tin cans and other refuse ground up in the soil over many years. "We can't detect the difference between trash and UXOs."

Instead, EOD teams will be on call whenever any new construction project requires digging. As old munitions are dug up, they will dispose of them.

Sergeant Hague sees his work as part of helping Iraq enjoy a better future. "This is not just for our own safety. This is going to be turned back over to the Iraqi people when we leave," he said. *(Maj Jon Anderson, CFACC/PA Forward, and MSgt Mike Hague, HQ ACC/CEX)*

No More Bare Base

SSgt Mike Sutton and TSgt Les Duncan, both of the 407th ECES, work the "Honey Wagon" detail at Tallil AB that trucks out all latrine waste from Air Force tent city. *(Photo by Maj Jon Anderson)*

Tallil airmen are enjoying a remarkable turn for the better as key squadrons and experts work around the clock to improve living conditions there.

In what has left many who have experienced previous bare base deployments and the normal pace of progress shaking their heads, Tallil recently surged ahead of the norm with new furniture, more variety in food, laundry facilities, movies and video games in a morale tent, and a new 10-bed hospital.

One improvement that might not be so evident but was critical in enabling so many others was Tallil's new potable water plant and wastewater disposal system. Taking water from a nearby Euphrates River canal and piping it three miles to the base for treatment through six reverse-osmosis purifiers was a big job for the 407th Expeditionary Civil Engineer Squadron.

"It took about three days out in the sun laying 20-foot lengths of 4-inch pipe, but now we produce almost 40,000 gallons of water each day to help in food prep and cleanup for the Air Force dining tent, as well as unlimited laundry and showers for

Beddown at a Bare Base

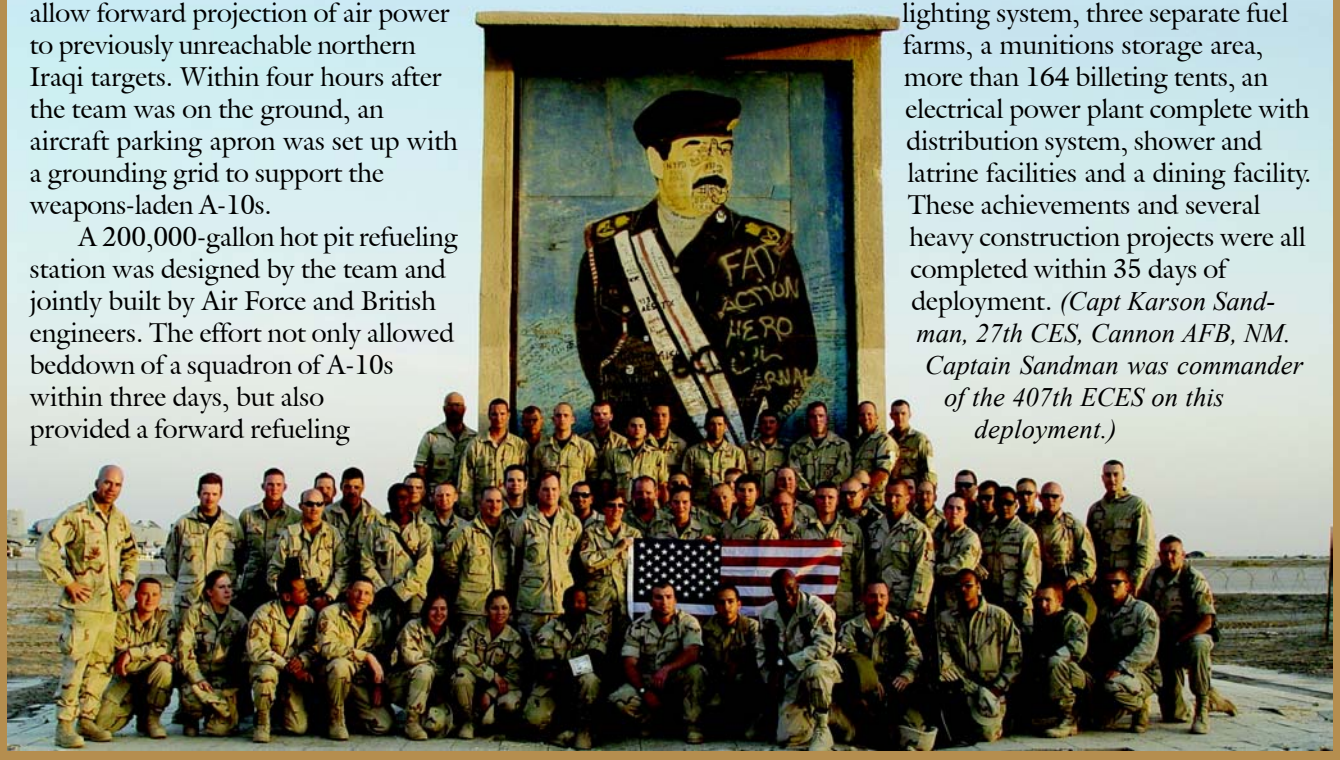
On March 27, 2003, the first Air Force civil engineer squadron ever assigned to the country of Iraq, the 407th Expeditionary Civil Engineers, landed at Tallil Air Base. The team initially consisted of 28 engineers, 19 firefighters and small explosive ordnance disposal and readiness teams.

Among other firsts, the Air Force team was jointly assigned with 168 British Royal Army Engineers commanded by Maj John White of the 34 Field Squadron (Air Support). Their initial joint tasking was the immediate beddown and support of A-10 operations to allow forward projection of air power to previously unreachable northern Iraqi targets. Within four hours after the team was on the ground, an aircraft parking apron was set up with a grounding grid to support the weapons-laden A-10s.

A 200,000-gallon hot pit refueling station was designed by the team and jointly built by Air Force and British engineers. The effort not only allowed beddown of a squadron of A-10s within three days, but also provided a forward refueling point for other aircraft coming from southern bases.

Both teams complemented each other in many respects. The British Royal Engineers came with more than 100 pieces of heavy construction equipment. The Air Force engineers were a highly skilled team with inherent knowledge of bare base design requirements. To make up for the Air Force's lack of equipment, 24-hour operations were immediately implemented using both services as operators.

Their list of accomplishments includes repair of two concrete runways, installation of a complete airfield lighting system, three separate fuel farms, a munitions storage area, more than 164 billeting tents, an electrical power plant complete with distribution system, shower and latrine facilities and a dining facility. These achievements and several heavy construction projects were all completed within 35 days of deployment. *(Capt Karson Sandman, 27th CES, Cannon AFB, NM. Captain Sandman was commander of the 407th ECES on this deployment.)*



The 407th Expeditionary Civil Engineers, the first Air Force civil engineer squadron ever assigned to the country of Iraq, poses at Tallil Air Base in front of one of Saddam Hussein's many portraits.

us," said TSgt Les Duncan, 407th ECES.

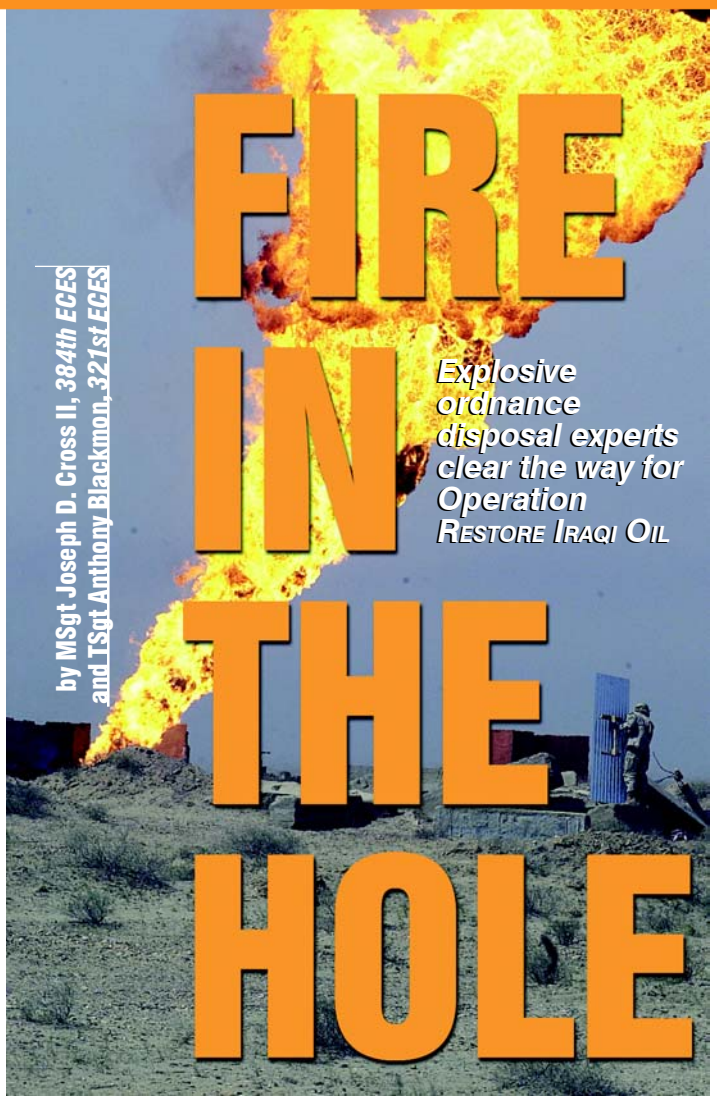
However, it's not enough just to provide water; shower and wash water runoff, as well as the roughly 40 gallons of water from each wash load, needs to be pumped out. That was no problem for Maj Kim McLaury, 407th ECES, who designs water systems for towns and subdivisions back home.

"As an Air Guardsman, I have civilian expertise I bring to whatever mission I'm assigned," said Major McLaury, adding, "It sure doesn't hurt that it's in water systems." Major McLaury's lift station pumping system design removes all soapy runoff to an evaporation lagoon north of the BX, another critical piece in improving Tallil's quality of life.

Power also played an important part in making base improvements possible. Six enormous air-transportable generators have been linked together for enough power to light a city of 5,000, according to Maj Richard Reid, 407th ECES.

