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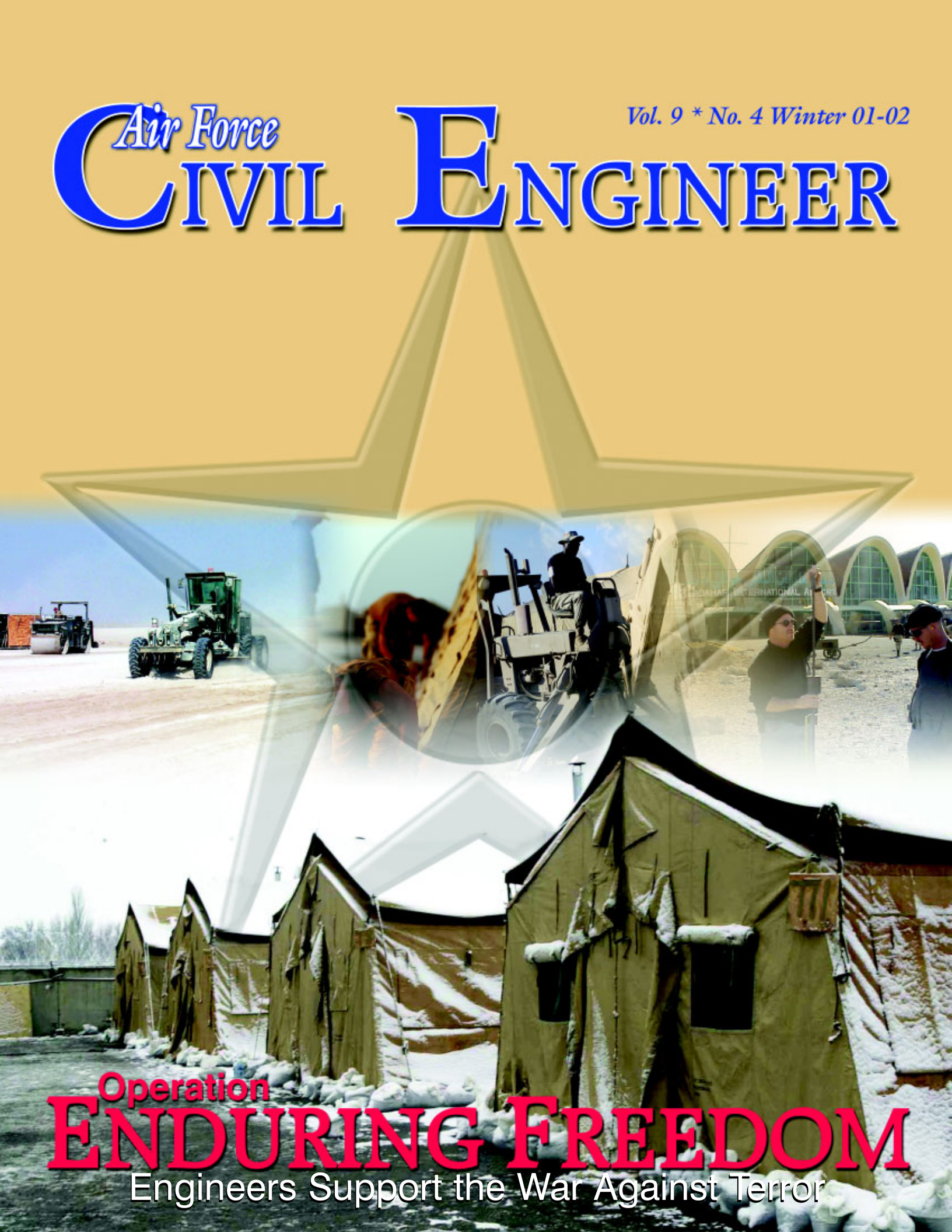


Operation ENDURING FREEDOM

Engineers Support the War Against Terror

Maj Gen Earnest O. Robbins II

FROM THE TOP

"I have unleashed a mighty military, and the mighty military of America is making us proud."
— President George W. Bush, Jan. 15, 2002

Air Force Civil Engineers — Serving Proudly

As our nation and the Air Force continue the war on terrorism, civil engineers are integral to success on many fronts. At home or deployed overseas, our CE troops are serving their country proudly, and we have plenty of success stories to tell.

