Air Force
CIVIL ENGINEER
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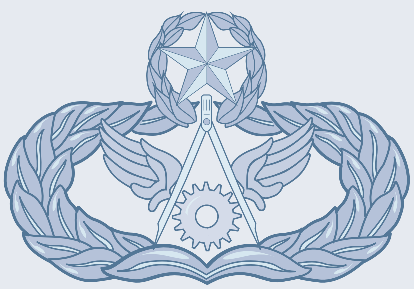
Building the ARRK

photo by Keith Fred

From the Top



A Winning Season!

We recently recognized our Air Force Civil Engineer annual award winners. As in previous years, picking the "best of the best" from our stable of thoroughbreds is always a daunting task. I received a number of comments from our CE "Founders" praising the program and the achievements of our award winners. My thanks to everyone for the outstanding nomination packages, the hard work by our awards committee, and to all the folks that made the reception and luncheon one of the best we've ever had…well done!

Our Back To Bases (BTB) initiative continues to pick up steam. At our Annual Programmer's Conference at Hill AFB, I met again with the MAJCOM Engineers to focus on the BTB team's findings. I have appointed the Air Staff Divisions, HQ AFCESA, and HQ AFCEE as the OCRs for each of the BTB findings and each MAJCOM has appointed a primary team member. Together we will develop and implement solutions to each and every issue so that, as your headquarters elements, we can better support the bases.

So why all this focus on bases? It's pretty simple—what other services call "Public Works," I consider one of our core competencies. The Army stresses maneuver warfare and the Navy projects power from offshore, but our traditional fighting platform is the base. We emphasize the notion that Airmen establish, open, operate, sustain, maintain and reconstitute our bases, and our home stations provide an ideal training platform for us to practice many of our contingency skills. For example, what better way to learn how to install, maintain and sustain an airfield lighting system than to do that as part of your primary duties while at home station? The same holds true for the whole host of tasks we engineers perform to support our great Air Force. While other services have moved toward a more centralized approach to installation management, I believe this would detract from the training opportunities that we take advantage of every day at our installations, reducing our overall combat effectiveness. So we will continue to emphasize the importance of our bases to maintaining and sustaining our readiness posture.

Recently, I was very fortunate to travel to Southwest Asia and visit some of our deployed engineers. I can't begin to put into words the pride I felt seeing all of you in action, accomplishing the mission better than any other engineering force in the world. To all our deployed troops I say, "Stay focused, get the job done, remember those at home who are working to support you while you're gone, and come home safe."

Spring means more activity and I want to remind you all to keep safety in mind as you go about your job and recreational activities. I especially ask that our motorcycle enthusiasts heed General Jumper's "Sight Picture" from 27 Feb 04 regarding motorcycle safety and mentoring. Each and every one of you is a valued member of our family, and with safety at the forefront of our daily tasks, we can all enjoy the fun and fair weather ahead. As I continue my travels this spring, I look forward to seeing many of you in action.

Sallie and I wish you and your families continued health and happiness!

L. Dean Fox
Major General, USAF
The Air Force Civil Engineer

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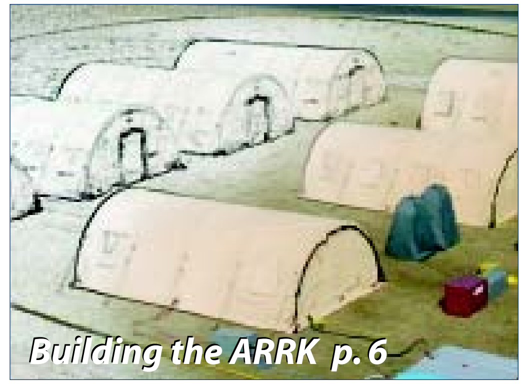
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On the cover: During a demonstration at Scott AFB, Ill., SSgt Joseph Wood, 16th CES, Hurlburt Field, Fla., unpacks one of the component kits that make up an Air Rapid Response Kit. (photo by MSgt Paul Fazzini)

Command Focus Air Force Special Operations Command

Teresa Hood
Editor

Light, lean, and mean. That's how the Air Force Special Operations Command was intentionally established in 1992. It's also a mantra for the engineers of AFSOC as they go about their day-to-day work in a major command that's growing and changing by leaps and bounds.

"Just late last year, when people thought of us they thought of the 'one-base' MAJCOM, because we only had Hurlburt Field," said Col Edmond Keith, the AFSOC Civil Engineer.

That's no longer the case. On October 1, 2003, Combat Search and Rescue (CSAR) moved from Air Combat Command to AFSOC, giving them 7,000 more people and another main operating base, Moody AFB, Ga.

The addition of CSAR doesn't account for all of AFSOC's growth, however. "We were already growing at a tremendous rate before the decision to move CSAR," said Col Keith. This fast growth gives HQ AFSOC's intentionally "lean" staff of 27 engineers a lot of work to do—much of it right on their home base, Hurlburt Field, which is "one of the fastest growing installations in the Air Force," according to Col Keith.

Over the last 10 years, Hurlburt's square footage has increased by sixty percent and the 16th SOW is now the seventh largest wing in the Air Force, with close to 8,500 people (about 7,500 military). "We have flat run out of room," Col Keith said. "We've built on every piece of property we can—anything else is wetland, in an airfield obstruction zone, or has some form of land use constraint."

Housing privatization is one way AFSOC is addressing their need for space. A partnership between AFSOC and Air Force Materiel Command on one of the largest housing privatization projects in the Air Force will result in 2,155 new and conveyed houses. Nearly 2,600 houses on Hurlburt Field and Eglin AFB will be demolished and 2,015 new houses will be built. Hurlburt's main base contains 306 of the houses identified for demolition; these houses will be rebuilt on property between Hurlburt and Eglin, which will open up 100 acres on Hurlburt Field for new growth and make room for facilities that are needed for the special operations mission.

The funds for building many of AFSOC's facilities come from a source not available to any other Air Force major command: Major Force Program 11 (MFP-11) funds. MFP-11 funds were established by the same legislation that created the U.S. Special Operations Command (SOCOM) and make AFSOC a little different. "Unlike any other MAJCOM, we are also the air component for a combatant commander and the only combatant commander with their own fund source," said Col Keith.

AFSOC, along with Army and Navy special operations forces (SOF), earns MFP-11 funds from SOCOM and the funds can be used only for SOF missions. AFSOC also competes with other major commands for Air Force funds, and although the programming processes for the two types of funds are similar, they must be kept strictly separate. According to Lt Col Sally Macon, chief of AFSOC's Programs Division, "The challenge comes early, in knowing which programs are SOF-specific and which are Air Force programs, such as CSAR."

SOCOM support means that AFSOC—a small command in number of bases—measures up to other, larger commands in the amount of military construction (MILCON) funds it receives. It doesn't, however, mean that AFSOC gets a larger staff to handle the work. "We're considered a two-base MAJCOM, but we serve two masters. We have two different programs, with two different agendas, with two different FYDPs," said Lt Col Mohsen Parhizkar, who heads a staff of five as Chief of AFSOC's Engineering Division.

Much of AFSOC's SOCOM-funded growth is global, taking them much further afield than Hurlburt. A Contingency Response Element will receive $95.1 million for facilities to support SOCOM's continued Southwest Asia presence. At RAF Mildenhall, a $34 million MILCON project will allow SOF units to be housed in one compound called Commando Central. AFSOC will receive $148 million to bed down new MC-130 aircraft inside and outside the continental United States, and another $99 million for the new, self-deployable CV-22s.

A larger global mission and an additional funding source are not the only things that make civil engineering different at AFSOC. "Because we're the numbered Air Force for a combatant commander, we get very involved in the direct support of the warfighter," said Col Keith.

To support their air commandos and rescue warriors AFSOC engineers developed the Air Rapid Response Kit (ARRK) and the Global Situational Awareness Tool (GSAT).

The ARRK was designed for expedient beddown of first-in deployers—usually SOF forces—and is the epitome of light and lean. It provides basic support for 100 people until Harvest packages arrive (up to 14 days later), includes a small command tent, fits on just three pallets, and can be set up by as few as two engineers.

"We gave the ARRK to our warriors and they loved it and we thought that was it," said Mr. Tom Graham, Chief of CE Readiness for AFSOC. "But then other units within AFSOC, such as CSAR, said 'it's still too heavy' so we created different versions to accommodate them: the ARRK Lite, ST and Mini. And now we have folks outside of AFSOC interested in it." (see article on the ARRK on p. 6).

AFSOC created GSAT to provide "situational awareness," a broader, more regional preview of conditions (e.g., environmental, medical, political, geographic, etc.) in an operational area. "We needed to take a different approach to looking at the environment," said AFSOC's Environmental Division Chief, Mr. Michael Applegate. "It's an interesting turnabout—we look at what a particular environment might do to us rather than what impact we might have on that environment."

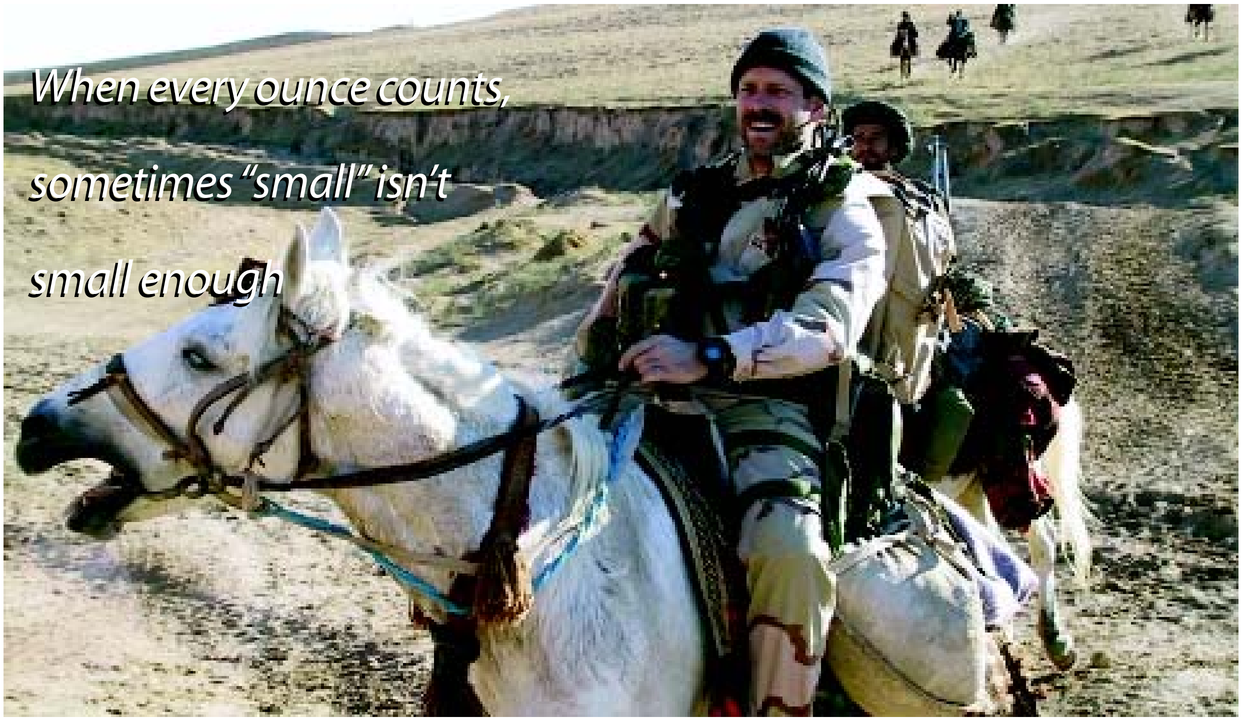
GSAT contains various layers of information—Geographic Information Systems, imagery and data—from many sources, including the U.S. Department of Defense, the U.S. Department of Agriculture, the CIA Worldbook, and the Armed Forces Medical Intelligence Center, to provide multiple uses for multiple customers. The Environmental Division is partnering with others in AFSOC, such as the medical and safety offices, to ensure the broadest use of GSAT.

GSAT can be used to evaluate potential beddown locations for soil conditions, floodplain locations, or local industries that might affect air and water quality. It might be used by those in the medical field to identify endemic disease or disease-carrying vectors in a given location. GSAT can also enhance flight safety by providing migratory bird patterns to evaluate the risk of bird air strikes. Evenutally, users will have access to GSAT via a secure Web site.

"The three ideas that the Air Force Special Operations Command emphasizes is that we are 'growing, changing, and becoming more vital,' especially with the Global War on Terrorism. Our role as engineers is to enable the growth and change, and to support our air commandos and rescue warriors," said Col. Keith. "A side benefit to all we do is that we are learning lessons on how to become lighter, leaner and meaner that are going to translate to the rest of the Air Force."