"Each one just rolls right into and off a C-130, making it easy for us to set up Tallil's plant," said Major Reid. He added that while most people don't care about the technical details, they do appreciate the air conditioning and laundry machines that finally became available with base power, as well as the elimination of the constant generator roar around living and work spaces.

Other improvements coming to Tallil this summer are full AFRTS TV and radio service and a fitness center tent with new equipment. *(Maj Jon Anderson, CFACC/PA Forward)*



FIRE IN THE HOLE

Explosive ordnance disposal experts clear the way for Operation Restore Iraqi Oil

by MSgt Joseph D. Cross II, *384th ECES* and TSgt Anthony Blackmon, *321st ECES*

There are more than 1,500 oil wells in Iraq, many of them idle due to war damage and/or shortages of spare parts and modern technology. U.S. military planners want to use the output from those wells to help finance the country's rebuilding. But before contractors could go in and get the oil flowing again, it was up to a joint team of Navy and Air Force explosive ordnance disposal experts to clear any booby traps left by fleeing Iraqi soldiers.

As Operation Iraqi Freedom began, coalition forces moved quickly to capture the country's major oilfields and prevent their destruction. Retreating Iraqi forces left behind a handful of oil well fires and, of greater concern, explosive devices such as anti-personnel and anti-tank mines.

The request for four Air Force EOD volunteers came March 17 from the CENTAF C7 staff at Prince Sultan Air Base. Our team was assembled quickly, and, with assistance from the 386th Expeditionary Civil Engineer Squadron EOD Flight, joined a convoy to a staging area with our Navy counterparts March 21.

The Air Force members of this 14-man EOD team were TSgt Anthony Blackmon and SrA Nathan Hower from the 321st ECES and SrA Jeffrey Wasik and MSgt Joseph Cross from the 384th ECES. We were tasked to support the I Marine Expeditionary Force's Operation Restore Iraqi Oil for 30 days. Our mission was to clear a path to 700 oil wellheads in Iraq's Rumaylah, Az Zubayr and Safwan oilfields, allowing contractors to close and log their status, and to clear 14 gas oil separation plants, or GOSPs, of unexploded ordnance and improvised explosive devices.

Getting EOD in place, trained and operating was paramount. Teams from Halliburton (tasked with well shut downs), Kellogg Brown & Root (tasked with GOSP shut downs), Boots & Coots International Well Control (oil well fire suppression teams/well shutdown teams) and the U.S. Army Corps of Engineers (mapping of wells) would be waiting in the wings to go in and do their job as we cleared each location. This high-profile mission required daily briefs to Vice President Dick Cheney, Defense Secretary Donald Rumsfeld and National Security Advisor Dr. Condoleezza Rice.

Preparation is everything

We worked in two-man EOD teams accompanied by an oil specialist and USACE representative. The teams carefully studied diagrams of the GOSPs. All GOSPs aren't designed the same, so we had to be familiar with the identifying features of oil manifolds, pump houses and separators.

In layman's terms, the oil wells pump the oil, which is then piped to the GOSPs. Once there, it is separated into its different components: gas, oil and water. Iraq's oil wellheads are not the type everyone is familiar with, like those in Texas and Kuwait with pumps and tall towers. Iraq's oil fields are under so much pressure that pumping is not necessary, hence their 6- to 10-foot wellheads. When the pressure in them is low, they are injected with water to help increase the pressure.

A booby-trapped SA-7 Surface-to-Air missile had already been found in the area, and we were briefed to be prepared to gather necessary information off of them if encountered. We were also given enemy prisoner of war rules of engagement cards to study.

Close encounters

Clearing wells where uncontrolled fires were burning was especially challenging. Working within 50-75 feet of the fire to prepare a safe path for firefighters, we used heat-resistant hoods to protect our faces and carried sheet metal shields to protect ourselves from the heat. Fire suppression teams needed to be able to get close to the burning wells so they could see where on the wellhead the fire was burning. Contractors refer to wellheads as "Christmas trees." If it's burning at the top of the Christmas tree it will be easy to repair after the fire is out, but if it's burning at the bottom it will require a lot more equipment to cap off the tree. They also needed to be able to see if a particular valve was accessible to shut down flow to the GOSPs.

On March 23 the first sabotaged wellhead was identified. Performing long-range reconnaissance, firing wire was identified coming from behind a berm and going into the ground at

the wellhead. A few concrete barriers around the area of the tree had been knocked down as well. Upon closer examination, we could see striation marks of a detonation on the ground and along the lower portion of the wellhead. The lower part of the wellhead pipe had gross damage where an explosive charge had been placed and detonated, but, due to incompetent charge placement, it did not cause the well to break and leak. Further investigation of the area revealed remnants of a time fuse and a sandbag that was charred. The time fuse was probably set with an incendiary device attached, intended to blow the wellhead. That would spray oil mist into the air that would be ignited by the incendiary device.

The area was cleared of any secondary devices and Combat Camera captured photographic evidence of the scene. The wires were collected for future intel, and the contractors assessed the damage and ensured the well was closed. This setup was found at more than one wellhead. One team also found a logbook that, with the help of an interpreter, we determined contained entries describing explosive charges being set on wellheads.

We found two wellheads that were mined with Valmara 69s that protected VS 1.6 anti-tank mines. Another wellhead was mined with PMN 9 mines, some of which still had the safety pins in them. All of the mines were completely exposed. At one location we could still see the tire tracks, and in some spots footprints, from when the mines were placed.

Numerous bunkers were found throughout the area as well, along with weapons caches. One bunker contained 13 OG-9 and 20 PG-9 rocket-propelled grenades. An M42 submunition field was found and marked for EOD contractors coming later. We discovered one cache containing over 500 120mm mortars placed in what appeared to be a paramilitary training camp. The cache had HE, Illum and WP rounds, numerous small arms and large amounts of propellant. A second area included chemical gear and atropine.

We often had to provide our own immediate area security, which we rotated to give teams breaks. One day, our rear security guard called for additional bodies as a car screamed up the road behind us. Three of us spread across the road and assumed a ready position while MSgt Cross stopped the vehicle and five Iraqi men exited dressed in civilian clothes. The individuals were separated from the vehicle and searched, while the vehicle was cleared of explosive devices. We obtained the individuals' identification and provided them with food and water. The United Kingdom Quick Response Force was contacted to take the men, who turned out to be Iraqi deserters, into custody.

Our teams were also subject to surprise encounters with Iraqi citizens. One such encounter happened April 11 at the Az Zubayr oilfield, where local citizens were siphoning and looting fuel at a large civilian fuel storage area. In the minute or two we spent in the area, the crowd grew to over 100 people, who began to argue louder and louder over the status of the fuel. A man claiming to be the owner of the facility approached our vehicle, demanding to know why looters were being allowed to steal his fuel. We directed him to U.K. soldiers at the site and explained that we had other responsibilities.

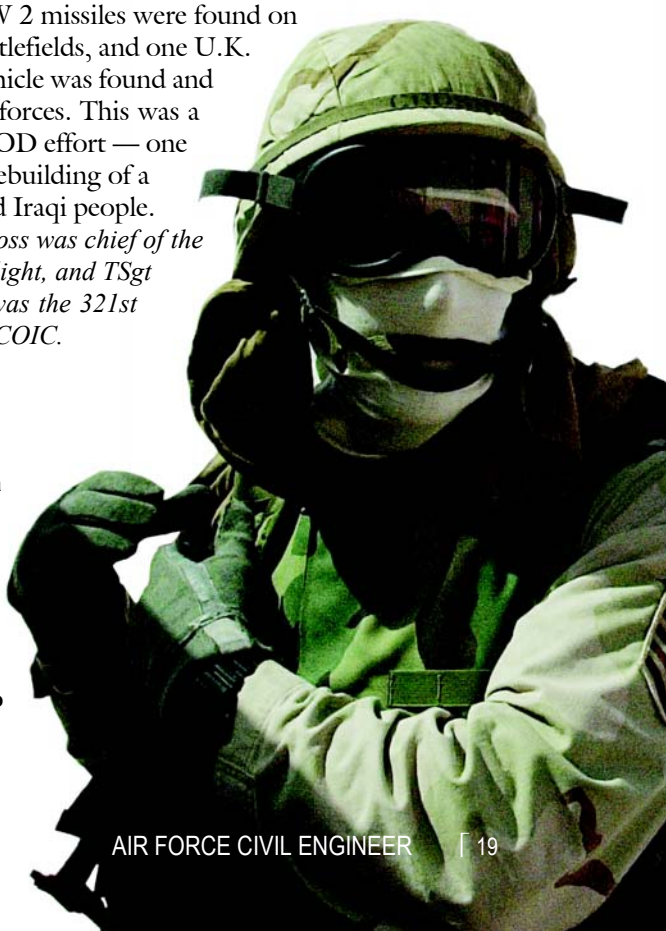
Another team was also overwhelmed in Az Zubayr when, during the search for wells (some of which were unexpectedly close to people's houses), a large crowd formed around their Humvee and the contractor's vehicle. All the crowd wanted was the water and food they had become accustomed to expecting from every American convoy they saw via humanitarian leaflets. The locals climbed in the back of the open contractor pickup truck and grabbed whatever they could. Our saving grace came when one of the locals grabbed a case of soda, which broke open sending spewing cans everywhere. That caused a free-for-all, leaving room for the team to escape the area. We learned a valuable lesson about keeping contents of the cargo hold concealed.

Oil's well that ends well

Overall the mission was successful and was completed five days ahead of schedule. It is estimated that the sale of oil from those oil fields will surpass $27 million a day for the Iraqi government and its people.

On our part, 52 unknown wells were located, and evidence of firing systems used to initiate explosive charges at oil wellheads was collected. More than 5,000 ordnance items ranging from M42 submunitions to 155mm projectiles and old Soviet 122mm rockets were found and destroyed. Three minefields were located, with some of the mines being destroyed. Two dud-fired U.S. TOW 2 missiles were found on one of the many battlefields, and one U.K. unmanned aerial vehicle was found and recovered for U.K. forces. This was a truly joint service EOD effort — one that will begin the rebuilding of a country for the freed Iraqi people.

MSgt Joseph Cross was chief of the 384th ECES EOD Flight, and TSgt Anthony Blackmon was the 321st ECES EOD Flight NCOIC.