First, there's the response of the CE emergency services folks. They have stepped up to an incredible new level of attention and carried the load — and they're still doing it. Our fire protection, explosive ordnance disposal and readiness personnel are on the front lines of a new kind of warfare everywhere they serve.

The 49th Materiel Maintenance Group has been assisting in force beddown in-theater since day one, deploying with their Harvest Falcon and Harvest Eagle kits. They've done a great job assisting Prime BEEF and RED HORSE troops, who have erected and maintained tent cities at multiple locations throughout the theater. Faced with a shortfall in Harvest kits, Air Force civil engineers were able to construct the Army's Force Provider despite having virtually no experience with those systems. We've provided deployed forces with water, electricity, shower and sanitary facilities, dining tents and other amenities so that they have a place to call home and can focus attention on their primary duties.

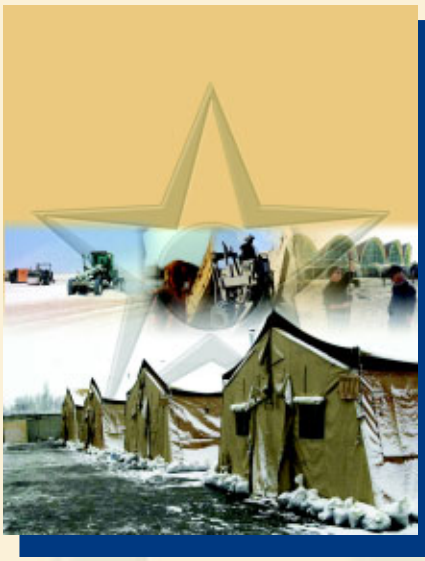
The Air Force Civil Engineer Support Agency's Airfield Pavements Evaluation Team was in the theater early assessing airfields' abilities to sustain contingency operations. Our GeoReach experts cranked up right away, as well. We combined their reports with the pavement team's to learn more about the places we might be going. This allowed us to do a better job predicting manpower and equipment requirements to bed down forces. At selected locations, civil engineers were called on to repair runways damaged during offensive operations and brought them back into operation.

We've experienced great success in the partnership between RED HORSE and the Air Force Contract Augmentation Program (AFCAP). The HORSE has been saddled with daunting construction challenges and has stepped up as always. AFCAP has been a force multiplier, sourcing commercial vehicles and equipment, purchasing supplies and construction materials on the local economy, transporting equipment and other commodities, and providing engineering assistance and top-notch planning support.

Tremendous Total Force support has been obvious. There are hundreds of Guardsmen and Reservists involved and almost all are volunteers. That speaks volumes about Total Force in CE. Others may do it well, but nobody does it better.

Finally, one of the hardest things we've had to do is continue with business as usual while addressing the additional workload that came with Operations Enduring Freedom and Noble Eagle. We've deployed more than 2,000 civil engineers for these operations, while we already had about 500 in theater as part of the standing force supporting Operations Northern and Southern Watch. Meanwhile, the day-to-day workload hasn't slacked off a bit. It's been a stressful time for all of us, but the ability of those back home to continue to support the daily mission while a huge part of our workforce is deployed speaks volumes about our pride and professionalism. I salute all of our CE family — officers, NCOs, airmen, civilians and contractors — who continue to make good things happen for the Air Force.

Features



On the cover ...
Civil engineers are at work throughout Southwest and South Central Asia in support of Operation ENDURING FREEDOM. **Story page 4.**

Departments

Please send story ideas, articles, photos, comments and suggestions to
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Civil Engineer Support to Operations NOBLE EAGLE and ENDURING FREEDOM

At WAR with Terrorism

by Lt Col Gregory A. Cummings
and Lt Col R. John Martin, P.E.
HQ USAF

Sept. 11, 2001 — another day that will live in infamy. More than 3,000 innocent people died in the attacks in New York, Washington DC and Pennsylvania. The terrorists got our attention. They woke up the "sleeping giant," brought our nation together, and focused our resolve on fighting and eliminating terrorism at the source.

The Department of Defense responded with operations on two fronts — one at home and the other anywhere that terrorists hide, against any country that hides them. President Bush advised the American people to go to work "with a heightened sense of awareness," an awareness that, unlike America's past wars, the war against terrorism will not be fought exclusively "over there."