Colonel Edmond B. Keith became the Civil Engineer for Headquarters Air Force Special Operations Command in July 2003. Col Keith is a graduate of the Virginia Military Institute with a B.S. in Electrical Engineering. Commissioned in 1982 through the Reserve Officer Training Corps at VMI, his first assignment was as an electrical engineer at Pope AFB, N.C. Col Keith has spent his entire Air Force career in civil engineering, with tours at every level of command: HQ USAF, MAJCOM, and field. He oversees all components of civil engineering for AFSOC's 19,952 personnel (17,650 military) on 32 bases (14 active duty and 18 Guard or Reserve).

Building the ARRK



MSgt Michael A. Ward
HQ AFCESA/PA

When special operations troops deploy, they are often the first ones in, most times into remote, austere locations with minimum equipment and support. No cots, sleeping bags, latrines or showers. Just them and the horse, helicopter or vehicle they rode in on.

That's changing thanks to a group of Air Force Special Operations Command civil engineers. About three years ago, they started developing a set of right-sized deployment packages called Air Rapid Response Kits (ARRKs) that can provide deployed troops with some basic, short-term, quality-of-life and functional comforts.

"When we went to war, we found out that our guys were getting there earlier than everybody else," said Col Ed Keith, the AFSOC Civil Engineer. "We had nothing to give our warriors so they operated out of their aircraft. They had no place to sleep, no latrines; they had absolutely no structure."

"We picked the brains of some people that had recently deployed and asked, 'What are the absolute minimum things that you really wanted to have?'" said Andrew Wardencki, an NBC analyst at AFSOC and a member of the ARRK team since its inception. "It pretty much came down to the same thing: 'Shelter over my head, somewhere to sleep, hygiene, a latrine system, and a small work facility.'"

When the Air Force deploys, the troops are normally supported by prepackaged, transportable, bare-base kits called Harvest Falcon and Harvest Eagle. Those kits contain everything needed to construct a tent city complete with latrines, showers, kitchen and electrical power generation.

That's great for a large force—the Harvest Falcon kits supports 1,100 people, and the Harvest Eagle kit supports 550—but

AFSOC needed something to support small teams of troops being inserted behind the lines or beneath the radar. What they developed were the ARRKs—four kits tailored to meet the unique needs of special operations missions, even though they don't provide quite *all* the comforts of home. "Our packages don't have the creature comforts that the big packages have in them," said Mr. Wardencki. "We don't put in heating and air conditioning, because those things add weight and they have a big power draw."

The largest kit, called the ARRK, can support about 100 people. It contains five billeting tents, an administrative tent, latrine tents, a shower-and-shave tent, a 3,000-gallon water bladder and an electrical generator. Only seven to 10 engineers are required to set it up. Most important, though, is its size. It's compact enough to fit on only three pallets, meaning it can be easily transported on only one of almost any cargo aircraft—it takes 18 C-17s to transport the Harvest Falcon kit.

Next is the ARRK Lite, which can support 50 people. It consists of five billeting tents, two other tents and a chemical latrine system. "This doesn't come with a fancy shower. It comes with (anti-bacterial hygiene wipes). One wipe will wash one person head to toe," said SMSgt Chuck Dewar, who heads up the ARRK cadre—members of the 16th CES at Hurlburt Field, who have worked with the ARRK since it's beginning.

The ARRK Lite is so small it doesn't require additional pallets. Instead, it can be inserted into existing pallets. It also doesn't require direct civil engineer support to assemble. "We provide it to the warriors and give them some basic training on it. Then they carry it forward at deployment," said Col Keith.

The ARRK ST (special tactics) is similar to the ARRK, but supports 20 people. "Special Tactics said they loved the ARRK but needed something smaller," said Mr. Tom Graham, AFSOC's Chief of CE Readiness.

The smallest version is the ARRK Mini, which is essentially a high-tech folding cot with a built-in tent, anti-bacterial hygiene cloths and a few chemical potty bags. The kit is small enough to fit into one bag and is carried in the airframe. It doesn't sound like much but it's a welcome sight when the only other option is sleeping and living amongst

With only three pallets in the largest ARRK, weighing in at 20,900 pounds lbs. total, loading them into this C-130 is fast work. By comparison, it takes 18 C-17s to transport a Harvest Falcon kit. (photo by SrA Ebony J. Pierre)

During a demonstration at Hurlburt Field, Mr. Andrew Wardencki asks a visiting airman to try out a tent cot, part of the ARRK Mini. (photo by the author)

the rocks. "Our guys were typically lying in their helicopter's airframe or lying underneath it," said Mr. Graham.

The ARRK concept has been so successful that other organizations, including Airborne RED HORSE and the R-1 RED HORSE lead element are looking into it. "Although both these RED HORSE elements already have their own equipment sets, some of the ARRK's innovative concepts could be incorporated to improve their capabilities," said Maj. Stephen Wood, Air Combat Command's RED HORSE program manager.

Although the ARRKs are a welcome sight for deployed troops, the civil engineers stress that they are only a stopgap measure, not a replacement for the Harvest kits.

"What we're providing gives them an initial capability until an engineer team can get in there with heavier stuff," said Col Keith. "It gives the warrior something to operate out of for 14–30 days until the rest of the Air Force catches up."

MSgt Michael A. Ward is the Chief of Public Affairs for HQ AFCESA, Tyndall AFB, Fla.

As part of a demontration at Scott AFB, Ill., two airmen unpack ARRK components. In the background are two latrine privacy tents and a billeting tent. The ARRK is a hybrid of military and commercial components. It also contains all the equipment necessary for set-up. Proper packing is key to maintaining the ARRK's small size. (photo by MSgt Paul Fazzini)

Engineer Force Development: Which Way from Here?

commentary by Lt Col Jon A. Roop EUCOM

The cat's out of the bag: force development promises a new destiny for engineers. We are on the cusp of evolutionary change that dares senior officers to cultivate leaders who can command and integrate missions outside their specialized career field.

With full implementation slated for October 2004, force development is on the fast track. Brig Gen Richard S. Hassan, Air Force Senior Leadership Management Office Director, stated that the overall goal of force development is to "successfully accomplish…Air Force missions by developing officers with the required skills, knowledge and experience to lead and execute current and future mission capabilities."

Enabling current and future mission capabilities requires interdisciplinary thinking—an extraordinary cultural shift from typical "stovepiped" careerism. Nevertheless, the message is clear. Senior leaders have an unprecedented responsibility to enable every officer to reach their full potential. What does this mean for mentoring future engineers? How should junior officers be counseled on the key aspects of engineer development? When asked these questions during a recent address at a MAJCOM Base Civil Engineer Conference, Maj Gen L. Dean Fox, The Air Force Civil Engineer, answered succinctly, "…advise them to over-compete!"

Although engineers have a legacy of proven mentoring, they did so in a different way. Now senior engineers need to think in broader terms, not to develop just engineers, or logisticians, or communications officers, but Air Force leaders—in other words, to over-compete.

Regrettably, career counseling is often analogous to Alice's encounter with the Cheshire Cat in Lewis Carroll's *Alice in Wonderland*:

'Would you tell me, please, which way I ought to go from here?'

'That depends a good deal on where you want to get to,' said the Cat.

'I don't much care where—' said Alice.

'Then it doesn't matter which way you go,' said the Cat.

Senior leaders must offer better, more informed counsel to junior engineers than the cat gave to Alice. We must understand branches and sequels for career planning, and most assuredly realize that there is no longer only one path or one end state.

Force development is about smarter utilization of the total force. It assumes that not all engineers will need or want to be developed through all three career-planning levels (see sidebar, p. 10). The Air Force Chief of Staff, Gen John P. Jumper has said, "We need great tactical and operational leaders…we will value each and every one of them, at all levels.

Force development improves our return on training and education investments, and

ensures cross-career assignments that instill the full depth and breadth of Air Force competencies. This means that tactical-level considerations should now include operational deployments and acquisition training, as well as professional registration, which is not currently an Air Force requirement for engineers.

At the operational level, we should suggest looking past traditional staff and squadron command billets as measures of merit, and risk venturing outside the career field into developmental assignment opportunities such as joint, sister-service or operational billets.

The strategic level has seen the most change. Engineers are now considered, and readily requested, as commanders of mission support groups and air base wings. The shift to greater reliance on joint interoperability and mission readiness means combatant command engineer billets will become highly sought. Sweeping major command transformations may soon lead to senior engineers being principal candidates for mission support directors.

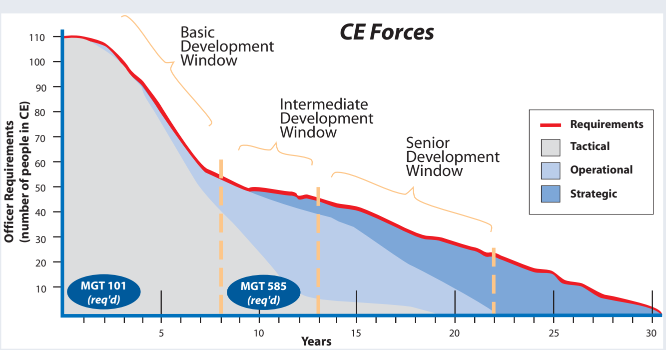
Yes, the cat is out of the bag, but like Carroll's Cheshire Cat, an engineer's career may look good-natured, yet it still has "…very long claws and a great many teeth, and it ought to be treated with respect." We must treat each engineer with great respect as we guide the development of their skills, knowledge, and experience to meet the challenges of expeditionary operations. Force development will result in significant changes to officer progression and requires innovative thought while we mentor our engineer corps now and well into the future.

Lt Col Jon A. Roop is the chief of Contingency Operations Branch, European Command.

Force Development Doctrine

Force development doctrine consists of three levels: tactical, operational and strategic *(see chart below)*.

Tactical: Emphasis is on learning primary skills at the tactical level. The basic toolbox consists of readiness skills for expeditionary operations, practical engineer project management experience, professional officership, and personal development of core values.



Operational: Emphasis is on development of complementary skills and an understanding of the broader Air Force mission, learning how to combine a wide range of warfighting capabilities to enhance or complete an Air Force or joint-service mission. This is the first chance for the engineer to start putting all the pieces together; to answer the "why" questions generated from years of tactical level development.

Strategic: Emphasis is on combining skills and experiences to develop a knowledge base that extends beyond the Air Force into Defense Department, interagency and international arenas. Force development has created new broadening opportunities external to classic engineer roles.

A New Understanding

MSgt Michael A. Ward
HQ AFCESA/PA

Joint service senior NCOs learn they are more alike than different

Nearly 100 people from the Air Force, Army, Navy, Marines and industry attended the first Civil Engineer Joint Senior NCO Symposium, April 20-22, at Tyndall AFB, Fla.

The conference, sponsored by the Air Force Civil Engineer Support Agency (AFCESA) and the Society of American Military Engineers (SAME), brought together a mix of senior NCOs and contractors to discuss civil engineer activities during Operation ENDURING FREEDOM.

"We wanted to bring the top enlisted engineers from the sister services together so we could discuss the lessons learned from the recent conflicts in Afghanistan and Iraq," said SMSgt. Jim Lucas, symposium project officer. But what the attendees wound up talking about had less to do with the war and more with discovering each other's capabilities.

"The Marine Corps deals a lot with the Army and a little with the Navy, but with the Air Force, hardly at all," said Master Gunnery Sergeant James Washington, HQ Marine Corps Logistics and Installation Division. "As far as their actual job, we just don't know."

"Honestly, I didn't know the Marines had engineers," said MSgt Sue Parker, Sheppard AFB, Texas. "I thought the Navy pretty much took care of their requirements."

The services have had little interaction in the past in part because each has a unique contingency engineering mission.

"My background is in combat engineering, and we do very rough, fundamental-type construction for initial theater support," said Army Sergeant Major Perry Hamilton, 11th Engineer Battalion, Ft. Stewart, Ga. "We don't have the finesse of the Seabees or the management skills of the Air Force."

Because of the lack of interaction and familiarity, many attendees came to the symposium with preset ideas about the other services.

"This conference helped dispel some of the assumptions we each had about our sister services," said Master Chief Petty Officer John Mulholland, HQ Navy Facility Engineering Command, Washington, D.C.

The services have conducted joint training for years, but have lagged behind in actual joint operations. SAME, which recently began a push to include more enlisted members in its organization, realized that, while senior civil engineer officers from the different services often interact, there was no similar forum for senior enlisted civil engineers.

"Getting all the civil engineer senior NCOs together is something we've needed to do for a long time," said retired Rear Admiral Michael Johnson, SAME president. "We talk a lot about being 'joint,' but we really needed to do something about *being* 'joint.'"

Now that they've been formally introduced, attendees said the next step is to change the culture within their own ranks.