Explosive ordnance disposal craftsman MSgt Joe Cross prepares to rope off a safe area near an uncontrolled natural gas fire in the Rumaylah Oil Field in southern Iraq. *(Left)* Sergeant Cross inches closer to the fire as he clears a path for firefighters to approach and extinguish it. *(U.S. Army photo by Spc James P. Johnson)*

Fueling the fight

Prime BEEF Team Builds a Pipeline to Freedom

by Maj Dave Eaton, 380th ECES
and Kenneth H. Lombard, CM, RMS

It was a warm day in early December at our forward-deployed location in Southwest Asia, and soon to get very hot, when Col Gregory Augst, 380th Air Expeditionary Wing commander, said to us, "We need five million gallons of jet fuel on base." To which we replied, "Huh?" With about a 600,000-gallon capacity currently on hand, we (the 380th Expeditionary Civil Engineer and Expeditionary Logistics Readiness Squadrons) were a little stunned by the magnitude of what we were being asked to provide. But, never ones to shy away from a challenge, we got to work.

The first question was where to site it. That many fuel bladders takes up a lot of real estate. There was plenty of property around, but most locations were not within a reasonable distance to the flightline and would require multiple taxiway and road crossings. After considering risk assessments, safety analyses and unique host nation challenges associated with each site, we settled on a parcel of land next to the ramp.

Wind, sand and a site plan

Ahhh … Christmas in the desert — the sun, the sand, the wind. Did I mention wind? During the construction phase of the project there were more than 10 days of recorded weather delays due to high wind and sand storms. What more could you ask for? How about a huge horizontal project for Christmas Day? This was an effort not normally taken on by Prime BEEF troops, but with the NCO leadership and experience we had on hand, it was a challenge we were more than capable of tackling.

Our engineer assistants quickly jumped at the chance to spend some quality time with their new GPS surveying equipment. Under the leadership of TSgt Brian Welch, the EAs developed a massive topographic database and, working with his pavements and equipment counterpart TSgt Stevie Wells, had a site plan done in a couple days.

We broke ground Dec. 25, en route to excavating and grading over 45,000 square meters. In some areas we had cut elevations over 2 meters, moving altogether about 25,000 cubic meters of material.

In hindsight, bringing the area to grade was the easy part. Next we had to build the berms to hold the fuel bladders and liners. The sand in this part of the world is too soft and non-compactable to make berms, so we used lined wire basket barriers. However, there weren't enough commercially available in theater to even put a dent in our requirement, and delivery from a supplier would take six weeks or more. That kind of time was a luxury we did not have, so we turned to Kuwait Dynamics Ltd., our Job Order Contract (JOC) contractor, for help. The contractor fabricated them on site, producing just over a mile of barriers that we filled with more than 7,000 metric tons of soil.

With our tight timeline, we could not wait for the entire area to be prepared before the liners and bladders went in. So, as we finished each containment cell, the 380th ELRS petroleum, oil and lubricants, or POL, troops lined them and placed the bladders. This stair-step approach worked very well. The bag farm was constructed with phenomenal speed and precision.

CE and POL were partners from the very beginning, wrestling with details, technical problems and ideas that were not always in sync. And the POL troops were awesome. They pushed hard behind CE placing and connecting the contingency fuel system, lining and installing 100 cells with 45,000-gallon bladders, installing four R-14 mobile hydrant fuel pumps and three R-22 booster pumps.

Getting the fuel to the fight

Building the bag farm solved only half the problem. We now had a place to store the fuel, but we still had to get the fuel to the fight. To be successful, we first had to deliver the fuel to the storage bladders, then cross an active taxiway, issue into the distribution bladders and finally into the jets. At the same time we were hashing through the design of the

Fuel Farms

Fuel farms on bare bases consist of fuel bladders, immense bags made of synthetic, rubber-like material, that store the fuel until it is issued to aircraft. The bladders, which come in 10,000-, 50,000- and 210,000-gallon sizes, are placed atop liners and inside large earthen berms.

storage area, we were also formulating a plan to move all that JP-8.

While there was quite a bit of war reserve materiel POL equipment in theater, we didn't think there would be enough, or that it could get here fast enough. Not willing to rely solely on WRM, the obvious engineering solution was to install a pipeline distribution and hydrant fueling system. But, obvious answers are rarely simple answers and this was no different.

First, a pipeline of that size doesn't just happen overnight, so we had to put it into design ASAP. Second, between the bag farm and the aircraft ramp was a very active taxiway. Closing it so we could run fuel hoses or pipes across it was not an option. We had two choices: open cut the taxiway and install the lines, or go under the taxiway. That was an easy choice, but again, not a simple one.

Our contracting officer coordinated the process with the U.S. Army Corps of Engineers and, with the help of the JOC contractor, found a sub-contractor who could make the horizontal boring in minimal time. Using a state-of-the art directional drilling machine, the contractor bored and lined a 60-centimeter hole with high-density polyethylene (HDPE) pipe, more than 72 lineal meters under the taxiway, without interrupting aircraft operations.

A local mechanical contractor was procured to bring our vision of the pipeline distribution and hydrant fueling system from concept to reality. The piping system consisted of 130 meters of 250-millimeter (10-inch) carbon steel pipe, 2,330 meters of 200-millimeter (8-inch) pipe, 120 meters of 150-millimeter (6-inch) pipe, and 16 meters of 100-millimeter (4-inch) pipe, 80 gate valves, 200 tee connections, 1,600 flanged joints, 6,400 nuts, bolts and washers and 120 butterfly valves.

To expedite fabrication, the contractor employed a local shop to produce the flanged pipe spools. Strict quality control procedures for welding and testing were adhered to throughout the process. Due to the existing site conditions, approximately 60 percent of the welding was done in the fabrication shop. The remaining field welding was performed in areas that were not considered a safety hazard. Each shop and field weld received 100 percent visual inspection and critical welds received 100 percent NDE (non-destructive examination) by ultrasonic, penetrant or magnetic testing or x-ray. Of the 1,400 welds made, three were rejected and were reworked to meet specifications — a phenomenal performance.

With the bag farm and taxiway boring complete, phase three began with installation of the distribution bladders, the fuel hydrant system and underground piping on the flightline side of the taxiway. Work progressed without a hitch. With testing complete on this phase, we could, if necessary, issue fuel to the flightline with temporary flex hose installed by POL as a backup plan.

With some room to breathe, we thought, construction began on the off-loading header and issue lines to the bag farm. All piping on the bag farm side was originally designed on aboveground roller supports. During the hydrostatic test of the first third of the issue line, which was approximately 350 meters long, a 6-meter flexible hose installed as an expansion joint failed, causing the line to collapse. And down it came. The pipe looked like pickup sticks. Luckily no one was injured. Our safety procedures for testing took all non-essential personnel out of harm's way.

Our construction manager and contractor redesigned the entire support system, and work was back on track in about a week. The water used in the hydrostatic testing was supplied by the base fire department. With the piping system volume nearly 20,000 gallons, they used their pumper truck to fill the lines and boost the line pressure to near test pressures, saving us hours of time. The remaining receipt and issue lines were installed and tested without another showstopper, and the fuel flowed.

Tremendous teamwork

This $2 million project was completed in seemingly record time. From notice to proceed to completion, we got it done in 56 days. It was a Herculean effort that resulted in a wartime throughput averaging over 2 million gallons of jet fuel per day, with 53 million gallons being processed during the peak 18-day period in support of Operation Iraqi Freedom.

The members of the 380th AEW were tremendous in their teamwork, and without them this mission-critical project would not have been the success it was. And our counterparts at HQ CENTAF/A7 were paramount to the execution. None of the 380th's success would have been possible without their support in garnering the approval and funding needed to make it happen.

Maj Dave Eaton is commander of the 380th ECES, and Mr. Ken Lombard is a construction manager for Readiness Management Support (RMS).

(Top to bottom)* The 380th ECES broke ground Christmas Day 2002, excavating and grading land for a new fuel farm at their forward deployed location. Local contractors perform quality control checks on the piping system. Capt Juan Alvarez, 380th ECES Engineering Flight chief, and construction manager Ken Lombard of RMS worked with contractors to complete the project, which resulted in a wartime throughput averaging over 2 million gallons of jet fuel per day. *(Photos courtesy 380th ECES)

Engineering THE Impossible

Civil engineers pull out all the stops to make sure a runway is ready in time for Operation Iraqi Freedom

by MSgt James J. Grace Jr.
48th CES

Just days prior to the start of Operation Iraqi Freedom, an airfield near Iraq supporting coalition forces had only one approach lighting system and severely degraded and problematic airfield lights. The existing cables were buried under the airfield surface and had numerous short circuits. The system was only 50 percent operational and could not be repaired easily.

In the middle of the night, U.S. Central Command Air Forces called on a two-man crew, MSgt Scott Oelschlager and SSgt Paul Golembiewski, at their deployed location in Pakistan to pack their bags and travel to Prince Sultan Air Base, Kingdom of Saudi Arabia. There, they would pick up an emergency airfield lighting system, or EALS, consisting of six trailers, do a thorough system check, ship it to another location, and then redeploy the entire set for the 10,000 by 150-foot runway.

Within two hours of the call they were on a plane to PSAB. Sergeant Oelschlager was selected for the mission due to his prior experience in instructing the EALS for Silver Flag training at the U.S. Air Forces in Europe Contingency Training School at Ramstein AB, Germany. Sergeant Golembiewski had prior knowledge of the system from Silver Flag training and a prior kit reconstitution while stationed at RAF Mildenhall, UK.

After flying for 10 hours, they went to work as soon as they hit the ground, even before procuring overnight accommodations. They checked in with PSAB Electric Shop foreman, MSgt Michael Palase, and coordinated radios and support. They went to the airfield manager and determined the least impact to airfield operations, then attempted to dismantle the EALS between sorties. With only minimal permissible time on the airfield, they could not use the trailers with the cable reels. They picked up the cables separately for repacking later. Two airmen from PSAB, SrA Daniel Olds and A1C John Calton, provided radio support, access to the active runway with properly marked vehicles, and labor between their regular jobs.