SSgt Alan Vanguilder, 148th CES, Minnesota Air National Guard, paints one of several newly constructed "road jacks" Oct.1. The Wing's CEs constructed numerous jacks for use on roadways to provide enhanced protection for the resources and personnel supporting Operation NOBLE EAGLE. *(Photo by MSgt Dean V. Kuhlman)*

The mission of Operation NOBLE EAGLE is to protect America "over here." Homeland defense and civil support services are being provided by DoD's Total Force, including 50,000 members of the military reserves who have now been called to active duty.

The mission of Operation ENDURING FREEDOM is to fight terrorism at its source — and the U.S. Air Force and its civil engineers have risen to the challenge.

405th Air Expeditionary Wing firefighters add sand bags to a security wall at a deployed location Jan. 5. *(Photo by SSgt Shane Cuomo)*

What's Underway

The Air Force responded to the call to fight terrorism with its full range of assets — literally thousands of airlift, bomber and fighter operations. Air Force civil engineers responded in kind, serving in our traditional roles and fighting our own kind of battle to bed down troops and aircraft in a hostile environment. In all, more than 400 CEs responded directly to the Sept. 11 attacks, providing firefighter, construction and explosive ordnance disposal (EOD) support, not to mention those at Air Force and major command headquarters who stood up Crisis Action Teams (CATs).

In New York, the governor called up more than 150 Air National Guard firefighters and Prime BEEF members for direct support in New York City. CE troops from fighter wings assigned to First Air Force responded to the

immediate increase in flights for the Southeast Area Defense Sector. EOD personnel supported President Bush, following him from Sarasota, FL, back to the White House. EOD also supported personnel at McGuire Air Force Base, NJ, and Dover AFB, DE. Throughout the Air Force CE community, CATs stood up immediately and have been manned continuously since the attacks.

A CE staff sergeant excavates a trench so that drainage pipe can be laid at an undisclosed forward operating site Nov. 18. *(Photo by MSgt Thomas Cook)*

"Homeland defense" has taken on new meaning since Sept. 11. ANG and Air Force Reserve forces are actively engaged in supporting Combat Air Patrols (CAPs) across the United States, as well as airport security and other requirements. The Air Force is flying CAPs continuously over key areas in the country, as well as randomly over cities and major public events. More than 500 CE troops are directly supporting these CAPs, but it would be safe to say that all 19,000 members of the Air Force's active duty CE force — with hundreds of members of the Guard and Reserve — are supporting Operations NOBLE EAGLE and ENDURING FREEDOM.

Prior to Sept. 11, CE forces were already providing support to various missions all over the world. CE is highly involved in the Aerospace Expeditionary Force and other commitments, deploying more than 1,600 engineers per month last year. In May and June, there were more than 2,100 CEs deployed, with more than 1,050 at bases in and around the Persian Gulf. As of Dec. 31, more than 2,000 CE members were in the Operation ENDURING FREEDOM area of responsibility (AOR) or on their way.

SSgt Chance Pasley, 366th CES, uses a circular saw to trim a sheet of plywood for a tent floor Jan. 12. *(Photo by SSgt Michael Gaddis)*

Today, Air Force CEs are providing the lion's share of manpower for base operating support at places most of us had never heard of before — from beddown to infrastructure improvements to fire protection, EOD and nuclear, biological and chemical (NBC) defense.

"We should be proud of what we have accomplished so far," said Col Tim Byers, chief, Readiness and Installation Support Division (AF/ILEX), Office of The Civil Engineer. "We have constructed tent cities, water plants, power generation and supply, and other infrastructure. We are building two new air bases and reconstituting others, and are supporting more than 19,000 personnel and hundreds of aircraft."

The 823rd and 820th RED HORSE Squadrons have deployed and tasked more than 500 personnel for heavy construction in the AOR, with other active, Guard and Reserve RED HORSE squadrons contributing personnel. More than 450 firefighters are deployed, with more than 60 vehicles in theater. We are also providing the

(From left)* SSgts Tracy McBride and Jeramy Isaac and A1C Ryan O'Connell, all from the 823rd RHS, construct an equipment marshalling area for the air terminal operations center at a deployed location. *(Photo by TSgt Carole Steele)

SSgt Phillip Langhus, 51st CES, shows Traci Brock how to properly fit a gas mask designed for children onto her daughter, Caitlin, during a Non-Combatant Evacuation Operation exercise for Osan dependents Oct. 19 at Osan Air Base, Republic of Korea. *(Photo by SSgt Johnny Saldivar)*

majority of EOD capability in the AOR, with about 100 specialists deployed.