"For so many years it was, 'we're Marines, we don't mess with you guys,'" said Master Gunnery Sergeant Washington. "We need conferences like these so that when the younger guys come up, unlike us they will have a better understanding."

During a symposium field trip, Staff Sergeant Jeffrey Lee Murrill, USMC, received a briefing on the FA-22 from a 43rd Fighter Squadron maintenance crew member. (U.S. Air Force photo)

Rigged, Ready and RED

An ARH team repairs a spall on a runway at an Iraqi air base using equipment from the MARES: CAT 420 backhoe (left) and IHI IC-45 crawler carrier (right).

Maj Stephen D. Wood
HQ ACC/CEXO

During deployments in support of Operation Iraqi Freedom, three Airborne RED HORSE (ARH) teams demonstrated why they are crucial to combatant commanders. Supporting missions at three different locations in Iraq, the teams validated U.S. Air Force Chief of Staff General John P. Jumper's vision for "jumping horses" to give commanders an airborne initial airfield assessment and repair capability.

The ARH teams were built from Air Combat Command's three active-duty RED HORSE squadrons: the 819th RHS, Malmstrom AFB, Mont.; the 820th RHS, Nellis AFB, Nev.; and the 823rd RHS, Hurlburt Field, Fla. The only other active-duty RHS, the 554th at Osan AB, Korea, is assigned to Pacific Air Forces. ARH teams consist of 35 airmen: 21 airmen from the RHS with a broad cross section of engineering capabilities; six explosive ordnance disposal (EOD) technicians; six fire crash-rescue specialists; and two readiness troops that specialize in nuclear, biological and chemical (NBC) defense.

Now back from OIF, Airborne RED HORSE is using lessons learned from their deployments to fine-tune all elements of their teams. Each of the ARH teams will stay with its parent RHS, and the EOD, Fire Crash-Rescue and Readiness airmen will come from three supporting CE squadrons: the 1st CES, Langley AFB (with the 823rd RHS); the 99th CES, Nellis AFB (with the 820th RHS); and the 366th CES, Mountain Home AFB (with the 819th RHS).

Airborne RED HORSE is postured to deploy with a Contingency Response Unit (CRU), and is paired with the 820th Security Forces Group, Moody AFB, Ga., through their Global Mobility CONOPS, specifically the "Open the Air Base" module, as a Tier 1 support element, primarily to assess airfields for aircraft landings. In addition to the AFSC-required training for each skill-set on the team, all ARH airmen must be airborne-qualified; additional training includes air assault and pathfinder qualifications.

Airborne RED HORSE is currently refining and standardizing equipment supply listings, and fielding new equipment to meet requirements. An important goal is for all ARH teams to be configured the same and operate from a standard "play book," to allow deployments in echelons as the mission requires.

For equipment, smaller is better as airframes become a highly sought commodity during a conflict, even when bigger might mean faster repairs. "There are some craters that we could handle faster with bigger equipment, but the trade-off for speed of assessment is well worth the extra time we might possibly spend in repair," said SMSgt Michael DeShon, 819th RHS, who has worked with ARH since 2001.

Airborne RED HORSE is a reality and it's ready for its next mission

ARH can reach back for any heavy equipment they need and act as engineering "eyes on the ground" for any beddown planning or potential operational problems.

Equipment pieces in ARH's kit, the MARES (Mobile Airfeld Repair Equipment Set), are smaller, lighter and ruggedized versions of their bigger brothers: two CAT 277 multi-tracked loaders (skid steers); a CAT 420-D IT backhoe; an IHI IC-45 crawler carrier (tracked dump truck); a tracked trailer; a Polaris Ranger; and a Polaris Sportsman 700. Other equipment used by ARH teams includes the All Purpose Remote Transport System (ARTS) EOD robot, Polaris-mounted Fire Response Expeditionary (FRE) equipment (a high-pressure fire fighting system), three additional Polaris Rangers, and three more Polaris Sportsman 700 ATVs. All the equipment will be airdrop- and slingload-certified.

TSgt Dave Keeley, a member of the 823rd RHS that air-landed at Baghdad International Airport during OIF, summed up the unique skills of Airborne RED HORSE: "Nowhere in the world will you find a unit with the total capabilities that we bring to the fight. Not only are we paratroopers, our craftsmen are the masters of their respective trades. The key to our success lies in our cross-training."

Maj Stephen D. Wood is Chief of the Command RED HORSE program for HQ ACC's Readiness Division.

Getting ARH On-Site

An Airborne RED HORSE team with equipment can get to the fight using one of three arrival modes: air land, air insert, or air drop.

Air land is a typical cargo aircraft delivery method, where team members and equipment load onto and off the plane on the ground. This is the ideal method in terms of risk and potential costs. However, there isn't always landing and take-off space where ARH has to go, so they need the ability to arrive in other ways.

Air insert is arrival by helicopter. Equipment is slingloaded from helicopters, carried to the location and set down. If there's space, the helicopter lands to unload the team; otherwise, team members rappel down. Training and certification is received through the Army's Air Assault School. The risks are greater than air-landing, but this method lets ARH rapidly move forward after initial arrival in the area of operations.

Air drop is parachuting team members and equipment from aircraft. This method has the greatest risks, but offers the longest range, and gives ARH the ability to get to essential airfields when there is no other option. Team members must be airborne-qualified through the Army's Basic Airborne Course at Ft. Benning, Ga.

RED HORSE Assault:
Coming Soon to a Theater Near You

Capt Terry Vance
554th RHS

RED HORSE takes on the '10 hardest days in the Army'

The 554th RED HORSE Squadron, Osan AB, Korea, recently broke a new boundary by graduating five people from the U.S. Army Air Assault School with soldiers of the 25th Infantry Division, Schofield Barracks, Hawaii. These five are the first Air Assault–qualified RED HORSE engineers and form the foundation for the 554th RHS Assault, Assessment, and Repair Operations (AARO; pronounced "arrow") team, which is intended to advance wartime engineering capabilities on the Korean Peninsula and in the Pacific theater. Focused on using seized airfields, rather than establishing new ones, AARO teams will provide air component commanders the rapid engineering capability necessary to turn cratered runways into hubs of operation. An initial capability demonstration is scheduled for June 2004.

The four phases of Air Assault School are preceded by "Zero Day," the infamous rite of passage. A Friday "o'dark-thirty" formation and inspection of 100 candidates comes right before an intense "Smoke Session" with cadre members in the middle of Oahu's wet and overgrown East Range. The many "Sergeant Air Assaults" seek to separate those with the necessary physical ability and determination from those without. "Go ahead and quit!" they yell while candidates perform countless flutter kicks and push-ups in the muddy, red clay. "I'll still have my job on Monday morning!"

Right: Candidates practice their skills on the rappelling tower. (photo courtesy 554th RHS)

Once the Air Assault hopefuls are either effectively "smoked" or reach total muscle failure, the Obstacle Course begins. Nine obstacles are included, with two attempts at each. The Tough One and Confidence Climb are required "goes," and only two total "no-goes" are allowed. Candidates carry several five-gallon water cans wherever they go, and double-time and sing jodies between obstacles. Immediately after the Obstacle Course, candidates head out on a two-mile run through the East Range's toughest terrain, with just 18 minutes to complete it. At the end of the long, rocky road, Heartbreak Hill waits—more than a quarter mile straight back

up. By lunchtime on Zero Day, everyone's in pain. Some are headed home—better luck next time!

All too quickly, Monday comes and Air Assault School begins. Each phase intensely tests both the physical and mental capabilities of the attendees. The first phase, Pathfinder Operations, deals with aircraft familiarization; medevac operations; helicopter landing site operations and marking; hand and arm signals; and operation planning. Pull-ups and decline diamond push-ups during each hourly break from class help keep soldiers "enthused." The mornings are also filled with formation runs and a rugged, four-mile forced ruck march. The standard ruck load is 40 pounds, including helmets and rifles. Fall an arm's length behind the soldier in front of you, and you're on your way home.

The second phase, Slingload Operations, is considered the most challenging. In a typical class, more than 20 percent of the students may fail the hands-on slingload inspection test and be gone. Students learn about aircraft limitations; slingload equipment; and requirements, rigging and inspection of slingloads. Following an early-morning forced march—six miles with a standard ruck—students get two minutes each to inspect four separate slingloads, and must cite four out of five deficiencies on each. Miss one gig and you'll survive. Miss two? Again, better luck next time.

Third is the Rappel Phase. In the first few hours of exposure to rappelling, all students learn to tie their own military rappel seats and are soon bounding from the 45-foot tall rappel tower. By the end of the phase, students must be able to correctly tie a military rappel seat within 90 seconds and execute four separate technical rappels, including two with a full combat load. If you fail to lock in properly, or lose your brake hand…see you next class! Total success in this phase is followed by the pinnacle of Air Assault School, a 90-foot combat rappel from a UH-60 Blackhawk. But class is not quite over when you hit the ground...

The fourth phase begins with formation the next morning at 0300 hours. That gives the cadre enough time to transport, thoroughly inspect, and stretch students for the final test of will—the 12-mile ruck march. Positioned under the Air Assault School arch at 0500 hours, students are released in the dark on their predetermined course with three hours to return. Thoroughly exhausted, feet blistered, and drenched in sweat, soldiers rejoice at the finish line. They've now earned the right to wear Air Assault wings. For the members of the 554th RHS, it is a special day. Proudly representing the best the Air Force has to offer, they proved to soldiers of the 25th Infantry Division that "those Air Force guys are in pretty good shape."

All Air Assault graduates are certified Slingload Inspectors, a dividend for any unit on the battlefield. To further the internal capabilities of AARO, the 554th RHS has also certified the first two Air Force members through the Helicopter Rope Suspension Techniques Master Course, taught by the 3rd Marine Regiment, Kaneohe MCB, Hawaii. Troops return to their units as certified Rappel, Fast Rope, and Special Patrol Insertion/Extraction Masters, equipped with the expertise to conduct training and real-world rappel operations day or night.

By September 2004, the 554th AARO team will consist of 21 highly trained Horsemen. In addition to their usual RED HORSE skills, they are also training in air base defense, infantry tactics, heavy weapons, and field medicine, for joint operations under ground threat levels I-III. RED HORSE is well known for constructing the physical backbone necessary to project air power from forward locations, although not necessarily after inserting their equipment with helicopters. Under certain circumstances, air insertion will give RED HORSE a faster, safer method of movement around than traditional convoys.



Left: Candidates hang from a helo moving 80 mph.

Center: The view from the bottom position on the rope.

Right: Rappelling from a stationary helo.

(photos courtesy 554th RHS)

Capt Terry Vance is the Chief Engineer, 554th RHS, Osan AB, Korea.

Engineers Take to the Air… Again

Dr. Ronald B. Hartzer
HQ AFCESA

The general needed a base close to the front lines for his aircraft to support the rapidly advancing ground forces. Calling upon a new group of engineers for the job, he sent in airborne engineers who loaded their specially designed equipment on transport planes and flew deep into the desert. After only 24 hours, the runways were ready for the first aircraft to arrive. Sound like a CNN report on Airborne RED HORSE activities from Operation Iraqi Freedom? Actually, it occurred during World War II operations in North Africa, where the military first tested the concept of airborne engineers.

World War II Aviation Engineers built or repaired airfields in every theater. First organized in 1940 as part of the Army but assigned to the Army Air Forces, they soon became an indispensable part of the American military. However, in May 1942, Brig Gen Stuart C. Godfrey, Air Engineer, AAF, recognized the need for aviation engineers who could respond whenever and wherever needed, even behind enemy lines to construct or repair expedient airfields. He wanted engineers who could parachute into enemy territory, establish an emergency strip and, using lightweight equipment landed by gliders, improve the runway until it could accommodate transports and tactical planes.

The greatest challenge the engineers faced was the size and weight of their equipment. Working with manufacturers, Brig Gen Godfrey's experts developed a set of specially designed equipment that could fit inside a C-47 or a Waco Glider.

In only four months, Brig Gen Godfrey's dream came true when the Army established the first Airborne Engineer Aviation battalions just in time to see action in North Africa. After a few weeks of work in Morocco, the 871st Airborne Engineer Aviation Battalion flew 1,000 miles to establish a dry base for Maj Gen Jimmy Doolittle's B-17 bombers at Biskra, Algeria. While this successful operation seemed to hold great promise, a simultaneous project by the 888th Airborne Engineer Aviation Company (AEAC) showed the unit's inherent inadequacies. After one day of work on an airfield near Tebessa, Algeria, it began raining and engineers quickly discovered the limitations of their miniature machinery. After 15 days, the airborne engineers returned to the rear area, replaced by a standard battalion to complete the work.