The team was only able to pick up 3,000 feet of airfield cable the first day due to non-stop airfield activity. At that rate the job was going to take days, so they decided to try a different tactic at night. Returning that evening, they requested permission from the tower to approach the runway on foot to remove the cables. They were able to pull the cables clear of the runway while sorties were taking off and landing. They picked up 15,000 feet of cable from the runway surface, rolled the 200-foot sections into individual spools and transported them back to the cable reels. The next morning they untangled and rolled all 18,000 feet of cable back onto the cable reels for redeployment. They removed every item from the kit and performed a function check to ensure they would be operational when deployed.

When told that the 30kW generators that supported the EALS were not operational, Sergeant Oelschlager relied on his vast experience as an instructor to troubleshoot them and quickly get them running. The third day had the team reconstituting the kit and preparing all six trailers for shipment to the destination base. They packed everything required for the mission into four trailers to conserve airlift. The other two trailers, a spare regulator and generator flew out at a later date.

They flew with the cargo and "hit the ground running." They assessed the reparability of the installed host nation system — it would require a major contract project. When told that the host nation had not yet given approval to cut taxiways and install the system, Sergeant Oelschlager massaged his way through that limiting factor and got the required approvals to install the entire system.

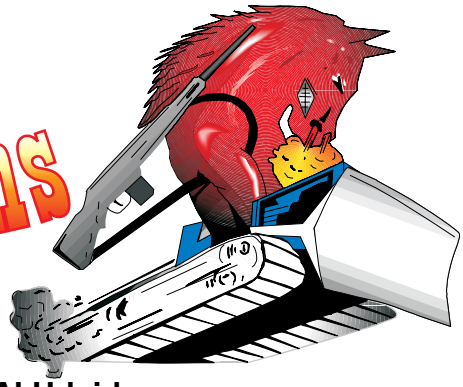
Sergeants Oelschlager and Golembiewski worked the entire afternoon with a team from the 410th Expeditionary Civil Engineer Squadron, testing the installed EALS at dusk. They were on the ground for less than 12 hours and flew out as soon as the job was done. The installation consisted of: two complete approach lighting systems with six rolling ball strobes, four precision approach path indicators, more than 100 runway edge and threshold lights with transformers, aircraft arrestment barrier lights, 10 distance-to-go markers and 20,300 feet of airfield lighting cable. Operation Iraqi Freedom commenced the following morning with this much-needed airfield as an important asset to coalition forces.

These motivated mission experts were able to think on their feet and get the job done. Both are true professional CE electricians.

MSgt James Grace is the Electric Shop foreman for the 48th CES, RAF Lakenheath, U.K. He recently redeployed from Prince Sultan AB, where he was the WRM superintendent.

"After flying for 10 hours, they went to work as soon as they hit the ground, even before procuring overnight accommodations."

Taking the Reigns



In an historic deployment, an Air National Guard RED HORSE Squadron leads construction efforts for Enduring Freedom

Maj William K. Giezie, PE
200th RHS

This time last year, the 200th/201st Expeditionary RED HORSE Squadron was handling most of the large construction projects at Al Udeid Air Base, Qatar, and throughout the theater for Operation Enduring Freedom. The Air National Guard RED HORSE unit's tasking marked a turning point in Air Force civil engineer history. It represented the first time an entire reserve component RED HORSE squadron was tasked and partially mobilized to support a major wartime operation and function as a full RED HORSE squadron, rather than just augmenting active duty operations or backfilling open positions.

Two missions, worlds apart

In March 2002, the 200th/201st RED HORSE Squadron was tasked to deploy a site survey team in support of OEF, to be followed by the remainder of the unit. At the same time, the unit was committed to undertake a series of New Horizons humanitarian construction projects in Jamaica, which would be jeopardized without RED HORSE participation. With so many deploying for OEF, finding the resources to participate in the annual nation-building exercise would be a challenge.

Our site survey team met with the Combined Forces Air Component Commander's staff, other RED HORSE units in theater and civil engineers at several main operating bases to evaluate theater-wide construction requirements. A phased deployment schedule was developed that allowed many of our unit members to deploy on a voluntary annual training status to complete the New Horizons requirement in Jamaica and then be partially mobilized and deploy in support of OEF. To alleviate some of the burden this would place on our personnel, the 202nd RHS (Florida ANG) supplemented manpower requirements on one of our two-week rotations to Jamaica.

By the end of March an ADVON team was deployed to Jamaica, while our advanced engineering planning cell deployed to Al Udeid AB to take over the reins of the 1st Expeditionary RED HORSE Group from the 823rd RHS. Team members established our squadron headquarters, or hub, at Al Udeid and prepared to rapidly spoke out to other main operating bases in theater.

Updating Al Udeid

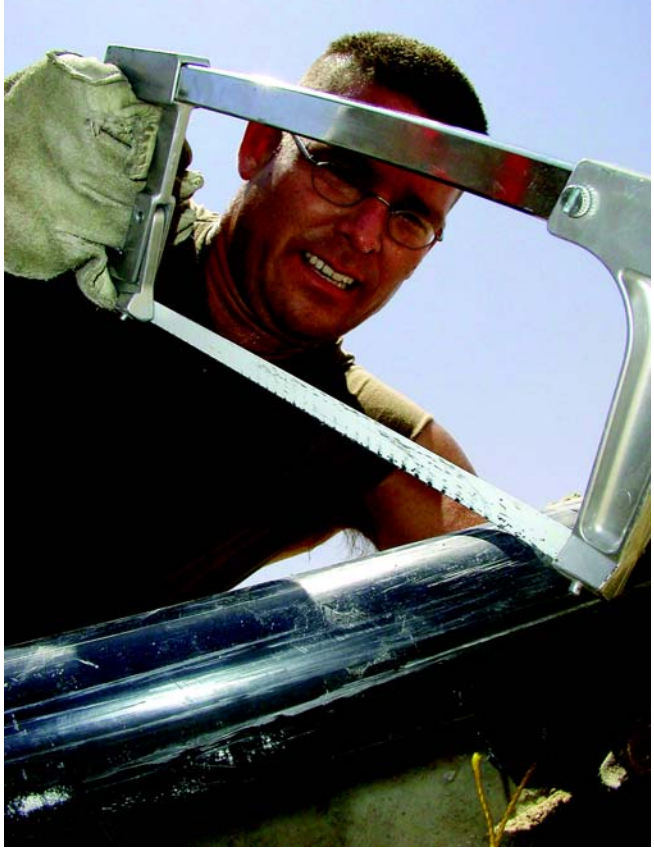
When the base camp and supporting facilities were initially erected at Al Udeid AB in October and November of 2001, Operation Enduring Freedom had just begun and it was unclear how long the facilities would be required. As a result, many were erected in locations now needed for future construction and would have to be relocated.

The entire logistics complex was the first to go. We worked with the 379th ECES to develop a master plan. It consisted of site development of a 50-acre area, construction of a road network, bringing primary power from an existing power plant to the proposed location, erection of two framed supported tensioned fabric shelters (FSTFS) and two aircraft hangars, relocation of one contingency dome shelter, installation of secondary distribution centers and secondary electrical power lines, and construction of several material and equipment staging yards.

Due to the lack of large contingency dome shelters we designed and erected two Super K-Span facilities for vehicle maintenance and the air transportation center. In addition, site preparation was done for several UBM (ultimate building machine) and ABM (automated building machine) facilities to be constructed by the 819th ERHS, which followed our deployment into the AOR.

To support all the communications requirements that logistics facilities require in a modern war, we had to trench over 12,000 linear feet through limestone bedrock

SSgt Chris Blackwell, a heavy equipment operator with the 200th/201st ERHS, operates an asphalt paving machine at Al Udeid AB. ***(Photo by A1C Tarkan Dospil)***



SSgt Todd W. Puckett, 200th/201st ERHS airfields section, cuts conduit for airfield taxiway lighting at a forward-deployed location. *(Photo by A1C Joe Pearce)*

and install over 70,000 linear feet of communications conduit and more than 40 pre-cast concrete manholes.

Prior to OEF, Al Udeid AB consisted of little more than a runway and aircraft parking ramp. The entire airfield was accessed by meandering gravel roads. Travel on those roads turned up huge dust clouds and created terrible FOD, or foreign object debris, problems on the airfield. The dust clouds were a potential health and safety problem, and required the ECES's airfield section to continually grade, water and stabilize the roadways. To alleviate the problem, the 823rd RHS engineering team surveyed and designed new roadways connecting the main work and operational centers with the main living areas. The 200th/201st ERHS then followed the 823rd and paved over 8 miles of 28-foot-wide, double-lane roadway, placing over 15,000 metric tons of 350-degree asphalt in 130 to 140-degree desert heat.

Construction in Kyrgyzstan

Within days of arrival in the AOR we were tasked to deploy to Ganci AB, Kyrgyzstan, to perform a site survey of the airfield and munitions storage conditions. The evaluation resulted in the design of a 120- by 1,200-foot AM-2 mat aircraft parking ramp and three munitions storage areas constructed with HESCO barriers to support coalition aircraft programmed to deploy there. What followed was a five-month-long tasking and additional projects for the unit to complete.

A couple months later we deployed a 35-person horizontal construction team to another forward location in the Central Command AOR. Several of the airfield's taxiways needed shoulder pavement repaired to allow larger cargo aircraft to taxi, park and turn around. Our engineering team evaluated the existing pavement system and developed a comprehensive pavement plan to allow the airfield to remain in operation while we rebuilt two of the taxiways. For four months the unit jackhammered, excavated, graded and compacted sub base aggregate,

Warriors in the War on Terror

RED HORSE Squadrons and Prime BEEF teams are the "building strength" of the Air Force. Members of the 200th/201st Expeditionary RED HORSE Squadron are among those who have made significant accomplishments in the CENTCOM area of responsibility.

According to Lt Col Frank Sullivan, 200th/201st ERHS commander, his crews are some of the hardest workers around. "We call one guy 'the machine,'" said Colonel Sullivan. "He will have been here 330 days by the time we leave. He's up before dawn and working until sundown." 'The machine' is TSgt Kevin Newcomer, 200th/201st ERHS airfield operations.