Nearly 150 readiness troops have deployed with protective and detection equipment. They are training Air Force personnel to use individual protective equipment and establishing joint NBC detection and decontamination operations with the U.S. Army in the AOR.

CE personnel have evaluated numerous airfields and potential air bases all over Central Asia, producing quality reports for the warfighters, including matrices of airfield capabilities for each aircraft being flown in the AOR. These evaluations are taking place on the ground, often augmented by "GeoReach," a global expeditionary planning system technology.

"We are experiencing exciting things with GeoReach," said Lt Col Brian Cullis, chief, Information Systems Integration Branch under AF/ILEX. "It's presenting users with opportunities to gain insight into the AOR prior to deployment using satellite imagery and layers of digital information. Whether coming from the GeoReach teams at Air Combat Command (ACC), Pacific Air Forces (PACAF) or AF/ILEX, the war planners have had geographic information system tools like no other."

GeoReach has already provided great assistance in supporting airfield assessments, while enabling the sharing of site survey data, photography and other information. The GeoReach imagery and global positioning system processes will ultimately serve as core elements for an integrated site survey framework being formed by the Services.

What Lies Ahead

Many challenges exist as we bed down in new locations, from fixing drainage problems, purifying water and excavating rock-hard soils, to force protection and host nation issues and preparing for winter operations. We are reconstituting bases that we previously bombed. Our pavement evaluation and RED HORSE teams reported that one base had excellent pavement for aircraft operations — except for 23 craters and three spall fields!

Challenges will exist with sustaining forces in the AOR, especially with a likely increase in humanitarian assistance. We also have challenges at home, especially with CE manning. Deployments for ENDURING FREEDOM and requirements for NOBLE EAGLE are impacting our continental U.S. base operations, with CE forces stretched thin between operations and home base support. In addition, this winter should prove especially busy for EOD personnel with support needed in Utah for the Winter Olympics.

SrA Robert Keatts opens an environmental control unit for repair on Nov. 15. Airman Keatts is a deployed member of the 366th CES. *(Photo by TSgt Michael R. Nixon)*

The Sept. 11 terrorist attacks shifted the U.S. military's NBC passive defense paradigm, highlighting our vulnerability to unconventional attacks. The terrorist attacks, and the anthrax incidents that followed, identified adversaries with an NBC capability and the will to use it directly against the United States. The anthrax attacks accelerated the Counter Biological Warfare Defense initiative. Efforts, originally scheduled a year out, were reprogrammed

A 355th Air Expeditionary Group firefighter waits for water pressure to build while preparing to extinguish a fire that erupted near an undisclosed airfield. *(Photo by TSgt Scott Reed)*

A1C Matthew Milanese, 39th CES explosive ordnance disposal technician, sweeps a fence line for ordnance at Incirlik AB, Turkey, Oct. 8. *(Photo by SrA Matthew Hannen)*

to produce the concept of operations by December 2001.

"There has been an obvious heightened sensitivity to NBC matters, but we're carrying on, despite our low manning numbers in the readiness career field," said Lt Col Jim Kasmer, chief, Emergency Services Branch under AF/ILEX. "In fact, our newest deployed locations have U.S. Air Force and U.S. Army NBC folks working together. We are working to make our NBC operations more flexible to meet the new threats that are evolving every day."

NBC warning and reporting is being integrated at locations with both Air Force and Army personnel so that all reports flow through base communications channels. They have also established integrated equipment decontamination operations for all materiel movement within theater.

Lessons Learned

To assist in doing our job both on the home front and in the AOR, we are gathering and reporting information on a daily basis from numerous sources. This information flow helps CEs make informed decisions and better support the warfighter.