Airborne engineers saw limited activity in the European Theater. Following the D-Day invasion, airborne units were not needed so

Right: Brig Gen James E. Newman, Jr. (center, pointing down), Commanding General of the 9th Air Force Engineers, explains how an airborne (midget) bulldozer is used to build and repair airstrips in Liberated France. (U.S. Air Force photo) they performed small construction projects and maintenance work.

The airborne aviation engineers saw their most exciting action on the other side of the globe. In March 1944, members of the 900th AEAC joined British General Orde Wingate's famous band of Chindits in a glider-borne landing 200 miles behind enemy lines in the jungle of Burma. The troops began work immediately and had a landing strip available the next night for transport aircraft. They eventually completed five runways, often picking up their weapons to defend the new airfield from Japanese attackers. Airborne units performed similar missions at Tsili Tsili, Nadzab, and Gusap, New Guinea. However, they just could not perform up to the standards of a regular battalion because they had only lightweight equipment and two-thirds the people. Their scrapers got clogged with heavy jungle grass and the miniature graders often just bounced along the surface. Commanders assigned routine or menial tasks to the airborne engineers because of their limited capabilities. By the end of the war, the airborne units had been furnished with standard size engineering equipment.

Following the war, a Board of Engineers evaluated the airborne aviation engineer mission. While they recognized the limited productivity and capacity of the equipment, the board validated the concept and recommended "that doctrine and techniques of airborne operations and development of airborne engineer equipment be continually reviewed." Little did they know that it would take 55 years for another airborne engineer unit to be established.

Dr. Ronald B. Hartzer is an Air Force historian and Chief of Professional Communications for HQ AFCESA, Tyndall AFB, Fla.

Left: A crew loads engineering equipment into a Douglas C-47 of the 1st Air Commando Force at Tamu, Burma. Right: An airborne engineer uses a miniature bulldozer to lengthen a runway at Tamu, Burma. Below: Glider-landed aviation engineers tow their glider off the airstrip at Myitkyina, Burma.
(U.S. Air Force photos)

Icy Crossing

Air Force engineers in Alaska build bridges that "disappear"

MSgt Andrew Gates
354th FW/PA

Building a bridge in sub-zero weather is not most people's idea of fun.

For Mr. Mike Skow and Eielson AFB's civil engineers, it's the only time to do it—literally. Mr. Skow, 354th Civil Engineer Squadron range maintenance foreman, and his team have perfected the art of building ice bridges.

Give them freezing temperatures and five weeks and they can build you a 5'-deep, mile-long ice bridge—capable of supporting more than 110 tons—that completely vanishes a few months later.

"People from many other bases can just drive right up to their ranges. Here, even in the summertime, we can drive to only one of our three ranges—the other two are surrounded by wetlands and can only be reached by helicopter. In the winter, though, our ice bridges let us drive to those other ranges to bring in fuel, equipment and support supplies," said Mr. Skow, who has been building ice bridges for more than 25 years.

SrA Jeremiah Anderson and SrA Jason Haines keep water flowing through a typhoon pump during ice bridge building. (photo by author)

Eielson's three ranges are a part of the 60,000 square-mile Pacific Alaska Range Complex—the largest over-land range complex in North America. This high-tech range complex gives U.S. and allied pilots the opportunity to fly over varied terrain while responding to simulated threats.

"We provide a realistic combat readiness range for nearly 20 nations to train in," said SMSgt John O'Brien, 354th CES range maintenance superintendent. "We have to go onto each range about once a year and rebuild and maintain the targets."

Alaska's characteristically cold November weather heralds the start of the ice-bridge–building season. As soon as a river freezes to a depth of about 8" the maintenance team clears off the snow—which acts as an insulator—to make a crossing about 300' wide. Then they bring out the augers to drill an 8"- wide hole through the ice down to the running water.

Once that's done, they place a small typhoon pump in the hole and start the pumping process. They can usually keep a hole open about two hours—during that time, they'll spray more than 60,000 gallons of water on top of the ice. The process continues 24 hours a day, seven days a week, until the ice is 60" thick—a feat even the team members find impressive.

"I am able to do something that no one else in the Air Force can do," said TSgt Shawn Kelly, 354th CES NCO in charge of range maintenance. "It's kind of hard to imagine five feet of ice below your feet—that the ice is almost as deep as a person."

When the ice is 20" thick, the team starts to build the snow ramps on and off the ice bridge. "We start with small vehicles," said Mr. Skow. "We bring out some small bulldozers and pickup trucks with plows. We'll build the ramps onto the bridge out of snow and soak the ramps down with water, since snow alone won't pack hard enough to be able to support the equipment we'll take to the range."

Enough supplies, equipment and material move over an ice bridge to keep a range supplied for two years, so the team usually builds only one bridge a year, alternating between crossings. This year, however, a $19.5 million new range complex project at the Blair Lake Range meant the team had to build a bridge over the Tanana River, as well as the one already scheduled to cross the Delta Junction and reach the Oklahoma Bombing Range.

This experience is eye-opening to people getting their first taste of the career field. "I get so much pride out of the work I do here," said SrA Jason Haines, 354th CES equipment operator. "Nowhere else in the Air Force will I get the chance to build an ice bridge."

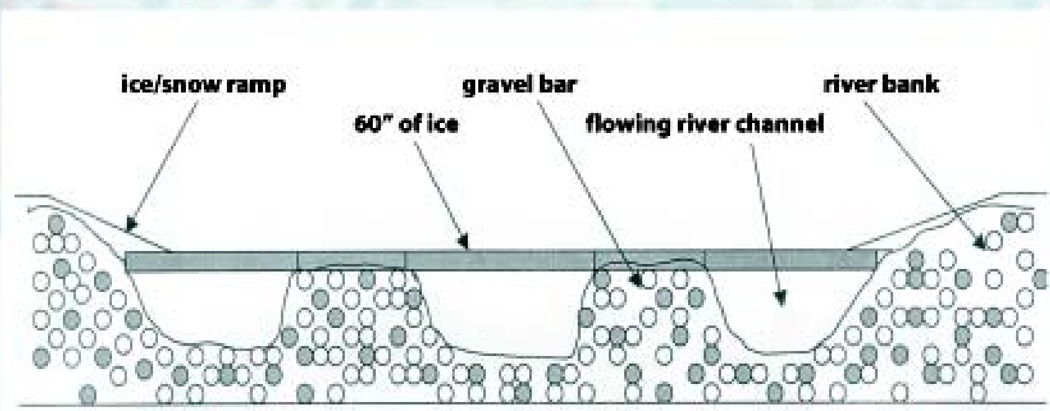
One unwritten benefit to the job is the opportunity to experience an Alaska very few people get to see. "I have a really great office," Mr. Skow said, waving at the vast open space surrounding him.

MSgt Andrew Gates is a public affairs specialist for the 354th FW at Eielson AFB, Alaska.

In a two-hour period, one typhoon pump can spray more than 60,000 gallons of water onto the ice. The slush cone that forms around the hole is left in place to prevent water from draining back into the river. (photo courtesy 354th CES)

The number of pumps and water source holes depends on how Mother Nature freezes the river. If the ice is flat, as few as four pumps can handle a day's worth of flooding; a "jagged ice" day could involve six pumps, relocated up to three times. (photo courtesy of 354th CES)

Building up the bridge is a gradual process. With 14" of solid ice, the bridge will support a 4x4 pickup. At 24" you can drive a JD-670 grader over it; at 48", a D-7 dozer. The finished ice bridge can support up to 110 tons. (photo courtesy of 354th CES)



The diagram at left depicts the bridge built across the Tanana River. During spring breakup, the glacier-fed river surges and shifts main channels. Before the winter freeze the team flies over in a helicopter to locate the "new" main channels—this winter there were three. (diagram by SMSgt John O'Brien)

A C-5 Galaxy sits on the ramp at Balad Air Base, Iraq. The flight line was recently certified to allow the C-5 and its 270,000 pound cargo-carrying capacity to use the airfield, reducing the dependence on ground vehicle convoys for supplies. (photo by SSgt Suzanne M. Jenkins)

Camp Anaconda gave way to Balad AB as members of the 332nd ECES rapidly built an Air Force base within an Army stronghold. Formerly an Iraqi Air Force Academy seized by the U.S. Army, the site had an airfield with two 11,800' runways. Engineers deployed as part of AEF Silver rapidly worked to reinstate the airfield and expedite the arrival of "the heavies," knowing that each C-5 or C-17 landing brought needed supplies and reduced convoy risks. "We just continued the superb job the AEF Blue CEs started," said Lt Col Patrick Ryan, commander of the 332nd ECES, but readying Balad AB to accommodate mission beddown moves from Baghdad International Airport and Tallil AB meant a lot of long hours of hard work for the troops. Under the direction of the operations flight chief, SMSgt Alwyn Archer, teams from the 170-person strong squadron installed a 14,000' emergency airfield lighting system, two mobile aircraft arresting systems, and a tactical air navigation system to increase flight safety and sortie rates. The Air Force engineers successfully merged with their Army counterparts in many areas to form joint teams for explosive ordnance disposal; fire, crash and rescue; and readiness operations. The engineers also created a fitness center, a chapel and dedicated facilities for the library and internet/phone cafes. One of the most welcome additions was the double-tent self-help laundry center. — *CMSgt John D. Albaugh, 332nd ECES*

SSgt Michael Erb, 506th ECES, wires a control panel while installing the lift station in a tent city at Kirkuk Air Base, Iraq. The 10-member power production shop, under the direction of MSgt Richard Scheurer, takes care of electrical needs for the whole base. Unrelenting rainstorms created a very muddy working environment that made even the small jobs difficult. The 150+ members of the 506th ECES worked every day for the first 60 days and will get no more than three days off in the first 120 days. According to their commander, Maj Michael Saunders, the 506th ECES completed contracts worth over $1.5 million in one single rotation (AEF Silver). MSgt Scheurer, in his third trip to Southwest Asia since 1993, said, "I'll never forget this one. It's the longest, roughest, toughest assignment with the most work." For this deployment, he created a special slogan: "We perform miracles here everyday." — *photo and text by TSgt Jeffrey Williams, 506th ECES/PA*

Maj Gen L. Dean Fox, The Air Force Civil Engineer, showed his support for the deployed troops during a recent trip to Southwest Asia. Maj Gen Fox spent time with airmen in several locations, learning about their experiences. (U.S. Air Force photo)

Air Force Civil Engineers deployed to Southwest Asia continue to support U.S. missions with their specialized skills.

An explosive ordnance disposal (EOD) team from the 379th ECES recently had to become "archeologists" in their quest for unexploded ordnance (UXO) in Afghanistan. Seven other U.S. and non-U.S. EOD teams had tried and failed to pinpoint the UXO's location beneath an airport taxiway, and their efforts had covered the original entry hole. Highly sensitive MK-26 subsurface ordnance locators were initially useless because of interference from metal rebar in the taxiway. Armed with site surveys, intelligence reports, and their knowledge of ordnance, the 379th EOD team began their "dig" at the presumed site of entry. Using heavy equipment, they removed fill from the hole created from past recovery attempts, encountering rebar and chunks of asphalt for the first 2.5 meters. All metal pieces were located with low-sensitivity detectors and then removed, including 10 pounds of tail-fin debris from the UXO. The team then hand-excavated to find the UXO's original entry path almost 4 meters below the surface and, using the MK-26 locator, tracked its route and likely resting site. Given the go-ahead for recovering the UXO from its probable location, the team used heavy equipment to remove a 5' x 5' square of taxiway and dig a hole to the same depth as the entry-site hole before starting hand excavation. Just about where they had predicted, the 379th's EOD team found the UXO and removed a large amount of components and materials, including about 70 pounds of explosive. After all dangerous materials were removed and disposed of, the runway was turned over for necessary repairs. — *SSgt Brion Blais, 48th CES/CED*

MSgt James E. Brewster, 379th ECES, stands at bottom of hole excavated to find the entry route of UXO located beneath runway in Afghanistan. (U.S. Air Force photo)

Fire Hydrant Hydraulics

Maj Thomas A. Adams
HQ AFCESA/CEOK

As former Operations Flight Chief at Keesler AFB, Miss., I had to solve a problem with our hydrant system. A hydrant was opened for testing but there was no water flow, a puzzling situation in a gravity-feed, positive-pressure system. Puzzling and possibly dangerous in today's security-heightened world, since contaminants could be introduced into a system through a hydrant in which the water level falls below the nozzle.

Some thinking and calculations solved the puzzle. An abbreviated explanation is presented here. A more detailed article and solution (with a calculation template) can be viewed from https://wwwmil.afcesa.af.mil/Directorate/es/ce_magazine/default.html.

Distribution System Characteristics. Water flow within the distribution system is governed by the Conservation of Energy principle: "Energy can be neither created or destroyed." For a gravity-pressurized system, the balance can be calculated using the modified Bernoulli equation (Eq. 1).