"Our motto back home is: 'Work hard, play hard,' but the motto here is: 'Work hard, work hard,'" said MSgt Patrick Wahlers, 200th/201st ERHS equipment operator. "We'll work 18-hour days with concrete and road construction," said Wahlers. "At the end of the day, we file our reports and it takes our last bit of energy to walk the distance to our tent and lay down for sleep."

Inclement weather conditions have amplified the difficulty. "The temperature was its hottest on the 4th of July for our peak production period — it climbed to more than 125 degrees," said Wahler. "The sand storms were real bad from May to July. They were so severe you couldn't see the person next to you. We were limited to visibility of 10 feet at times, but we never stopped."

The 200th/201st ERHS members began rotating home in mid-November, with the 819th/219th RHS from Malmstrom AFB, MT, taking over. According to Lt Col Kent Cooper, 200th/201st ERHS logistics commander, the work they did was invaluable.

"These guys put in more than a full day of work," said Colonel Cooper. "Working six and sometimes seven days per week, they even volunteered to accomplish things on their days off. I know the meaning of being able to depend upon our RED HORSE folks, but the work they did at Al Udeid and other sites in the theater gives me a new appreciation of the Air Force's combat construction engineers. They are truly warriors in the War on Terror."
(From an article by 2Lt Marcella Keiter, 379th AEW Public Affairs)

placing over 3,000 cubic meters of concrete and ultimately increasing the base's cargo handling capacity.

Rebuilding Bagram

The following May we deployed a team to Bagram AB, Afghanistan, where the U.S. Army was in charge of base operating support, to evaluate beddown conditions for Air Force personnel, the airfield pavement system and the base's air traffic control tower. During the site survey the team found that the Air Force beddown was constructed of deteriorating GP medium tents that were beginning to fall down due to lack of maintenance. Also, the tents and operational facilities were erected too close together for fire and safety purposes, were improperly wired, and were in a general state of disrepair.

In addition, Air Force personnel had converted a bombed-out former Soviet bunker into a shower facility. Due to lack of adequate drainage, gray water from the shower drained into a poorly constructed retention pond in the middle of the Air Force tent city. And at the airfield, which was constructed from hand-mixed and placed concrete using river-washed aggregate, years of Soviet bombings, the recent coalition air campaign and current operations had taken their toll.

From June through October, a 40-person construction team was deployed to Bagram, along with new TEMPER tents, lumber, cement, bare base electrical components and heavy equipment, to begin the repair process. We developed a phased beddown plan that allowed for partial teardown of existing Air Force facilities while still allowing operations to continue. We worked with Army Prime Power personnel to bring a new electric distribution system into the base camp to power the facilities and environmental control units.

In about six weeks, we had completely rebuilt the billeting area, fire station and main operational areas. We replaced the sanitary facilities with new modern modular units and re-wired the air control tower. A combined team of RED HORSE, Army and coalition engineers removed and replaced more than five hundred 144-square-foot concrete slabs on the airfield. In the end, over 2,500 cubic meters of concrete were mixed, placed and finished while the airfield remained active on an alternate side to keep the supply train for all U.S. forces in the area open.

More spokes

We had deployed construction teams on the ground at five other locations, as well. At one site the team constructed a new vehicle search area with pre-cast concrete search pits and a security forces operations center and completed site development of a 30-acre expansion area to the existing tent city.

At the other four locations, our teams evaluated a fuel offload area, reviewed force protection construction projects, and completed a perimeter road project and an aircraft arresting system installation.

Around the Mid-East in 180 Days

By the end of the 200th/201st ERHS's 180-day OEF tour, we had deployed more than 350 personnel, with additional manpower from the 203rd RED HORSE Flight, the 49th Materiel Maintenance Group, the 183rd Fighter Wing and the 134th Air Reserve Wing. Our host units, the 180th Fighter Wing and the 193rd Special Operations Wing, provided outstanding support for this high number of personnel.

We deployed to 13 main operating bases across the AOR in 10 different countries, completing 21 individual projects at seven bases simultaneously and performing engineering evaluations and site surveys at six other locations. We executed over $14.5 million in construction material procurement and heavy equipment rental. We placed 10,000 cubic meters of concrete and 15,000 metric tons of asphalt, used 1 million gallons of construction water and consumed 100,000 metric tons of crushed aggregate. We deployed more than 50 C-17 loads of heavy equipment, materials and personnel from our headquarters at Al Udeid AB to our spoke locations throughout the AOR.

We were also responsible for maintaining the longest RED HORSE spoke operation in history, with our headquarters in Qatar and our New Horizons spoke at Up Park Camp in Jamaica — more than 7,000 miles apart!

Maj William Giezie, 200th RED HORSE Squadron, Ohio Air National Guard, was the 200th/201st ERHS operations officer on this deployment.

SSgt Phillip Boss, 200th/201st ERHS engineering assistant, uses a theodolite to measure the vertical and horizontal angles of a new taxiway extension in Kyrgyzstan. *(Photo by MSgt Jerry King)*

supporting the WARFIGHTER

A multi-functional team ensures forward-deployed civil engineers have the resources necessary to operate their bases

by Maj John D. Thomas
HQ ACC

Contingency construction to support the Combined Forces Air Component Commander and the Global War on Terrorism has been impressive — a tribute to all the deployed engineers who worked long hours in harsh conditions and sacrificed time away from their families. Behind that superb effort is a little known team of professionals whose job it is to plan, program and technically guide civil engineer efforts where needed — the Southwest Asia Delivery Team.

U.S. Central Command Air Forces' programming, design and construction program exceeds that of most major commands. In the past year, CENTAF executed Operations and Maintenance and Military Construction projects totaling more than $1.5 billion at 20 forward operating locations in support of the Global War on Terrorism. A vital component of CENTAF's execution process during Operations SOUTHERN WATCH, ENDURING FREEDOM and IRAQI FREEDOM was the advocacy provided by the Air Combat Command Southwest Asia Delivery Team at Langley Air Force Base, VA, for project planning, programming and construction requirements.

An important purpose

In November 1996, The ACC Civil Engineer saw the need for a multi-functional team to be the single "belly button" for issues in Southwest Asia, and the SWA DT was born. It was chartered to provide the expert responsiveness necessary to wrestle complex planning, programming and construction execution issues to ground. Throughout its tenure, the team's focus has been to support the warfighter, ensuring that the Combined Forces Air Component Commander, CENTAF and deployed wing commanders have the right resources — facilities, infrastructure, supplies and equipment — to operate their bases.

The ACC Deputy Civil Engineer, Col Ed Angel, is the chairperson and is charged with guiding the SWA DT, an integrated group of 26 personnel from various ACC directorates, HQ USCENTAF A7, HQ US CENTCOM CCJ4-E and HQ USAF ILE. The ACC Civil Engineer Programs Division is the facilitator. Issues are worked continuously, but the team meets formally on a monthly basis to solve problems and ensure action items are identified to resolve planning, programming, design, construction and manning issues for forward operating locations.

"We aren't just interested in construction," said Brig Gen Pat Burns, The ACC Civil Engineer. "We're interested in construction that directly brings added capability to the front-line troops. For example, early in OIF we learned that for every additional bomber parking space we built, over $1.2 million per month was saved in maintenance costs for each aircraft parked and 25 percent more bombs could be dropped on target. That kind of relationship gives added importance to pouring concrete."

With OEF and OIF underway, the team's had a very busy year. In addition to overseeing $1.5 billion in O&M and MILCON construction at 20 deployed bases, the team developed contingency general plans for five locations and programmed more than $1.3 billion through MILCON and host nation funding.

Contingency General Plan teams deploy to a location for two weeks to develop a detailed base development plan. This CGP team worked at Ganci AB/Manas International Airport last October. ***(Photos courtesy HQ ACC/CEP)***

Building the future

People at all levels can give better support if everyone is looking at the same picture. Prior to the start of

OEF and OIF, CENTAF recognized that establishing a base development plan was essential to provide the way ahead at each forward operating location, especially since new troops rotate in and out every 90 days. As a result, ACC established planning teams to pair up with USCENTAF A7 and develop short- and long-term plans — the Contingency General Plan. The goal of the CGP is to basically convert concept into construction.

"We want to look at the future of any forward base through the eyes of the CFACC," said Col (sel) Kevin Rumsey, chief, ACC Programs Division.

The SWA DT became a force multiplier for CENTAF A7 by providing technical services and a central clearinghouse, ensuring that CENTCOM CCJ4-E, USCENTAF A7, HQ USAF ILE and HQ ACC CE are all in sync with requirements at forward operating locations.

The CGP team's footprint is small. The SWA DT assembles 12 to 15 experts for each CGP visit. They deploy to each location for two weeks to develop a detailed plan, including facility project lists for facilities and infrastructure systems. A typical CGP team includes a planner, two engineering assistants, and facility, water, wastewater, electrical, fuels, mechanical, pavement and force protection engineers.

Brig Gen Myron Ashcroft, 376th Air Expeditionary Wing Commander, had this to say about the team: "This planning effort stands out as the way to do visits. This makes it look like we truly know what we are doing strategically and not just working current issues. Our coalition partners have been particularly impressed with the product, and the force protection section has been able to use the product as well."

The SWA DT has developed plans for Prince Sultan Air Base and Bishkek-Manas (Ganci AB) as well as several other AOR bases and is working additional plans for other key locations to meet the CFACC's 2010 vision, which is the vision for the Southwest Asia area of responsibility.

The SWA Delivery Team resolves planning, programming and construction issues for civil engineers in forward operating locations to expedite projects such as this aircraft parking ramp built by a Prime BEEF team for Operation Iraqi Freedom, and beddowns such as the tent city at Manas, Kyrgyzstan, below. ***(Tent city photo by CMSgt Andrew Stanley)***

Making things legal

The programming phase is where we match the requirement with the funds and authority, legalizing the construction efforts. The ACC SWA DT prepared DD Form 1391 programming documents and facilitated project approvals for more than $500 million in contingency and MILCON requirements during OIF. The results were outstanding.

"Some projects were approved in as little as three days," said General Burns. Projects included aircraft ramps, taxiways, damaged runway repair in Afghanistan and Iraq, water wells, cantonment areas and dining facilities to meet current OEF and OIF mission needs. Projects were also programmed in preparation for future beddown missions in support of the CFACC's 2010 plan.