An airman from the 4th CES, Seymour Johnson AFB, NC, installs an ash heater in a tent at the U.S. and coalition military compound near Bishkek, Kyrgyzstan. The 4th CES is augmenting the 86th Expeditionary Contingency Response Group from Ramstein AB, Germany. The buildup there is in preparation for more than 2,000 follow-on forces. *(Photos by Maj Mike Young, above, and Capt Kristi Beckman, right)*

"We have done a very good job of flowing information from the field through ACC (CENTAF Rear CE) to ILE and vice versa," said Colonel Byers, "and we continue to communicate well with supporting major commands like U.S. Air Forces in Europe and PACAF, working war readiness materiel and other issues. As with any base civil engineer, the Wing BCEs in theater should be able to contact the Air Force Civil Engineer Support Agency (AFCESA) directly for assistance. We can always do better in communicating and coordinating information, and we welcome suggestions on how to improve this process."

We have started to capture lessons learned from challenges faced to date. We have applied lessons learned

MSgt Evander Andrews' squadron hat adorns his casket at his final resting place in Arlington National Cemetery, Oct. 22. Sergeant Andrews died Oct. 10 in a construction accident while deployed to the northern Arabian Peninsula. He is survived by his wife, Judy; four children, ages 2 to 9; a sister; and his parents Mary and Obder Andrews. *(Photo by TSgt Jim Varhegyi)*

Service before Self

Service sometimes means the ultimate sacrifice, and the first American casualty of Operation Enduring Freedom was a civil engineer, MSgt Evander Earl Andrews. Maj Gen Earnest O. Robbins, The Air Force Civil Engineer, said, "The next time you hear someone describe engineers as 'tail' in some inane discussion of tooth-to-tail ratio, I suggest you show them this photo. We are grateful for MSgt Andrews, his service and the service of all the members of Air Force civil engineering. The nation is grateful, too."

Deployed 552nd CES members erect a California tent during Operation ENDURING FREEDOM, Oct. 30. *(Photo by A1C Maryann Walker)*

from Operation DESERT STORM and the Kosovo conflict, and are now applying lessons learned at the start of this campaign.

Examples include: get CE representation on site survey teams, improve sourcing of Harvest Eagle/Harvest Falcon kits that are essential to force beddown, and work with the Army at sites deploying their Force Provider kits. Also, as the clamor for more ramp space was heard throughout the AOR, AFCESA put together a simple matrix for the operators that explains the full capabilities of AM-2 matting.

A civil engineer member of the 355th AEG makes a height adjustment prior to a shower trailer being moved into position at an undisclosed location Nov. 17. *(Photo by TSgt Jack Braden)*

Satellite communication and other state-of-the-art technology is making the job easier for pavement evaluation teams, RED HORSE and other CEs dispersed throughout the AOR, and we are looking to make that communication even more efficient. As flying bases were built up, a concept of operations was needed to assess fire protection risks and deploy a finite number of fire protection assets in concert with the operations tempo. NBC operations have had to be flexible to meet the new threats — threats that are evolving every day.

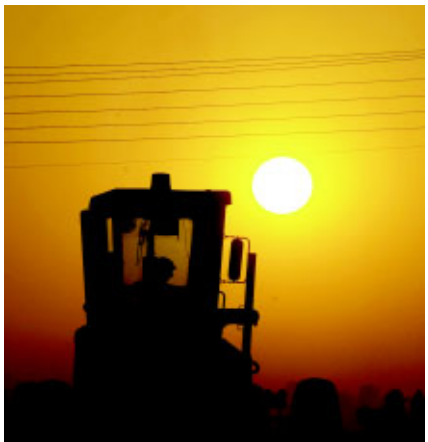
Digging a trench at a forward-deployed location Nov. 9. *(Photo by TSgt Marlin Zimmerman)*

One of the biggest lessons learned is simply getting CE forces into bare bases and other locations early so they can evaluate potential air bases before a majority of other forces arrive. Whether our mission is to assess damage, evaluate pavements, or set up the base infrastructure, CE forces are "early enablers" and have expertise needed by the warfighting commanders.

For example, as of December, two separate pavement evaluation teams from AFCESA had conducted surveys of more than a dozen airfields in the AOR. The U.S. Central Command Air Forces Civil Engineer, Lt Col Dave Nelson, reported, "Both of these teams have done one hell of a job. They provided and continue to provide incredible support, not only to Combined Forces Air Component Command needs, but also to Combined Forces Land Component Command and U.S. Central Command requirements."