Consider a fire hydrant with a 4.5" nozzle. The manufacturer states that the hydrant bore pressure loss is 3 lbs/in^2 at a flow rate of 1,000 GPM. Under these conditions, the hydrant stream velocity head is 6.32', and the hydrant bore head loss is 6.92' (i.e., the total head at the hydrant bore inlet is 13.24'). That value will vary as the square of the flow rate.

Now assume the hydrant is fed from a water tank through a 1000'-long pipe, with the tank water level 150' above the hydrant nozzle. It follows that the total head loss from tank to hydrant bore inlet, from all causes, at a flow rate of 1,000 GPM, is 150.00' – 13.24' = 136.76'. This is a very large head loss for a smooth pipe with no bends, obstructions or tributary losses, but not uncommon for an actual length of pipe with all those features.

Now consider the same hydrant, fed by the same tank, but through a 100' long pipe—the total head loss is the same as before (150.00'), but the feed pipe head loss is much smaller because the pipe is much shorter, so much more head is available at the hydrant; therefore the hydrant flow is much larger. Assuming the feed pipe head loss is proportional to pipe length, the total head loss at a flow rate of 1,000 GPM would be 13.68 + 13.24 = 26.92', much less than the actual 150.00'. Therefore, since all head losses are proportional to the square of the flow rate, the actual flow rate through the hydrant 100' from the tank will be 1,000 GPM, multiplied by the square root of the ratio (150.00/26.92), or 2,361 GPM.

System Analysis. Finally, to explain our particular circumstance, consider a situation involving three hydrants, symmetrically located around a uniform feed loop (Fig. A). Hydrant #2 is at the far end of the loop, 5,280' from a water tank (longest measured length at Keesler), with the tank water level 150' above the nozzle. Hydrants #1 and #3 are each 200' closer to the tank, with their nozzles 10' below nozzle #2 (Fig. B). When tested alone, Hydrant #2 produces 1,000 GPM, 500 GPM coming from each side of the loop. Under this condition, the feed pipe head loss in each side of the loop, carrying 500 GPM, is 136.76'. Now assume Hydrant #2 is closed, and Hydrants #1 and #3 are both open. If the flow to both hydrants were 500 GPM, the total head loss at each hydrant would be 131.58' + 3.31' = 134.89', less than 160.00'. Therefore, the flow to each hydrant will be 500 GPM, multiplied by the square root of the ratio (160.00/134.89), or 545 GPM. The total head at the inlet to Hydrants #1 and #3 will be 3.93', 6.07' *below* Nozzle #2. This condition obviously creates the opportunity to introduce a contaminant into Nozzle #2.

Limitations. The examples presented here are intended only for approximating static pressures on gravity feed water distribution systems—no accounting is made for booster pumps, fire pumping or energy extracting devices such as turbines. Results obtained are theoretical and not verified under actual field conditions. In addition, continuous turbulent flow is assumed throughout—a reasonable assumption under most conditions—but with very smooth pipes and low water

Figure A

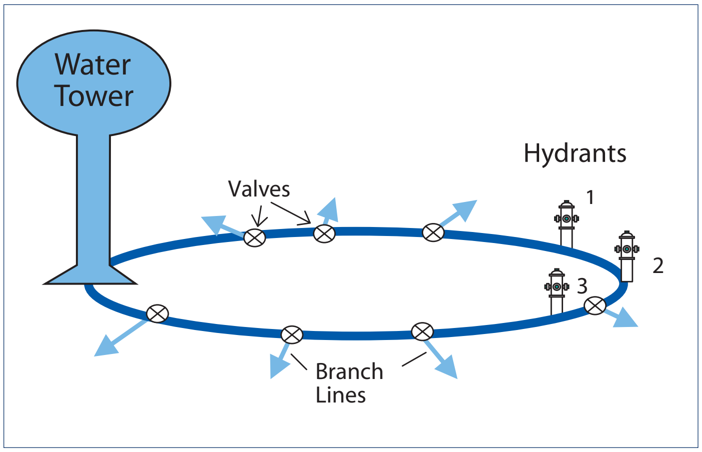
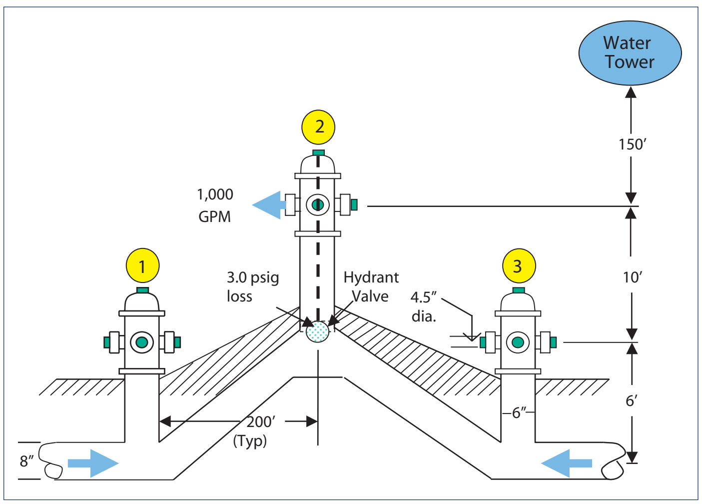


Figure B



Equation 1

$$\frac{p_0}{\rho} + \frac{v_0^{\,2}}{2 \cdot g_c} + z_0 = \frac{p_1}{\rho} + \frac{v_1^{\,2}}{2 \cdot g_c} + z_1 + hf$$

Where:

p =static pressure

z =elevation

ρ =water density $\Rightarrow$ 62.4 lb_m/ft^3

v =water velocity $\left(\frac{\dot{V}}{A}\right)$

g_c=gravitational constant $\Rightarrow$ 32.2 ft/sec^2

hf=friction loss= $f \cdot \frac{L \cdot v^2}{2 \cdot g_c \cdot D}$

f=friction factor

L=length of pipe

D=pipe diameter

velocities, the flow may become laminar, thus invalidating these conclusions. Nonetheless, these derivations do provide a reasonable means of identifying potential problem areas on an installation's water distribution system.

Conclusions. As it turned out, our problem hydrant was at the end of a dead-end branch line and hydrants were being flushed upstream. The branch line was "looped" and the problem was resolved. The American Water Works Association recommends a minimum 20 psig static line pressure at any point in the system with a fire hydrant at full flow. However, as experienced utilities troops know, this pressure is not always attainable in gravity feed systems. The static pressure parameter should be checked alongside required flow tests, but if there is no direct way to do this for a hydrant at full flow conditions, the parameter may be estimated based on the manufacturer's pressure loss data. If this data is unavailable, measure the pressure at the nearest adjacent fire hydrant. With several other key parameters such as hydrant barrel length, accurate "as-built" drawings, or geospatial coordinates, the measured pressure can be adjusted to estimate static pressure at the full-flow hydrant.

When problem areas are identified, further investigation is warranted to assess the problem, and take corrective action, if needed. In addition to repair projects, look at the viability of adding booster pumps or a water tower, increasing the distribution line size, "looping" the system (if applicable), or controlling water usage in high-use areas. Bases should also take proper precautions to monitor their water systems to prevent access by unauthorized persons.

Maj Thomas A. Adams is a staff professional engineer at HQ AFCESA, Tyndall AFB, Fla.

Editor's Note: *Intentionally creating a low system pressure is just one of several potential methods of attacking the water distribution system. AFCESA will soon issue a new Engineering Technical Letter (ETL) entitled "Design Recommendations for Potable Water System Security." It will provide physical security recommendations for all types of water distribution systems.*

Prime BEEFers "Package" Wastewater with a Tent City Treatment Plant

Lt Col Tracey Walker
DDEM
Eglin AFB, Fla.

What do you do when you have a tent city going up in a land where sewage trucks are almost non-existent, when you want to go "high-tech" in a land of antiquity? Do what the 506th Expeditionary Civil Engineer Squadron did at Kirkuk AB, Iraq: get on the Internet and find a supplier of a package wastewater treatment plant on the same continent.

MSgt Colin Bayes, a deployed utility superintendent from the 22nd CES, McConnell AFB, Kan., searched online for a Turkish supplier who could deliver a packaged plant capable of servicing almost 3,000 troops. No easy feat with minimal Internet service and no skills in Turkish.

An Army-contracted interpreter helped communicate the requirements and options. The toughest part was getting the seven tractor-trailer–sized units across the Turkish border, where traffic was backed up for miles.

A local contractor placed the necessary 40'x 70'x 24"concrete pad, with oversight by MSgt Marshal Townsend, a structures superintendent deployed from the 22nd CES. "Prime BEEFers don't usually get to do this type of construction, especially this early in a beddown," MSgt Townsend said.

TSgt John Heisner from the 37th CES, Lackland AFB, Texas, went to Istanbul for training and became the "resident expert" for the system. According to him, many sizes are available, beginning with a 600-person-capable unit..

For just $270,000 we went from slit latrines to an aerobic waste treatment plant in 120 days and called it the "luck of Kirkuk" that it all fell in to place so quickly. Our "out-of-the-box" approach to solving problems of both gray water and sewage disposal for a tent city removed the need for a sewage lagoon, which reduced land requirements. More importantly, it eliminated force protection issues related to taking sewage off base, which is done at most bases in this area of responsibility.

Hill AFB's Landfill-to-Energy Project Is DoD First

Lt Col Mark Kramer
75 CEG/CC
Hill AFB, Utah

Hill AFB recently entered into a 20-year Energy Savings Performance contract with Exelon Federal Services Group for the first Air Force landfill-gas-to-energy project. This is also the first Department of Defense implementation of the Department of Energy's Biomass and Alternative Methane Fuel program.

Using landfill gas from nearby Davis County Landfill, this project is designed to provide the base with a guaranteed supply of low-cost electricity from a renewable resource and give it protection against rising costs. Hill's Energy Management Team, DOE, Exelon, Utah State Energy Office and Davis County developed the design and financial details that enabled the project to move forward in less than six months.

Methane gas will be used to generate 1.2 megawatts-per-hour of reliable energy that will be independent from the local grid system. There are several financial benefits from the project:

1. No up-front capital costs to the Air Force
2. Reportable energy consumption reduced by 3 percent
3. Approximately $600,000 annual savings in energy costs, which will more than pay for the project over the life of the contract

The environmental benefits are also significant. The base will use less coal-produced power, saving more than 75,000 tons of coal annually. This will result in annual air emissions of nitrous oxide, carbon monoxide and sulfur dioxide being reduced by 5.5 tons, 4.8 tons and 19.7 tons, respectively.

New Paver Put To Good Use

SMSgt Jerry Lewis
15th CES/CEOR

After taking advantage of the Air Force's Productivity Enhancing Capital Investment (PECI) program to purchase a new paving machine, engineers from the 15th Civil Engineer Squadron's Heavy Repair Element put it to use in a project with dual purposes: meeting security requirements and providing more parking.

Many parking spaces on Hickam AFB were eliminated to meet recommended anti-terrorism/force stand-off distances of up to 25 meters. On such a small base anticipating a population growth from the C-17 beddown mission in FY06, improved parking was a primary concern, so Pavements and Equipment operators from the 15th CES Heavy Repair Element undertook two main projects: converting an open field into a new, functional parking lot, and then repairing an existing parking lot.

Creating the new parking lot meant demolishing a dilapidated concrete basketball court, removing 1,800 tons of topsoil and building the construction site up in lifts with more than 2,500 tons of recycled base course. The team preserved a huge 60-year-old Banyan tree by hand-forming the entire curb and gutter around it. Ninety days after construction began, the team placed 900 tons of asphalt in a single 14-hour day. After 4,263 man-hours and $366.5K in materials, the base had a new lot with 111 parking spaces.

The troops then began repair efforts to the adjacent parking lot, removing failed pavement and preparing the base for new asphalt. Over 1,000 feet of new curb was installed, and topsoil recycled from the first project was used to beautify areas around affected facilities and match the existing landscape. After just 90 days of preparatory repair efforts, the engineers placed more than 1,000 tons of new asphalt in a 16-hour day to complete the project.

SSgt Brian Lawrence, SSgt Greg Cahill, and SSgt Chad Lepley of the 15th CES lay down hot asphalt on a parking lot at Hickam AFB, Hawaii. Used on several projects, the paving machine has saved the base over $700,000. (photo courtesy 15th CES)

While many of the 15th CES team members were deployed as part of AEF Blue during the construction, SSgt Lepley and his 30-person team worked extra hard to meet the challenges created by decreased manpower. "We love this," said SSgt Lepley. "There is nothing better than being out here seeing the final product, no matter how many hours we work."

SMSgt Jerry Lewis is the Heavy Repair Chief for the 15th CES, Hickam AFB, Hawaii.