Construction— the fun stuff

Requirements determination and project programming is important. But, when troops are waiting 60 minutes for a hot meal because the dining hall is too small, the front-line civil engineer needs dirt moved and new buildings rising up out of the sand.

In this regard, the SWA DT had the greatest impact. CENTAF A7 and ACC's Construction Division orchestrated a truly remarkable integrated approach using RED HORSE, Prime BEEF and contractors to execute the largest wartime construction program since the Vietnam War.

Members of the ACC SWA DT planned and managed projects that provided more than 160 acres, or 145 football fields, of aircraft parking space; 70 acres of taxiways; more than 1.2 million square feet of permanent facilities for dormitories and community center facilities; and more than 2.3 million square feet of temporary facilities for hangars and contingency billeting space.

"The key to successful project execution was to match the capabilities, availability and skills of the construction group with the requirement and need date," said Lt Col Dave Nelson, CENTAF Deputy A7.

More than 10,000 engineers have deployed in support of OEF and OIF in the past 18 months, and each had a dramatic impact on the CFACC's capability to put bombs on target. Those engineers can be justifiably proud of the work they did fighting our nation's Global War on Terrorism. The members of the SWA DT are just glad they were able to help CENTAF A7 and our deployed engineers get the resources they needed to get the job done!

Maj John Thomas is chief of the Southwest Asia Delivery Team at HQ ACC, Langley AFB, VA.

Securing A Safe Landing

CEMIRT Provides Mobile Aircraft Arresting Systems for ONE and OEF

by CMSgt Glenn Deese
CEMIRT

In the aftermath of the tragic events of 9/11, President Bush ordered combat air patrols, as part of Operation NOBLE EAGLE, to guard the skies over the country's borders and over major cities. That order resulted in fighter jets temporarily operating from airfields not equipped with aircraft arresting systems. This posed a danger for pilots and aircraft alike, since there would be no cable across the runway to stop aircraft during emergency landings or aborted takeoffs. Aircraft would likely continue through the overrun and crash into whatever might lie beyond the runway.

Without knowing how long the CAP flights would last, Air Force leadership decided it wasn't worth the risk of losing an aircraft, or worse, losing the life of a pilot, to keep flying without the arresting systems in place. The only problem was that war plans did not anticipate having to install mobile aircraft arresting systems, or MAAS, in the continental United States, so there were no assets to send to each airfield supporting CAP operations. That's where the Civil Engineer Maintenance, Inspection and Repair Team, aka CEMIRT, came into play.

CEMIRT is a specialized capability belonging to the Air Force Civil Engineer Support Agency, Tyndall Air Force Base, FL. Part of CEMIRT's mission is to provide intermediate and depot-level repair support on power generation, electrical distribution, and aircraft arresting systems. CEMIRT has nine 7-person specialized Prime BEEF teams that provide commanders with power production and electrical expertise during wartime, military operations other than war, humanitarian and natural disaster recovery actions.

CEMIRT serves as the Warner Robins Air Logistics Center's depot overhaul source for aircraft arresting systems and supports civil engineers with 10-year overhauls to maintain mission-capable rates. The team continually strives to reduce costs and save the Air Force money by improving business practices. One proactive initiative involved acquiring 12 condemned MAASs to cannibalize for spare parts or, where suitable, completely refurbishing the systems to add to the Air Force inventory. This foresight proved extremely beneficial for CAP operations after 9/11.

CEMIRT received a request asking if it could provide a MAAS within 60 days to support CAP operations at a West Coast base. CEMIRT notified the requester that it had condemned sets that could be refurbished within 30 days and called in additional help from the team's operating locations at Travis AFB, CA, and Dover AFB, DE, to assist.

The overhaul team worked 12-hour shifts, six days a week, to meet the deadline. The team, led by Mr. John W. Smith, an aircraft arresting system equipment specialist, worked miracles to have the system completely refurbished and outfitted with upgraded installation hardware and tool sets in just 30 days. The system was then loaded on a flatbed trailer and hauled to the West Coast base, arriving within 35 days of the request.

The 200th RED HORSE Squadron from Port Clinton, OH,

CEMIRT provided MAASs that enabled fighter aircraft to operate safely from bases in the U.S. and at deployed locations in Southwest and South Central Asia. *(Top)* Mr. Gary Krajnik puts the finishing touches on a MAAS refurbished by CEMIRT. *(Right)* Richard Cantu, Michael Bear and Pete Matos shrink-wrap an overhauled MAAS for shipment by sea. *(Photos courtesy CEMIRT)*

was tasked to perform the installation. The weather did not cooperate at first; the area received several inches of rain just days before installation began, converting the ground next to the runway into a swampy mess. Eventually the ground dried sufficiently to complete the installation. With installation of the MAAS, CAP operations continued with a much higher degree of safety for aircraft and pilots.

As Operation Enduring Freedom kicked off, troops were deployed throughout the CENTCOM theater of operations to air bases that had never been occupied by U.S. troops. Again, flying operations were based at airfields where arresting systems were non-existent. Assets were drawn from war reserves to ensure safe flying operations. This caused the inventory to dip dangerously low, should a conflict begin elsewhere in the world requiring arresting systems. Again, CEMIRT was called to provide MAAS systems to build the reserves back to safe levels.

CEMIRT was asked to overhaul 14 systems within 20 months. This put a strain on operations, but CEMIRT personnel rolled up their sleeves and began producing a completely refurbished MAAS every 45 days, in addition to maintaining their normal workload. By mid-April 2003, CEMIRT had produced 10 systems on schedule, with another four due by Sept. 30. The Air Force saved more than $1.5 million in replacement costs by having CEMIRT refurbish 15 systems that were originally condemned and destined for the Defense Reutilization and Marketing Office.

CMSgt Glenn Deese is the operations manager for the Civil Engineer Maintenance, Inspection and Repair Team, Tyndall AFB, FL.

HORSEing Around Iraq

(Above) **An Airborne RED HORSE team poses in a crater on a runway at Baghdad International Airport, Iraq, before beginning repairs. The team named it the "mother of all craters" as it was 135 feet wide, 40 feet deep and filled with water 15 feet deep. Brig Gen Pat Burns, the Air Combat Command Civil Engineer, said the crater was well over twice the size of any crater repaired in training or combat. RED HORSE is repairing the civilian and military runways at Baghdad IAP, a primary base of operations for U.S. troops, cargo and humanitarian airlift for Operation Iraqi Freedom.** ***(Right)*** **ARH members pose in front of a portrait of Saddam Hussein near Tallil AB.** ***(Photos courtesy HQ ACC/CEX)***

A Research Lab in the Desert

Members of Air Force Research Laboratory's Airbase Technologies Division performed jet engine trim pad anchor tests throughout the CENTCOM area of responsibility during Operations Enduring Freedom and Iraqi Freedom.

AFRL members recently performed jet engine trim pad anchor tests at five locations in the CENTCOM AOR. ***(Photo courtesy AFRL/MLQD)***

The testing was done to prevent failure from shear, bearing, bending, compression, pullout or rotation of the concrete slab, connecting hardware and anchor components. The advantage to the war fighters is safety of the aircraft and personnel performing engine run ups and a huge savings of time and money. Engine maintenance shops save hundreds of thousands of dollars for each engine they do not have to ship back to home station for testing.

Lt Col R. Craig Mellerski, MSgt Woody Lisner, and Mr. Gary Wagner (ARA, Inc.) tested and certified nine anchors in four countries. Each location provided outstanding support for the team to accomplish their mission. The testing was accomplished in accordance with AFCESA Engineering Technical Letter, 00-2, Inspection and Testing of Trim Pad Anchoring Systems. *(Lt Col Craig Mellerski, AFRL)*

AFCESA At Your Service

Did you know that failure to comply with the National Telecommunications and Information Administration narrowband mandate within the time frames specified can lead to the directed shutdown of all your noncompliant systems? All radios that transmit and/or receive voice, data or video in the 138-150.8 MHz, 162-174 MHz, and the 406.1-420 MHz bands require narrowband migration by specified time frames.

Before you purchase a radio-based system, you need to contact your installation spectrum manager (formerly known as base frequency manager) to obtain a frequency license.

The Air Force Civil Engineer Support Agency has a Help Desk ready to assist you with your narrowband conversion efforts. Call DSN 523-6995 or commercial (850) 283-6995, or visit the Help Desk web site at https://wwwmil.afcesa.af.mil/Directorate/CES/Mechanical/Narrowband/default.htm.

A-Gram List

- 03-11—Improved Herbicide Application Technology
- 03-12—Unexploded Ordnance Safety Training Program CD-ROM
- 03-13—CE Vehicle Acquisition Support
- 03-14—Obtaining A Special Purpose Vehicle Lease With Option To Buy

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

Technical Publications

Newly Released

Available at http://65.204.17.188//report/doc_ufc.html

UFC 3-120-01, *Air Force Sign Standard*

UFC 3-400-02, *Design: Engineering Weather Data*

UFC 3-460-03, *O&M: Maintenance of Petroleum Systems*

UFC 3-570-06, *O&M: Cathodic Protection Systems*

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

ETL 03-1, *Storm Water Construction Standards*

ETL 03-3, *Air Force Carpet Standard*

Available at http://www.e-publishing.af.mil/

AFI 32-1043, *Managing, Operating, and Maintaining Aircraft Arresting Systems*

AFPAM 32-1123V1, *Working in the Operations Management Field*

AFCAT 21-209V2, *Demolition Munitions*

Apply Online for CESS

The Civil Engineer and Services School at the Air Force Institute of Technology recently launched a new online application process. For the first time, individuals can apply directly to CESS for admission to the school's classes.

Start by reviewing the course descriptions on AFIT's web page at http://www.afit.edu.

• Select **Civil Engineer and Services School**.

• On the next screen, select **Courses**.

• Select the type of course you are interested in: **Services Management, Engineering Management,** or **Environmental Management**. You can also apply for the school's satellite **seminars** at this location.

• Click on any course to view its description, information about the intended audience, and prerequisites, as well as a schedule of upcoming classes and instructions for applying.

• To apply, select **Apply** at the bottom of the screen and follow the prompts.