Before it's all over, no doubt we will capture and refine many more lessons learned. And we need your help. If you have lessons learned or new ideas on how to work smarter, please contact AFCESA or The Office of the Civil Engineer. Together, we can meet every challenge!

Lt Col Greg Cummings is chief, Expeditionary Engineering Branch, Readiness and Installation Support Division, Office of the Civil Engineer, HQ U.S. Air Force. Lt Col John Martin is Colonel Cummings' individual mobilization augmentee.



As the sun sets marking another deployment day for U.S. Military personnel worldwide, SSgt Benjamin Pelky, 823rd RHS, puts the finishing touches on the base of what will be another tent city for troops deployed in support of Operation ENDURING FREEDOM.

(Photo by TSgt Scott Reed)

Pavements Team Brings Expertise to the Fight

How many times can an aircraft take off and land on an airfield? Good question, and one that's been asked a lot lately of the Air Force airfield pavements evaluation team.

The team has been in Central and Southwest Asia since Oct. 21, evaluating more than a dozen airfields in the region for potential use in support of Operation ENDURING FREEDOM.

TSgt Steven Russell and TSgt Greg Crosslin conduct pavement tests using a dynamic cone penetrometer at Kandahar International Airport, Afghanistan.

"Most airfields can support a few passes of an aircraft," said Capt Anthony Davit, chief, Air Force pavement evaluation section. "Our goal is to show the limitations that may or may not need to be in place for the airfield to support longer term operations."

The two, three-person teams use self-contained evaluation systems to help determine pavement thickness and strength of the underlying soil. The results are analyzed to determine gross allowable load for each of the 14 classes of aircraft in the Air Force inventory.

The team conducted pavement evaluations at airfields in 10 countries in the region, including some that had been damaged recently by U.S. forces to prevent Taliban troops from using them.

"When the bombs worked properly, the damage to the pavement was unbelievable," said Capt Jim Chrisley, a member of the team. "At one base, it was hard to believe that a runway once existed within the rubble. I imagined it was similar to walking on the moon."

Southwest Asia has good quality gravel and sand which makes the area very suitable for airfield operations. And, hardness is a plus. In some places the soil was so hard, teams reported, that a steel rod driven by an impact hammer could only penetrate about three inches. They found the soil in Central Asia less consistent because of the mountainous terrain. Some of the soils there were so soft that test equipment penetrated as deep as 12 feet.

The team also examined airfields that once belonged to the former Soviet Union, something Captain Davit said he "never would have imagined five years ago because of the political climate."

The Soviet-built airfields presented their own problems because Soviet construction techniques differed from U.S. and European standards. "We don't use reinforcing steel for the most part in European and American airfield design," Captain Davit said. "The Soviets used pre-stressing steel and put it down in slabs similar to how we did rapid runway repair in USAFE (United States Air Forces in Europe) years ago. That presents different challenges, assumptions and things to look for. There are concerns we have at a couple of airfields, and we'll have to see how those assumptions hold up."

TSgt Jody Root uses a Hilti drill to determine the thickness of the airfield pavement at Kandahar International Airport, Afghanistan. *(Photos courtesy Airfield Pavements Evaluation Team)*

Whether an airfield can handle a few take offs and landings or thousands, pavement team members know their evaluations will play a major role in keeping aircrews flying. No questions asked. *(TSgt Michael A. Ward, HQ Air Force Civil Engineer Support Agency Public Affairs)*

TSgt Steven Russell uses the automated dynamic cone penetrometer for pavement tests in Kabul, Afghanistan. *(Above, right)* The team goes to work at Kandahar International Airport. Members dressed to blend in with local Afghans.

Bombs dropped from B-52s left craters on airfields like this one in Kabul that were more than 30 feet across and deep enough to hold several 823rd RED HORSE Squadron members.

Col David W. DeFoliart is the Pacific Air Forces Civil Engineer. In this interview with the *Air Force Civil Engineer* magazine, he discusses current events affecting civil engineers within his large and diverse command, and why they are known as ...

The Enablers

AFCE: What types of support are Pacific Air Forces (PACAF) civil engineers providing to Operation Enduring Freedom (OEF)?

Col DeFoliart: CE is playing a significant role here at headquarters and across PACAF. Immediately after the events of Sept. 11, we started 24/7 manning of two positions in the POSC, or Pacific Operations Support Center, PACAF's 24-hour command post. To back them up, we had two additional members manning the CE vault to receive and track CE taskings.