Productivity Enhancing Capital Investment Program

The Air Force Productivity Enhancing Capital Investment (PECI) program has two types of capital investment funds: the Fast Payback Capital Investment Fund, or FASCAP, (projects ≤$200,000; payback ≤2 yrs) and the Productivity Investment Fund, or PIF (projects >$200,000; payback <4yrs). Using PECI allowed PACAF to leverage limited manpower and funding to work "smarter" and complete a range of productivity improvements.

For general information, see the AF PECI website at https://www.dp.hq.af.mil/dpm/peci/or go to the PACAF/CEOO website for examples of AF Form 2288s for CE projects: https://www.hqpacaf.af.mil/ce/ceoindx/ceoo/PECI/pacaf_peci_websites.htm. — *CMSgt Troy Wiitala, HQ PACAF*

A Well-Formed Idea

Capt Robert Baran
MSgt Larry Lenneman
819th RHS

ICFs speed the construction process

The 819th RED HORSE Squadron recently deployed to Ellsworth AFB, S.D. to raise the walls of the new Base Information Transfer Center (BITC) facility using a product that made their task go faster and more efficiently—insulated concrete forms (ICFs).

The BITC handles the delivery and sorting of all official mail on base, and was recently relocated to a stand-alone facility away from high-population areas for security reasons.

The new facility has two features which are firsts for the Air Force: a containment room with 12"-thick concrete walls for suspected explosive devices, and an emergency shower with a 400-gallon, rubber-lined containment pit for suspected chemical or biological agents.

Initial design of the building called for two courses of 8" x 8" x 16" concrete masonry units (CMUs) to be installed next to each other, with a 4" air cavity between them to act as an air barrier/insulator. To expedite construction, the 819th RHS got approval to use ICFs in place of the inner course of CMUs.

An ICF consists of two separate sheets of polystyrene foam, varying in thickness from 1½" up to 2½", which are held together by internal webbing made of either plastic or steel. The webbing serves three purposes: it holds the foam sheets apart at a desired thickness (4"-24"); it helps vibrate the concrete during pouring, so that air is reduced and the aggregate consolidates and settles more uniformly; and it extends to the faces of the blocks at evenly spaced points, providing anchors for interior and exterior wall finishes.

For the BITC, two types of block-form (flat wall) ICFs were used; they differed primarily by type of locking system for assembly and by internal webbing.

The interlocking ICF was chosen for the 12"-thick concrete walls of the interior containment room. This hexagonal ICF fits together like Lego™ building blocks. Workers unpacked the individual sheets; clipped the plastic webbing together to the desired width; and then slid the webbing into embedded cleats on the inside walls of the polystyrene sheets. This particular ICF can be set to any desired

Above right: Windows were framed into this exterior wall. Below right: ICFs were sometimes formed off site and carried into position. (photos courtesy 819th RHS) width by changing the size of webbing in the form, giving designers greater flexibility in concrete wall dimensions.

The tongue-and-groove ICF was chosen for the main structure of the building because its connection method was found to be more secure; it also had 18-gauge steel webbing on 6" centers, giving greater flexibility for mounting interior/exterior finishes. This type of ICF came pre-assembled in blocks that measured 24" x 48" with an interior opening of 8" for concrete.

Both systems are easy to cut and shape with hand or power saws. As the ICFs are stacked, window and door openings are cut into place using a block-out system: a plastic runner wraps around the ICF and can be cut and shaped to match the opening. Once in place, the system is braced with wood before pouring concrete. The plastic runner acts as an anchoring point when installing the window or doorframes. Electrical and utility lines can be installed flush by grooving out the foam behind the interior finish.

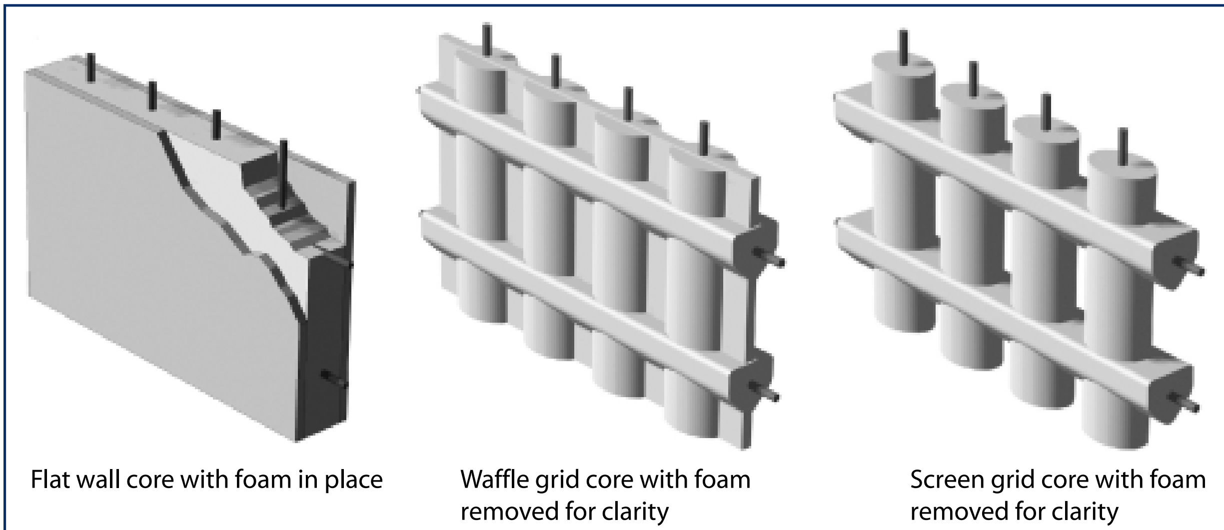
The foam acts as an insulation and acoustical barrier. The 5" of foam in the ICFs used at Ellsworth will give an insulating value of R-45 or better, making it significantly quieter, considering the proximity to the airfield.

The unique feature of using ICFs for vertical concrete forming is that they *are* the forms and they stay in place after pouring. In regular vertical concrete forming, crews have to erect the forms and brace them, pour the concrete, then remove and clean the forms. Crews still have to brace the ICFs but from one side only instead of both, and the bracing system comes with many attachments such as scaffolding brackets and adjustable turnbuckles to keep walls plumb.

The 819th RHS team erected and braced a 44' x 70' x 10' ICF structure in just four days, including reinforcement steel placed horizontally every 2' and vertically every 4'. Because of the speed at which the inner bearing walls were set using the ICF construction method, it became just a matter of setting the trusses, the roof decking, and the metal roofing system, which meant multiple crews could work inside and outside simultaneously.

Finishing of the BITC was similar to other concrete projects. J-bolts were set into the concrete to secure the top plates, providing a nailing surface for the roof trusses and a transition to the structural concrete wall, which in turn bears the weight of the entire roof assembly. The integrated webbing of the ICFs takes the place of internal stick frame construction for attaching the interior finish. A block veneer anchoring system was attached directly to the ICFs. These anchors used hinged clips, which were set into the mortar joints of the exterior block, helping space the 2" air cavity designed into the facility.

Capt Robert Baran is Project Engineer and MSgt Larry Lenneman is Project Manager, 819th RHS, Malmstrom AFB, Mont.



courtesy of the Portland Cement Association, 2001

Left: The diagram illustrates types of walls formed by different ICFs. Flat walls are made with block ICFs (uses the most concrete). Grid walls are made with plank ICFs. The screen grid wall is sometimes known as 'post and beam,' and is made with panel ICFs (uses the least concrete).

Selected for Promotion

Colonel

Allen J. Benefield
Timothy L. Boone
William S. Bradshaw
Harry Briesmaster III
Nicholas L. Desport
John L. Eunice III
Robert L. Fant
Anthony A. Foti
Donald L. Gleason
Michael W. Hutchison
Dennis L. Jasinski
Sally D. Macon
Michael K. Myers
Mohsen Parhizkar
Edward Piekarczyk
Thomas D. Quasney
Jon A. Roop
Michael J. Smietana
Christopher J. Thelen
Keith F. Yaktus
Robert E. Moriarty

Major

Aaron D. Altwies
Brian D. Benter
Oscar I. Betancourt
Daniel A. Black
Chad B. Bondurant
Kyle D. Brown
Patrick J. Carley
Lance D. Clark
Thomas L. Defazio, Jr.
Mark S. Donnithorne
Phillip R. Donovan
Marc L. Douvia
Kevin W. Dunlop
Mathew T. Duston
John G. Eggers
Derek R. Ferland
Crissie D. Fitzgerald
Kirk A. Folk
Christopher K. Fuller
Celiann M. Gonzalez
Andrea R. Griffin
John A. Hanrahan
Colby D. Hoefar
Michael J. Johnson
Donald A. Jones
Dwight F. Junio
William H. Kale
Dee J. Katzer
Juan A. Kays
Matthew D. Kovich
Brian W. Macdonald
George J. Matusak
Sarah F. Maynard
Steven W. McCollum
Francis J. Mondo, Jr
Andre F. Moore
Lynn R. Moriarty
John D. Norton
James R. Palmer
Gregory T. Reich
David A. Reynolds
Jose L. Rivera-Hernandez
Jerry D. Sanchez
John D. Schuliger
Paul T. Silas
Michael R. Staples
Joseph M. Taylor
Douglas F. Tippet
Lance F. Turner
Troy M. Twesme
Terrence L. Walter
David M. Warnke
Jay A. Welborn
Jeffrey J. White
Kevin L. Williams
Chaz M. Williamson

Chief Master Sergeant

Patrick D. Abbott
Andrew C. Babich
Stacy G. Ballew
David A. Cassino
Gary M. Coumbs
Cevin R. Cox
William E. Ferenc
Keith D. Finney
Timothy D. Hulme
Lawrence B. January
David W. Linde
John E. Little
Donald H. Nelson
Rian S. Peaceman
Dan Red Cloud
Paul R. Rushin
Daniel I. Sacks
Michael A. Schreck
Jeffrey C. Slocum
Frazier S.J. Speaks
Joseph R. Thompson
Mark A. Campbell
Ivan L. Godwin
Eric W. Mortensen
Todd W. Nielsen
Kevin N. Remedies
Edward J. Rouvet
Robert R. Inman
James M. Petree
Steven J. Reed
Marita S. Woods

Technical Publications

Available under the "Publications and Policy" link at:
http://www.afcesa.af.mil/library/index.asp

ETL 03-4, *Alternate Fuels E85 and B20*

ETL 03-5, *Converting Civil Engineering Radio Frequency Devices to Narrowband Technology*

ETL 04-6, *Inspection of Drainage Systems*

ETL 04-8, *Stone Matrix Asphalt (SMA) for Air Force Pavements*

Recent A-Grams

Six A-Grams were released in the first quarter of 2004. Visit the AFCESA Web site (http://www.afcesa.af.mil/library/ , under the Periodicals link).

04-01 Full Spectrum Threat Response (FSTR) Web Site Now On AF Portal
04-02 Ricin: Background Info, References & Resources
04-03 Deployable Power Generation & Distribution System MEP 810A Training Opportunities
04-04 Engineering Prime BEEF Equipment and Training (1 of 2)
04-05 Engineering Prime BEEF Equipment and Training (2 of 2)
04-06 AF WMD Installation Training & Exercise Program

Officer Receives National Engineering Honor

Capt Rockie K. Wilson *(photo at right, center)* has been named the Air Force representative for National Engineers Week's New Faces in Engineering recognition program.

Captain Wilson is the engineering flight commander for the 374th Civil Engineer Squadron, Yokota AB, Japan. He received the honor in part because of his role in helping implement a $130 million annual construction program and a $647 million host-nation–funded program at Yokota AB, Japan. He also helped manage a $260 million program to replace four maintenance hangars on the base through host-nation construction funding.

Eleven other engineers from industry, government and the military were also nominated for the honor. Nominees were honored during National Engineer's Week, Feb. 22-28, and were featured in *USA Today* that week.

New Faces in Engineering is sponsored by the National Engineers Week Committee and corporate affiliates.

2003 Air Force

The 2003 Air Force Engineer Awards were presented Feb. 24, during National Engineers Week, at the 42nd annual Civil Engineer Awards Luncheon, Bolling AFB, Washington, D.C. The Balchen/ Post winner will be recognized at the 38th annual International Aviation Snow Symposium, May 8-12, in Buffalo, N.Y. Winners are shown here in boldface.