The enrollment period for all CESS courses opens 90 days before the class start date. If enrollment for the course you selected is not open, you have the option of requesting a reminder be sent to you when enrollment opens. CESS will notify you and your supervisor by e-mail of the status of your application after Course Director review.

A special note about satellite classes: Satellite courses require a facilitator at each base who serves as the CESS representative to help the instructor administer the class. If you are the first approved applicant (primary or secondary) from your base, we will telephone you to ask whether you are willing to handle this important duty.

Questions?

Address an e-mail to cess@afit.edu. Type "Application Process" in the subject line. Send us your question and we'll respond quickly. *(Diane Osborne, Chief, Academic Operations and Support, CESS, AFIT)*

Continuing Education

AFIT
Civil Engineer and Services School

Wright-Patterson AFB, OH

Course No.	Title	Off	Start Dates	Grad Dates
Seminar (S)	Stormwater Seminar	04A	09-Oct	09-Oct
MGT 101	Intro. to Base Civil Engineer Organization	04A	20-Oct	13-Dec
MGT 412	Financial Management Course	04A	20-Oct	31-Oct
ENV 418	Environmental Contracting	04A	27-Oct	07-Nov
Seminar (S)	Hazardous Waste Accumulation Site/Initial Point Management	04A	06-Nov	06-Nov
ENV 020 (S)	Environmental Compliance Assessment	04A	17-Nov	20-Nov
ENV 222 (S)	Hazardous Material Management Program	04A	02-Dec	04-Dec
ENV 419	Env. Planning, Programming & Budgeting	04A	02-Dec	04-Dec
Seminar (S)	Utilities Privatization Seminar	04A	16-Dec	16-Dec

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 (listed on the previous page). 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	01-Oct/24-Nov	15-Oct/08-Dec
J3AZR3E051-007	Airfield Lighting	01-Oct/04-Dec	10-Oct/15-Dec
J3AZR3E051-008	Electrical Distribution Sys. Maint.	17-Oct/21-Nov	14-Nov/19-Dec
J3AZR3E051-010	Bare Base Electrical Systems	01-Oct/10-Nov/19-Dec	15-Oct/24-Nov/12-Jan
J3AZR3E051-012	Fire Alarm Systems	01-Oct/28-Oct/24-Nov/19-Dec	27-Oct/21-Nov/18-Dec/23-Jan
J3AZR3E051-013	Intrusion Detection Systems (IDS)	01-Oct/10-Nov/19-Dec	21-Oct/01-Dec/16-Jan
J3AZR3E071-001	CE Adv. Elec. Troubleshooting	22-Oct/20-Nov/19-Dec	19-Nov/18-Dec/27-Jan
J3AZR3E472-000	Liq. Fuels Storage Tank Entry Spvsr.	06-Oct	17-Oct
J3AZR3E472-001	Liq. Fuels Sys. Maintenance Tech.	20-Oct	31-Oct
J3AZR3E451-004	Fire Suppression Systems Maint.	20-Oct/01-Dec	07-Nov/19-Dec
J3AZR3E471-101	Bare Base Water Purification and Distribution Systems	01-Oct/29-Oct/03-Dec	10-Oct/07-Nov/12-Dec
J3ARR3E453-002	Pest Management Re-Certification	20-Oct/03-Nov	24-Oct/07-Nov
J3AZR3E052-013	CE Advanced Electronics	22-Oct	19-Nov
J3AZR3E072-002	Troubleshoot. Elec. Power Gen. Eq.	29-Oct	20-Nov
J3AZR3E072-113	Bare Base Power Generation	20-Oct	13-Nov
J3AZR3E151-013	HVAC/R Controls Systems	15-Oct	19-Nov
J3AZR3E151-014	Direct Expansion Systems	23-Oct	25-Nov
J3AZR3E151-015	Indirect Expansion Systems	06-Oct	24-Oct

Ft. Leonard Wood, MO

Course No.	Title	Start Dates	Grad Dates
J3AZP3E571-003	Engineering Design	20-Oct/01-Dec	31-Oct/12-Dec
J3AZP3E571-005	Construction Materials Testing	06-Oct/03-Nov	17-Oct/14-Nov
J3AZP3E971-003	Advanced Readiness	20-Oct/03-Nov/01-Dec	24-Oct/07-Nov/05-Dec
J3AZP3E971-005	NBC Cell Operations	06-Oct/27-Oct/17-Nov	10-Oct/31-Oct/21-Nov

Indian Head, MD

Course No.	Title	Start Dates	Grad Dates
J5AZN3E871-001	Adv. Access and Disablement	06-Oct/27-Oct/01-Dec	20-Oct/07-Nov/12-Dec
J5AZN3E871-002	Advanced EOD Course	28-Oct/02-Dec	08-Nov/13-Dec

Gulfport, MS

Course No.	Title	Start Dates	Grad Dates
J3AZP3E351-001	Low Slope Maint. & Repair	20-Oct/03-Nov/01-Dec	30-Oct/14-Nov/11-Dec
J3AZP3E351-002	Fabrication Welded Pipe Joints	21-Oct/02-Dec	01-Nov/13-Dec
J3AZP3E351-003	Metals Layout Fab. & Welding	07-Oct/04-Nov	25-Oct/22-Nov

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

Tinker Tornado Damage Exceeds $10 Million

An F4 tornado struck Tinker Air Force Base, OK, May 8, ravaging the area with 150 to 260 mph winds that inflicted more than $10 million in damage to the base. There were no reported injuries or damaged aircraft.

The $10 million estimate, said Base Civil Engineer Stephen Mallott, is the estimated "total cost of the impact, which includes clean-up, repair and replacement."

Getting the base back to pre-storm conditions may take months, according to Mr. Mallott, who said civil engineering experts are prioritizing repairs. "The main thing was getting fences back up, the second thing was getting power restored, and that's been accomplished."

Though significant, Tinker's losses left many feeling lucky. "From a base facility standpoint, the damage is minimal compared to what it could have been," said Mr. Pete Girillo, 72nd Air Base Wing fire chief. "If this thing had gone 500 yards north, it would have hit the Navy buildings and would have come across and taken out part of the Airborne Warning and Control System complex and a fire station.

> *"From a base facility standpoint, the damage is minimal compared to what it could have been,"*
> —Mr. Pete Girillo

"You have to look at the positive side to this thing. We had two major storms, two days in a row and because of the notification systems we have implemented, the people in Oklahoma, Tinker included, reacted the way they were supposed to."

Mallott agreed. "We certainly don't like having a tornado, but I can tell you our folks responded just superbly," he said. "From the security forces corralling everyone into the storm shelters to the immediate response by the fire department and our engineering operations immediately conducting damage assessment — it was an outstanding effort on everyone's part." *(From an AFMC News Service article by Amy Welch, Oklahoma City Air Logistics Center Public Affairs)*

CEs Modify Hangar, Save Money

What a difference 4 feet makes — in this case $20,000.

Every May, the 76th Helicopter Flight's fleet has to move because its hangar at Vandenberg Air Force Base, CA, is used for Guardian Challenge ceremonies. Guardian Challenge is an Air Force Space Command five-day competition of space and missile units.

For years the flight has rented a tent to house the helicopters, which cost $20,000 for the two weeks. Plus, the tent moorings damaged the flightline.

Last month, Vandenberg civil engineers modified a door at another nearby hangar by 4 feet, 6 inches to make room for the helicopter fleet. Now they are housed there, and the base saves $20,000 a year. The project took one month to complete and cost $49,000.

The hangar door opening was originally 10 feet tall, which provided very little room to maneuver a helicopter into it. "There was about a 4-inch leeway for a helicopter to be moved into the hangar. We originally had to have someone hold down one of the propellers in order to get the helicopter in the building," said John Kalusky, project manager at the 30th Civil Engineer Squadron.

Workers from the 30th CES modified a design that would allow the main rotor on the top of the helicopter to come into the hangar unobstructed.

"It fit the bill perfectly, we had exactly what we needed to get the job done," said 2Lt Phillip Baker, 30th CES project programmer. "This will save us a lot of money in the long run, because not only did the tent cost a lot, it was also destroying the tarmac on which it was being set up. It would cost $300,000 to replace the tarmac. So, it was either replace the tarmac or do something about the tent."

Although 2003's Guardian Challenge was canceled because of real-world operations, the hangar is ready for future events. *(Amn Juanika Glover, 30th Space Wing Public Affairs)*

A helicopter is pushed into the hangar 30th CES members modified for the 76th Helicopter Flight. ***(Photo by SrA Jonathan Pomeroy)***

Laughlin CE Rewarded for Money-Saving IDEA

Mr. Donald Hendrix, 47th Civil Engineer Squadron, Laughlin Air Force Base, TX, received a $3,969 award recently for an idea he submitted under the Innovative Development through Employee Awareness, or IDEA, Program that will save the Air Force $1,130,744 over the next 45 years.

After a severe hailstorm caused extensive damage to the asphalt roofs at Laughlin last year, Mr. Hendrix, the squadron's construction representative, researched and found that metal shingle roofing lasted longer than asphalt roofs and would better withstand heavy hail and high winds, thereby saving the Air Force money in roof replacement costs.

As the base evaluator, Mr. Marvin Parvino, 47th CES deputy base civil engineer, conducted a detailed analysis of Mr. Hendrix's research and confirmed that replacing the roofs with metal would benefit the Air Force. The metal shingle roof has a 50-year warranty against hail and 120-mph wind damage, whereas asphalt roofs did not warrant those types of damages.

"The metal roof provides better comfort for residents," said Mr. Hendrix. "It reduces installation time by 50 percent and produces minimal amounts of construction debris such as nails and other dangerous objects. The metal roof also looks like traditional asphalt shingles."

About half of Laughlin's base housing currently has metal roofing as a result of Mr. Hendrix's suggestion. The 47th CES expects to have 100 percent of Laughlin's housing fitted with metal roofs within the next year. Mr. Hendrix said he is more excited about Laughlin having such an extensive project than he is about receiving the award. According to the 47th CES, Laughlin is the first Air Force installation to replace asphalt roofs with metal for all base housing.