We soon found that taskings were moving too slowly through our normal organizational structure, so we reorganized our staff into a contingency-staff type of construct. In addition to a CE chief of staff, we established a personnel-administration cell and force beddown cell. They, along with the rest of the CE A staff, completed numerous "What if?" drills for this area of responsibility (AOR) and responded to numerous taskings both within and outside PACAF. We found this reorganization improved our ability to respond to all PACAF engineering planning and execution requirements.

Col David W. DeFoliart

Across PACAF, we have on average about 140 people deployed at various locations worldwide in support of OEF. Like all the other major commands (MAJCOMs), our various Air Force specialties are involved in build up and bed down operations. Diego Garcia falls within our AOR, so we're active in what's going on there. Civil engineers from Andersen Air Force Base's 613th Contingency Response Squadron, augmented by engineering craftsmen from Hickam AFB, deployed to Diego Garcia and to a base in Thailand in preparation for beddown in those areas.

For the first time GeoReach was used in a real contingency situation. GeoReach is a geospatial information and imagery program that uses satellite imagery to produce products that allow us to do advanced beddown planning . When OEF began, we were the only MAJCOM up and running so PACAF became the Air Force's GeoReach web site. With the addition of six contract personnel to input raw data into the program, we were able to keep up with the ever increasing demand for informational products and, I'm happy to say, proved the worth of this system.

Since the web site stood up at the end of July, we've had more than 843,000 hits — a big success for the Air Force and Air Force CE.

AFCE: Did the Sept. 11 terrorist attacks against the United States impact PACAF civil engineer readiness priorities?

Col DeFoliart: PACAF is a forward-based command, so we're always thinking in terms of contingency and war fighting capability. We, like other MAJCOMS, report our equipment in the SORTS (Status of Resources and Training System). In the first stages of the operation, we turned that around to rethink how well equipped we were to handle an attack on a base. For example, we have enough gas masks for our UTCs (unit type codes) and our mobility people, but do we have enough masks for the base to recover if attacked? That's the type of thinking we did for all our resources. We looked to see how they impacted our ability to recover a base. Should something happen, CE has the preponderance of a base's ability to respond; either through its own in-house resources or through agreements it has with surrounding communities.

AFCE: Do PACAF CEs train or prepare differently than those in other commands when it comes to nuclear, biological and chemical warfare defense?

Col DeFoliart: PACAF's AOR is considered a high-threat area, so in some ways we are operating differently on a day-to-day basis. We recently developed a new chemical warfare CONOPS (concept of operations). It is not fully implemented yet, but we are working our way through it right now.

The old scenario was that if you got "slimed" on a base you would pretty much hunker down and wait for the "condition black" to be changed by the wing commander. Then you would either go back to business as usual or do business at a much slower pace in your MOPP 4 (Mission-Oriented Protective Posture) outfits. What PACAF did was return to some of the original science that has worked and some of the new science from recent live agent testing and found that in a chemical attack the whole base will not be equally slimed. Some areas of the base will be more contaminated than others, and one sector on my base may be operating in MOPP

level 2 while another sector is in MOPP level 4, depending on what the contaminate is. We won't have CE readiness troops in each sector to determine for people what level they should operate in, so there will be a lot more responsibility on the bomb loaders, aircraft maintainers and transportation folks to know the chemical CONOPS and be able to make judgments for their own safety as they go from sector to sector to do the job of producing sorties. This does increase risk to airmen because they are not being led by someone, but are making their own judgments; however, in the long run, it saves lives by returning the base to an operational mode where we're projecting airpower and not in a hunkered down survival mode.

We took that information and looked at our job — to produce aircraft sorties. The reason it's important to produce sorties is to keep us on the offensive and not provide the enemy an opportunity to fire again and resurface our bases with more chemical contamination. So it's important that if we get hit, we get up and running as fast as we can to eliminate the possibility of our adversary coming back on us.

In that respect, we do it much differently than the rest of the Air Force. As we implement and find problem areas that need to be emphasized we try to get that word out to the rest of the Air Force, because if war ever comes to the PACAF theater a lot of war fighting forces will come from other MAJCOMS. They'll need to be prepared to survive the way PACAF does business.