Outstanding Civil Engineer Unit Award and The Society of American Military Engineers Curtin Award

Large Unit

52nd CES, Spangdahlem AB, Germany (USAFE)

99th CES, Nellis AFB, Nev. (ACC)

Small Unit

27th CES, Cannon AFB, N.M. (ACC)

31th CES, Aviano AB, Italy (USAFE)

Air Reserve Component

11th CES, Sioux Falls, S.D. (ANG)

439th CES, Chipcopee, Mass. (AFRC)

Brigadier General Michael A. McAuliffe Award (Housing Flight)

3rd CES, Elmendorf AFB, Alaska (PACAF)

9th CES, Beale AFB, Calif. (ACC)

Major General Robert C. Thompson Award (Resources Flight)

3rd CES, Elmendorf AFB, Alaska (PACAF)

775th CES, Hill AFB, Utah (AFMC)

Brigadier General Archie S. Mayes Award (Engineering Flight)

92nd CES, Fairchild AFB, Wash. (AMC)

65th CES, Lajes Field, Azores (USAFE)

Major General Clifton D. Wright Award (Operations Flight)

7th CES, Dyess AFB, Texas (ACC)

786th CES, Ramstein AB, Germany (USAFE)

Chief Master Sergeant Ralph E. Sanborn Award (Fire Protection Flight)

1st CES, Langley AFB, Va. (ACC)

30th CES, Vandenberg AFB, Calif. (AFSPC)

Senior Master Sergeant Gerald J. Stryzak Award (Explosive Ordnance Disposal Flight)

43rd CES, Pope AFB, N.C. (AMC)

56th CES, Luke AFB, Ariz. (AETC)

Colonel Frederick J. Riemer Award (Readiness Flight)

Active Duty Category

8th CES, Kunsan AB, Republic of Korea (PACAF)

52nd CES, Spangdahlem AB, Germany (USAFE)

Air Reserve Command Category

114th CES, Sioux Falls, S.D. (ANG)

913th CES, Willow Grove ARS, Pa. (AFRC)

Environmental Flight Award

45th CES, Patrick AFB, Fla. (AFSPC)

325th CES, Tyndall AFB, Fla. (AETC)

Society Of American Military Engineers Newman Medal (Officer Category)

Col Brian L. Miller, HQ AMC, Scott AFB, Ill. (AMC)

Lt Col Donald L. Gleason, HQ USAFE, Ramstein AB, Germany (USAFE)

Society Of American Military Engineers Goddard Medal (Enlisted Category)

Active Duty

MSgt Stanley R. Gilmore, 52nd CES, Spangdahlem AB, Germany (USAFE)

SMSgt Andrew C. Babick, 341st CES, Malmstrom AFB, Mont. (AFSPC)

Air Force Reserve

SMSgt Ronald W. Woodward, 916th CES, Seymour Johnson AFB, N.C. (AFRC)

MSgt Pamela J. Stokes, HQ AFCESA, Tyndall AFB, Fla. (AFCESA)

Air National Guard

SMSgt Lawrence C. Jones, 179th CES, Mansfield-Lahm ANGB, Mansfield, Ohio – co-winner (ANG)

SMSgt Gerard A. Tembrock, 136th CES, Carswell NASJRB, Fort Worth, TX – co-winner (ANG)

CMSgt John M. Kuykendall, HQ AMC, Scott AFB, Ill. (AMC)

Major General Joseph A. Ahearn Enlisted Leadership Award

CMSgt Wayne E. Quattrone II, 314th CES, Little Rock AFB, Ark. (AFSPC)

CMSgt Rodney E. Coleman, 21st CES, Peterson AFB, Colo. (AETC)

The Harry P. Rietman Award (Senior Civilian Manager)

Mr. Ronald R. Daniels, 92nd CES, Fairchild AFB, Wash. (AMC)

Mr. Robert M. Schultz, 775th CES, Hill AFB, Utah (AFMC)

Major General Augustus M. Minton Award (Outstanding *Air Force Civil Engineer* magazine article)

Capt Ryan J. Novotny, 819th RHS, Malmstrom AFB, Mont. (AFSPC)

Maj Anthony J. Davit, 56th CES, Luke AFB, Ariz. (AETC)

Civil Engineer Awards

Major General William D. Gilbert Award

Officer

Maj Aaron Young, HQ USAFE, Ramstein AB, Germany (USAFE)

Maj Charles D. Kuhl, HQ AETC, Randolph AFB, Texas (AETC)

Enlisted

MSgt Danny Pelkey, HQ ANG, Andrews AFB, Md. (ANG)

SMSgt Samuel C. Hazzard, HQ AFSPC, Peterson AFB, Colo. (AFSPC)

Civilian

Mr. John F. Faulkner, HQ AFSPC, Peterson AFB, Colo. (AFSPC)

Mr. Juan A. Perez, HQ AFMC, Wright Patterson AFB, Ohio (AFMC)

Major General Eugene A. Lupia Award

Military Manager

Capt Christopher K. Fuller, 18th CES, Kadena AB, Japan (PACAF)

Capt William H. Kale III, 819th RHS, Malmstrom AFB, Mont. (AFSPC)

Military Technician

TSgt Joseph R. Jenkins, 35th CES, Misawa AB, Japan (PACAF)

SSgt John F. Dziok, 43rd CES, Pope AFB, N.C. (AMC)

Chief Master Sergeant Larry R. Daniels Award (Outstanding Military Superintendent)

MSgt Daniel B. Jessup, 16th CES, Hurlburt Field, Fla. (AFSOC)

SMSgt Timothy D. Hulme, 823rd RHS, Hurlburt Field, Fla. (ACC)

Outstanding Civil Engineer Senior Military Manager

Lt Col David W. Funk, HQ PACAF, Hickam AFB, Hawaii (PACAF)

Col Thurlow E. Crummett, 819th RHS, Malmstrom AFB, Mont. (AFSPC)

Outstanding Civil Engineer Civilian Manager

Mr. Paul Degner, 3rd CES, Elmendorf AFB, Alaska (PACAF)

Mr. John R. Fox, 21st CES, Peterson AFB, Colo. (AFSPC)

Outstanding Civil Engineer Civilian Supervisor

Mr. Paul Wagner, 86th CES, Ramstein AB, Germany (USAFE)

Ms. Lisa M. Mata, 9th CES, Beale AFB, Calif. (ACC)

Outstanding Civil Engineer Civilian Technician

Mr. Antonio A. Avila, 65th CES, Lajes Field, Azores (USAFE)

Mr. Billy D. Clemons, 347th CES, Moody AFB, Ga. (AFSOC)

Outstanding Civil Engineer (Air Reserve component)

Officer Manager

Lt Col Anthony Desimone, HQ USAFE, Ramstein AB, Germany (USAFE)

Maj Jeffery S. Barnett, 810th CEF, NASJRB, Ft. Worth, Texas (AFRC)

Senior Non-Commissioned Officer Manager

CMSgt Jimmy M. Sinks, 314th CES, Little Rock AFB, Ark. (AETC)

SMSgt Scott H. Duncan, 21st CES, Peterson AFB, Colo. (AFSPC)

Non-Commissioned Officer Manager

TSgt Stephen J. Burns, HQ AFCESA, Tyndall AFB, Fla. (AFCESA)

SSgt Steven Laporte, 366th CES, Mt. Home AFB, Idaho (ACC)

Outstanding Community Planner

Mr. Carl T. Hoffman, 16th CES, Hurlburt Field, Fla. (AFSOC)

Ms. Denise Webb, 99th CES, Nellis AFB, Nev. (ACC)

Balchen/Post Award (Snow And Ice Removal)

305th CES, McGuire AFB, N.J. (AMC)

341st CES, Malmstrom AFB, Mont. (AFSPC)

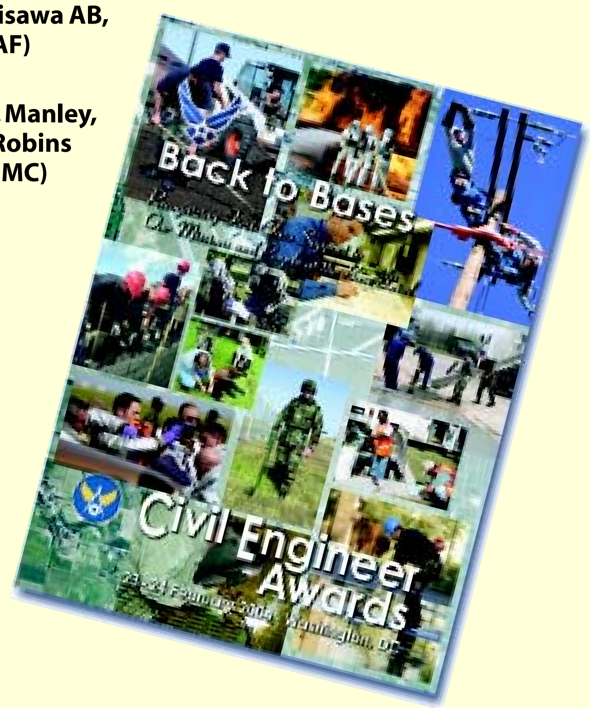
2003 Air Force National Society Of Professional Engineers Federal Engineer Of The Year

Military

Maj Monte S. Harner, 35th CES, Misawa AB, Japan (PACAF)

Civilian

Ms. Nancy J. Manley, 778th CES, Robins AFB, Ga. (AFMC)



Air Force Energy, Water Managers Earn DOE Awards

Saving energy and money while helping the environment earned the Air Force several Federal Energy and Water Management Awards this year. The awards, sponsored by the U.S. Department of Energy's (DOE) Federal Energy Management Program (FEMP), are given annually to recognize outstanding contributions toward increased energy efficiency, renewable energy and water conservation within the federal sector. The Air Force winners in each category are listed below.

2003 Federal Energy and Water Management Awards (six winners)

Water Conservation, Small Group
The Water Conservation Group, 7th Bomb Wing, Dyess AFB, Texas. Group members include Mr. Tom Denslow, Mr. Dwain Wadlington, Mr. Ron Miller and Ms. Deb McGrath.

Alternative Finance, Individual
Capt Harry W. Jackson, Deputy Chief of the 47th Civil Engineer Operations Flight, Laughlin AFB, Texas

Renewable Energy, Small Group
The Renewable Energy Purchase Group, Edwards AFB, Calif. Group members include Mr. Paul Weaver, Mr. Mike Keeling, and Ms. Amy Hoffer from Edwards, along with Mr. Michael Santoro and Maj Jeff Renshaw from Headquarters Air Force Civil Engineer Support Agency (HQ AFCESA), Tyndall AFB, Fla.

Energy Efficiency/Energy Management, Individual
Mr. George Lopez, Base Energy Manager from the 89th Civil Engineer Squadron, Andrews AFB, Md.
Water Conservation, Organization
The 15th CES, Hickam AFB, Hawaii

Water Conservation, Individual
Mr. Michael X. Clawson, Water Manager at HQ AFCESA, Tyndall AFB, Fla.

2003 Federal Energy Saver Showcase Award (six winners)

To promote wise energy and water use throughout the federal government, agencies are showcasing cost-effective technologies in their facilities that enhance energy efficiency, water conservation, and renewable energy use. Since 1995, FEMP has recognized more than 100 facilities across the country as Federal Energy Saver Showcases. 2003 Air Force base winners (with Major Command) include Dyess AFB, Texas (ACC), Laughlin AFB, Texas (AETC), Fairchild AFB, Wash. (AMC), Grand Forks AFB, N.D. (AMC), McConnell AFB, Kan. (AMC) and Travis AFB, Calif. (AMC).

2003 Presidential Award For Leadership In Federal Energy Management

The Air Force winner of this DOE award is the Energy Project Team from the 7th BW, Dyess AFB, Texas; HQ ACC, Langley AFB, Va.; and HQ AFCESA, Tyndall AFB, Fla. They were chosen from nominees using the criteria of implementation, institutionalization, outreach, and results. Team members include Lt Col Darren Daniels, Mr. Tom Denslow, Ms. Deb McGrath, Mr. Ron Miller, and Mr. Dwain Wadlington from Dyess; Mr. Willis Barrow and Mr. Steve Dumont from HQ ACC; and Mr. Tim Adams, Mr. Michael Santoro, and Ms. Lynda Sisk from HQ AFCESA. The awardees were honored in a ceremony at the White House on Oct. 30, 2003.
This award was established to recognize outstanding energy management for contributions to successful federal energy management.

USAF Spring 2004 "You Have The Power" Energy Champion

Using a set of modified DOE FEMP criteria, the Air Force selected Capt Harry W. Jackson of Laughlin AFB, Texas, as their awardee/nominee. DOE FEMP recognizes the "You Have the Power" Energy Champion awardees from federal agencies and DOD branches for their outstanding achievements in the conservation/efficient use of energy. A poster of the USAF Energy Champion was published and distributed by DOE FEMP to major commands and bases for April's "Earth Day" and was posted on the FEMP Web site.

For more information on the DOE FEMP awards program, contact Pat Mumme, Air Force Facility Energy Program Manager, at HQ AFCESA: pat.mumme@tyndall.af.mil, DSN 523-6361 or commercial 850-283-6361.

Mr. Kevin Wahlstrom, HQ AFCESA Energy Awareness, Tyndall AFB, Fla.