Donald Hendrix discusses a metal roof with Lt Col Michael Blaylock, 47th CES commander, atop a home in base housing. Mr. Hendrix earned an award for his idea to replace asphalt roofs with metal roofs. *(Photo by TSgt Anthony Hill)*

"His idea has been forwarded to AETC for wider use," said Anita Cox, 47th Flying Training Wing IDEA analyst. "If the command decides to use it at its other bases, there could be more savings identified. That also means more award money could be earned by Mr. Hendrix." The maximum limit for an IDEA award is $10,000, said Ms. Cox. *(TSgt Anthony Hill, 47th Flying Training Wing public affairs)*

Air Force Wins DoD Environmental Awards

Secretary of Defense Donald H. Rumsfeld announced the winners of the 2002 Secretary of Defense Annual Environmental Awards Program May 5. Air Force winners are:

- Tinker Air Force Base, OK, for environmental quality
- Hill AFB, UT, for environmental restoration
- Ms. Karlene B. Leeper, 611th Air Support Group, Elmendorf AFB, AK, for cultural resources management

Each year, the defense secretary honors installations, teams and individuals at domestic and overseas bases for promoting and making significant lasting contributions to Department of Defense environmental programs. These programs support the U.S. military mission, protect our national heritage and promote quality of life. *(DoD News Release)*

Civil Engineers Honored for "Closing the Circle"

Air Force personnel have garnered five of this year's White House "Closing the Circle" Awards. The Closing the Circle Award recognizes federal facilities and employees for significant achievements in environmental compliance and protection. This year 26 award winners were selected from more than 200 nominations.

Following are the Air Force winners by category:

- Education and Outreach: Michael "Recycle" Redfern, HQ AETC/CEV, Randolph AFB, TX
- Affirmative Procurement: Wright-Patterson AFB, OH
- Waste/Pollution Prevention: John A. Wildie, 12th CES, Randolph AFB, TX
- Environmental Management Systems: 7th CES Environmental Flight, Dyess AFB, TX
- Recycling: Patrick AFB, FL

Key CE Personnel Changes

Maj Gen L. Dean Fox, formerly the Director of Civil Engineering, Headquarters Air Mobility Command, Scott Air Force Base, IL, is now The Civil Engineer, Deputy Chief of Staff, Installations and Logistics, HQ USAF, Washington D.C.

General Fox replaces Maj Gen Earnest O. Robbins II, who retired in May. Brig Gen (S) Delwyn R. Eulberg, formerly the Special Assistant to the Commander, Air Warfare Center, Air Combat Command, Nellis AFB, NV, is now the Director of Civil Engineering for HQ AMC.

Brig Gen David M. Cannan retired as the Command Civil Engineer, HQ Air Force Materiel Command, Wright-Patterson AFB, OH, in May. Mr. James R. Pennino, a member of the Senior Executive Service and former Deputy Command Civil Engineer at HQ AFMC, is now the Command Civil Engineer.

Col Connie J. Carmody, formerly the HQ Air Force Space Command Civil Engineer, Peterson AFB, CO, is now Director of Mission Support for HQ AFSPC. Col Gordon R. Janiec, formerly the AFSPC Deputy Civil Engineer, is now the AFSPC Civil Engineer.

Col Edmond B. Keith, formerly the 89th Mission Support Group commander, Andrews AFB, MD, will be on board as the new Air Force Special Operations Command Civil Engineer Aug. 1. Colonel Keith replaces Col Richard P. Parker, who retired in March.

The Air Force Civil Engineer Support Agency and the Air Force Center for Environmental Excellence will both come under new leadership this summer. Mr. Gary M. Erickson, a member of the Senior Executive Service and Director of AFCEE, will retire July 22 after 30 years in federal service. Mr. Paul A. Parker becomes the new AFCEE Director. Change of command at HQ AFCESA will take place Aug. 1, as Col Bruce R. Barthold relinquishes command of the Agency to Col Gus G. Elliott, Jr. and retires from active duty.

RED HORSE Reunion slated for August

The REDHORSE Association is holding a RED HORSE reunion in New Orleans, LA, Aug. 10-13, at the Double Tree Hotel. This year's reunion is hosted by alumni of the 554th RED HORSE Squadron. The guest speaker at the official reunion banquet on Aug. 12 will be retired Brig Gen David O. Swint. The Double Tree Hotel (800-222-8733) is offering a special rate of $79 per night. Be sure to mention that you are with RED HORSE when you register. For more reunion information visit the reunion website at http://redhorsereunions.tripod.com or contact Don Averett at 251-649-7165.

The Association has also joined with Turner Publishing Company to publish a commemorative history of RED HORSE. Current RED HORSE members and alumni are encouraged to submit their personal experiences, stories and photographs. For more information, contact the REDHORSE Association, 7739 Raleigh St., Westminster CO 80030-4587, phone 303-650-1215.

2003 Senior Master Sergeant-Selects

Robert L. Appling
Jose A. Badillo III
Mark E. Barner
John E. Battis
Kenneth L. Bennett
David A. Berridge
Ralph V. Brea
Rodger E. Brown
Jack L. Buchman
David W. Campbell
Nicholas Campbell
Richard L. Cart
David L. Cook
Alberto C. Czeczotko
Michael R. Czekaj Jr.
Dwight Daniel
Dwright J. Davis
Karl R. Deutsch
David C. Eldridge Jr.
John A. Etter Jr.
David M. Fain
Joel X. Fernandez
Kevin E. Fitzgerald
William J. Flynn
Brian K. Foster
Michael C. Garrou
John L. Gibson II
Rodolfo Gonzales
Joseph C. Gootee Jr.
Randal L. Grimes
Reginald L. Hammond
Jeffery Hannaford
Douglas R. Hartwell
Michael A. Hast
Michael L. Hatfield
Samuel C. Hazzard
Mark A. Hepner
Eric J. Honeycutt
Patrick A. Hoppaugh
Mark B. Isaman
Michael R. Jenks
Curtis A. Jennings
John M. Joyce
Brian P. Kaley
Todd M. Katz
Dennis B. Laclaire
Brian T. Langhorne
Manuel T. Lapuz Jr.
Michael D. Lefebvre
Dale D. Littles
Philip W. Lopes Jr.
Lorenzo Luechtefeld
Phillip M. Mack
Bridgid K. MacSeoin
Kenneth E. McClure
John J. Mollick
Muhammad W. Mustafa
Robert C. Nelund
Andre R. Pare
Harold D. Patterson
David J. Poulin
Christian M. Pugh
Vernon S. Raye
Brian O. Richardson
Michael A. Roberts
Donald F. Roy
Gregory E. Russell
Edward Sanchez
Joseph P. Schuch
Kenneth J. Shomin
Bruce D. Smalls
Steven A. Smith
Anthony C. Smithwick
Robert A. Stover
Eric A. Turner
Robin F. Versailles
Randall S. Vis
Carl W. Walters
Claudette Watler-Hall
Lewis H. Weaver Jr.
Ronald Westerfield
Richard A. Widmark
Edward D. Wilkinson
Tony L. Williams
Richard Williamson
George J. Wong

437th Civil Engineer Squadron

The 437th CES supports the East Coast C-17 airlift mission, critical to Air Force operations around the globe. The "CE Outlaws" are responsible for maintaining, repairing, designing and constructing facilities at Charleston AFB and six remote sites in South Carolina. This includes maintaining 6,500 acres, 4.3 million square feet of facilities, 3.6 million square yards of pavements and 1,374 family housing units. The squadron plays a key role in Charleston AFB mission readiness, providing fire protection emergency services, air crash and rescue, emergency medical operations, disaster preparedness and explosive ordnance disposal response for more than 12,000 military, civilian and family members while maintaining a top-notch environmental program.

Parent Unit:
437th Airlift Wing
(Air Mobility Command)

Location:
Charleston Air Force Base, SC

Commander:
Lt Col Maria J. Dowling

Assigned Personnel:
265 military and 135 civilians

Squadron Nickname:
CE Outlaws

Recent Accomplishments: The 437th CES has made giant strides in providing world-class facilities to enhance CAFB's C-17 mission. The squadron constructed a $9 million Supply Mobility warehouse to consolidate wartime team kit storage, captured $16.5 million in Defense Logistics Agency fuels projects to increase fuel storage capacity 190 percent, and teamed with the U.S. Navy to execute more than $20 million in base construction. The Operations Flight completed more than 16,000 facility work requests, renovating four key facilities in-house and saving more than $320,000. In addition to facility improvements, the unit boosted quality of life by completing construction on 140 homes, designing a $12.5 million project to renovate 134 additional homes and upgrading 16 playgrounds in family housing to meet national safety standards.

While deployed, the 437th CES supported Operation Enduring Freedom — leading a combined force of 190 engineers in setting up a bare base in just three days to prepare for the first bombing campaign in Afghanistan. The massive 1,500-person beddown transformed a 100-acre site into a fully functional air base with 220 tents, 330 facilities and $24 million in Harvest Falcon assets.

Recent Awards: The 437th CES's amazing performance regularly results in the squadron receiving awards at the wing, numbered air force, Air Mobility Command, Air Force and Federal levels. The unit received the Curtin Award in February 2002 as the "Most Outstanding Large Civil Engineer Unit" in the Air Force for 2001. The Operations Flight was named #1 in both AMC and the Air Force for 2002. The Environmental Flight was named #1 in AMC and #2 in the Air Force in 2002 and the EOD Flight was named #1 in AMC for the second year in a row.

Additionally, the squadron is home to one of the Air Force's 12 Outstanding Airmen of the Year and won four separate 2002 General Thomas D. White Environmental Awards and seven separate 2002 Annual AMC individual awards. The unit earned one of only 12 2002 National Energy Saver Awards for a $9.8 million family housing geothermal heating and cooling project (which had resulted in a 33 percent energy reduction) and garnered one of only four National Coastal America Partnership Awards for executing an artificial reef project.

Unit Spotlight

HORSEpower

SSgt Doug Weymer, 823rd Airborne RED HORSE, moves huge pieces of concrete from the military runway at Baghdad International Airport, Iraq, in April. RED HORSE is repairing the civilian and military runways at Baghdad IAP, which is a primary base of operations for U.S. troops, cargo and humanitarian airlift for Operation IRAQI FREEDOM. *(Photo by SSgt Cherie A. Thurlby)*