Alaska Recognizes Eielson Employees

Ms. Hobbs and Mr. Nason review plans for Eielson's 2004 Repair Lagoon Liner project with SSgt Edward Fitzgerald. (photo by A1C Rachel E. Walters)

The Alaska Water and Wastewater Management Association recently recognized two employees of Eielson AFB's 354th Civil Engineer Squadron. Ms. Terri Hobbs, Wastewater Treatment Plant Operator, was named the Large Wastewater Operator of the Year and Mr. Malcolm Nason, Water Systems Superintendent, was named the Manager of the Year. One of the few remaining Air Force-owned and -operated utilities, the base's water and wastewater works was named the Large Water System and Large Wastewater System of the Year in both 2002 and 2003. The wastewater treatment plant also received an EPA national Clean Water Act Recognition Award in 2003 for Operations and Maintenance Excellence in the Large, Non-Discharging category.

"Spring Cleaning" Heats Up for 6th CES

A raging fire recently decimated 30 acres of forest in 12 hours at MacDill AFB, Fla. The good news is that was the whole idea.

"The purpose of the prescribed burn was two-fold," said Jeff Sprinkmann, a contractor with the 6th Civil Engineer Squadron's environmental flight. "First and foremost it reduced the possible dangers that a wildfire can produce. Secondly, fire is essential in maintaining the balance between the vines and undergrowth of the forest." Many plants only release their seeds when the high temperatures of a fire trigger them.

Minimizing smoke received top priority during planning, but Mother Nature had other plans; the entire on-base campground was shrouded in smoke for most of the day.

In preparation for the burn, the 6th CES cleared a firebreak to the south, providing extra protection to the campground. Lewis Lake and Marina Bay Drive provided breaks to the north and west, and a mangrove canal provided a break to the east. Squadron firefighters and staff were onsite until 11 p.m., when only tiny smoldering piles of ash were left where there had once been abundant growth.

In four or five years, most of the vegetation, which grows rapidly in the humid, subtropical climate of Florida, will be back just as thick.

Text and photo by SSgt Randy Redman, 6th Air Mobility Wing Public Affairs, MacDill AFB, Fla.

Jason Kirkpatrick, a contractor with the 6th CES, ensures that the prescribed burn is under control.

AT/FP Web Site Unveiled

Lt Col Craig Rutland
HQ AFCESA
Tyndall AFB, Fla.

The Force Protection program will soon unveil its latest tool for engineers and force protection specialists. The Anti-Terrorism/Force Protection Information/Technology Web site will provide information focusing on planning, design, and construction for security and protection of DoD facilities.

Content includes design and construction standards and criteria; expert guidance; test data; DoD points of contact with expertise in each technology area; searchable databases; design support tools; worked examples of key problems; and computer-based training. Some areas contain detailed guidance on design principles, requirements, and equations. Vendors and manufacturers can post information about products they offer in each technology area. Designers can examine specifications; installation and maintenance requirements; product costs; and performance and test data.

The Air Force Force Protection Battlelab and the Naval Facilities Engineer Command (NAVFAC) are jointly developing the site. The Defense Technical Information Center will host it. Security Engineering Working Group, U.S. Cost, Applied Research Associates, AFCESA and the Defense Threat Reduction Agency (DTRA) all provide support. Work on the site and its content will continue after it's initial public opening. AFCESA, NAVFAC, U.S. Army Corps of Engineers, and DTRA continue to develop computer-based training modules and content.

Located at https://sewg.dtic.mil, public access to the site is planned for August 2004. Consult the AFCESA Web site at http://www.afcesa.af.mil for any late-breaking developments.

For more information , e-mail the author at craig.rutland@tyndall.af.mil.

Fistful of ACES

Mr. Jeff Coleman
HQ AFCESA
Tyndall AFB, Fla.

The Automated Civil Engineer System (ACES) provides direct Civil Engineer information management to more than 200 active Air Force units, the Air National Guard, and the Air Force Reserve. Accurate real-time work management information, combined with financial information, supports the customer in all operational environments.

ACES applications are under development at Maxwell-Gunter AFB, Ala., and Web-based training is under development at HQ AFCESA, Tyndall AFB, Fla. Visit http://aces.afcesa.af.mil for the currently available training: Personnel and Readiness, Real Property, and Program Management. The Housing module's training should be complete by August 2004. Additional training will include the Explosive Ordnance Disposal, Furnishings Management Office, and Fire Department modules.

Based on actual tasks, the training teaches users how to do their jobs, rather than just explaining the components of the program. Users aren't forced to progress from one task to another; they can access tasks and subtasks as needed. This flexibility makes the training useful for both initial learning and review. Bookmarks and colored links help users navigate their way through the training.

Narration and Flash animations let the user focus on the task demonstration rather than having to read through explanations during the activity. Media controls let the user play, pause, stop, and replay the animations and the audio. Transcripts of the audio are also available.

Lesson overviews, learning objectives, and summaries assist in learning and retention. Other resources include a glossary, a frequently asked questions page, and an e-mail link to send comments to AFCESA. Currently, practice exercises and quizzes are being developed to help reinforce and evaluate what the user has learned.

Contact Dr. Viki Bowen at 850-283-6381 (DSN 523-6381) for more information.

AFIT

Wright-Patterson AFB OH

Course No.	Title	Off.	Start Dates	Grad Dates
ENG 520	Comprehensive Planning Development	04A/04B	19-Jul/02-Aug	30-Jul/06-Aug
ENG 440 (S)	Roofing Design & Mgmt	04A	23-Aug	27-Aug
ENG 555 (S)	Airfield Pavement Construction Inspection	04B	30-Aug	03-Sep
ENV 020 (S)	Environmental Compliance Assessment	04C	26-Jul	29-Jul
ENV 220 (S)	Unit Environmental Coordinator	04C	13-Sep	17-Sep
ENV 222 (S)	Hazardous Material Mgmt. Process (HMMP)	04C	03-Aug	05-Aug
ENV 419	Environmental Planning, Prog. & Budgeting	04C	20-Jul	22-Jul
MGT 101	Intro to the BCE Organization	04C	06-Jul	28-Aug
MGT 102	Intro to the BCE Organization/Reserves	04B	23-Aug	03-Sep
MGT 421 (S)	Contracting for Civil Engineering	04B	02-Aug	13-Aug
MGT 422 (S)	Project Management	04A	19-Jul	23-Jul
MGT 424 (S)	Real Property Management	04A	26-Jul	30-Jul
MGT 484	Reserve Forces Air Base Combat Eng.	04B	07-Sep	17-Sep
MGT 570	Civil Engineer Superintendent	04C/04D	19-Jul/23 Aug	30-Jul/03-Sep
MGT 580	CE Advanced	04B	13-Sep	17-Sep
Seminar (Web)	Stormwater	04C	01-Jul	01-Jul
Seminar (S)	Hazardous Material Management	04C	03-Aug	03-Aug
Seminar (Web)	HW Accum Site/Init Pt Mgmt	04C	19-Aug	19-Aug

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

366th Training Squadron

Sheppard AFB TX

Course No.	Title	Start Dates	End Dates
J3ARR3E453-002	Pest Management Re-Certification	12-Jul/09-Aug	16-Jul/13-Aug
J3AZR3E051-003	Cathodic Protection	18-Aug	31-Aug
J3AZR3E051-007	Airfield Lighting	17-Aug	26-Aug
J3AZR3E051-008	Electrical Distribution Sys. Maint.	30-Jul	26-Aug
J3AZR3E051-010	Bare Base Electrical Systems	12-Jul	23-Jul
J3AZR3E051-012	Fire Alarm Systems	23-Jul/18-Aug	17-Aug/13-Sep
J3AZR3E051-013	Intrusion Detection Systems (IDS)	18-Aug	07-Sep
J3AZR3E052-013	CE Advanced Electronics	12-Jul/16-Aug/22-Sep	06-Aug/13-Sep/20-Oct
J3AZR3E071-001	CE Adv. Elec. Troubleshooting	19-Jul/16-Aug	13-Aug/13-Sep
J3AZR3E072-002	Troubleshoot. Elec. Power Gen. Eqp.	14-Jul/11-Aug	04-Aug/01-Sep
J3AZR3E072-113	Bare Base Power Generation	19-Jul/14-Sep	12-Aug/08-Oct
J3AZR3E151-013	HVAC/R Controls Systems	19-Jul/08-Sep	20-Aug/13-Oct
J3AZR3E151-014	Direct Expansion Systems	16-Jul/02-Aug/08-Sep	17-Aug/01-Sep/08-Oct
J3AZR3E151-015	Indirect Expansion Systems	18-Aug/08-Sep	07-Sep/27-Sep
J3AZR3E451-004	Fire Suppression Systems Maint.	19-Jul/16-Aug/13-Sep	06-Aug/03-Sep/01-Oct
J3AZR3E471-101	Bare Base Water Purification & Distr. Sys.	07-Jul/18-Aug/15-Sep	16-Jul/27-Aug/24-Sep
J3AZR3E472-000	Liq. Fuels Storage Tank Entry Spvsr.	30-Aug/13-Sep	10-Sep/23-Sep
J3AZR3E472-001	Liq. Fuels Sys. Maintenance Tech.	02-Aug	13-Aug

Ft. Leonard Wood MO

J3AZP3E571-003	Engineering Design	16-Aug	27-Aug
J3AZP3E571-004	Construction Surveying	19-Jul/02-Aug/13-Sep	30-Jul/13-Aug/24-Sep
J3AZP3E571-005	Construction Materials Testing	06-Jul/30-Aug	16-Jul/10-Sep
J3AZP3E971-003	Advanced Readiness	26-Jul/16-Aug	30-Jul/20-Aug
J3AZP3E971-005	NBC Cell Operations	12-Jul/23-Aug/13-Sep	16-Jul/27-Aug/17-Sep

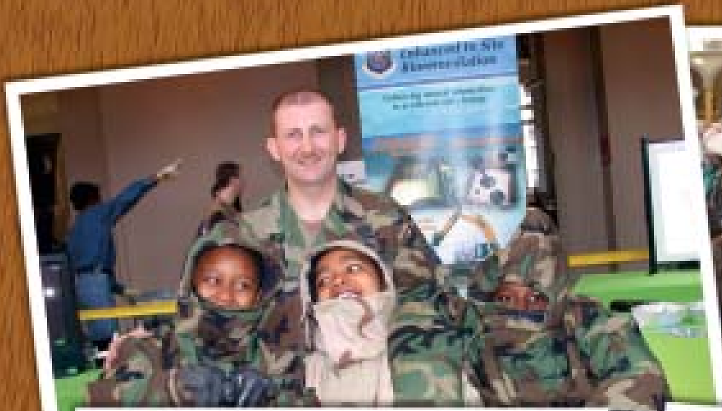
Indian Head MD

J5AZN3E871-002	Advanced EOD Course	14-Jul/04-Aug	25-Jul/15-Aug

Gulfport MS

J3AZP3E351-001	Low Slope Maint. & Repair	23-Aug/13-Sep	02-Sep/23-Sep
J3AZP3E351-002	Fabrication Welded Pipe Joints	23-Aug	03-Sep
J3AZP3E351-003	Metals Layout Fab. & Welding	13-Jul/02-Aug/13-Sep	30-Jul/19-Aug/30-Sep

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



Answer Me This

Air Force civil engineers patiently answered "What does that do?" and many more questions during the annual Engineers' Week Family Day, Feb. 21, in Washington D.C.

Family Day, sponsored by the National Engineers' Week organization, introduces young people to engineering through interactive, engineer-themed games, activities and displays.

Dozens of private and government organizations took part, including the Air Force, which had four displays: fire prevention, explosive ordnance disposal, readiness and geotechnology. Air Force members spent almost eight hours answering loads of questions from the more than 8,500 people who attended this year's event.

"The number one question for us was, 'Are we using robots in Iraq?'" said CMSgt Julio Morelos, HQ AFCESA, Tyndall AFB, Fla.,who coordinated the Air Force EOD team's display, which included a remote-controlled robot.

The Air Force's display drew large numbers because participants could do more than just touch the gear; they could also try it on.

"Putting the stuff on gives another perspective for the kids," said SSgt Roger Dupuis, a firefighter with the 436th CES, Dover AFB, Del. "They get to see that it's not play equipment, it's real, and 'wow, it's really heavy.'"

By the time the event was over, the Air Force teams had been visited by most, if not all, of the attendees and had patiently answered the barrage of questions.

"I got tired of standing on my feet, but I loved answering questions about the career field," said MSgt Paul Kull, Det. 63, Air Armament Center, Indian Head, Md.

Yeah, but can he handle "Are we there yet?"

Photos and text by MSgt Michael A. Ward, HQ AFCESA/PA, Tyndall AFB, Fla.