Also, as of January this year, CE is operations manager for RESTOPS, the Restoration of Operations exercises. We're testing new technologies and methods to operate more efficiently in a chemical/biological environment. Osan AB, Korea, is the main test base for that. These exercises are helping to build the level of knowledge we need to help improve the tools that the Air Force has to protect people and launch sorties faster.

AFCE: Are Aerospace Expeditionary Force taskings affecting the way PACAF CEs meet their home base requirements?

Col DeFoliart: The AEF Center deploys our folks, tasks them and does the redeployment planning. We fall in line just like all the other MAJCOMs do to support that. Yet, it does have an impact, and PACAF is no different than any other command in this regard.

Our squadrons are already tasked to maintain older infrastructure and facilities and do training, and with the additional home station workload they are pretty busy. Then there's the READY Augmentee program. Across PACAF wings, squadrons, to include CE, have been tapped to provide augmentees to support functions like Security Forces. So not only is the AEF pulling people out, but you've got READY Augmentees being pulled out, and that has added stress to our organization.

Right now, it's a different ballgame than what the AEF construct was originally designed for, so people need to be flexible and understand there may be deployments outside the AEF or for longer than three months. CE has five career fields that are extremely stressed right now, and if you happen to be in one of those you're feeling more pressure maybe than other folks. This typically happens anytime you're doing force beddown — the civil engineers are the enablers.

If you look back at the way we were 10 or 15 years ago versus the way we are now, you would have to congratulate our Air Force senior leadership on the job they've done in making sure the Air Force is flexible and effective. That helps the military as a whole meet their requirements.

AFCE: What types of challenges do CEs face in accomplishing quality of life improvements on PACAF bases?

Col DeFoliart: When I was younger I used to think "quality of life" meant nice facilities. People now, I think, are smarter than I was and realize that quality of life is complex. There's more to it than just facilities and the part CE plays. For example, if you're a maintainer, you need the right spare parts so you don't have to do the work twice. Housing, workplace environment and more go into quality of life.

On CE's part, workplace quality of life is very difficult to do right now in PACAF with current funding. The command has migrated dollars out of SRM for three years in a row. As a result, our Facility Investment Metric (FIM) 5 numbers are $20 million over what our FIM 4 was. This is not a good thing from CE's standpoint because it makes our job of keeping workplace facilities in good shape more difficult.

I don't think things will improve until the Air Force gets more total funding or until the priority for facilities increases, which I think is happening slowly. People have to keep in mind that bombs and bullets are pretty important too, especially when you look at what the Air Force is doing right now and the number of bombs we are dropping. We all know where the money will go first if we run short.

PACAF's housing program, on the other hand, is hugely successful. If an airman's work environment is not the greatest, but his or her family is living in a quality environment, then I think we have a good chance to retain that airman.

AFCE: Regarding PACAF's housing inventory, what kinds of revitalization efforts are underway as part of the Defense Department's directive to revitalize, privatize or demolish inadequate housing by 2010?

Col DeFoliart: Housing is a great success story for PACAF. The Family Housing Master Plan (FHMP) has really helped. Almost half our houses were not up to standards a couple years ago, but we've gained a much increased level of funding. There's $102 million in the

2002 military family housing MILCON (military construction) to replace 102 units at Hickam AFB, HI, and improve 501 units at other bases in the command. Through the FHMP, we'll replace 761 units for $155 million and improve almost 3,700 units, while privatization will improve 2,070 units in the near term and will ensure all 2,808 privatized units continue to be revitalized over the next 50 years.

Host nation programs at Kadena and Misawa Air Bases, Japan, will replace 270 units for $169 million and eventually replace almost 3,300 units for $2.1 billion. Over the next 10 years, 752 units will be constructed, which will erase the housing deficits at both.

Elmendorf AFB has a privatization project under contract that is taking care of 828 family housing units. It was awarded on March 15, 2001. That project involves conveying 584 existing units, constructing 420 new units, renovating 200 units and demolishing 176 units. It's changing the face of Elmendorf's housing very rapidly. It's expected to save the Air Force more than $40 million over the project's 50-year life. Plus, doing the work using MILCON would have taken a lot longer. It is really accelerating the pace at which we can get the job done. A second privatization project at Elmendorf will take care of another 624 units.

The other privatization project we have underway is at Hickam. That one will convey 1,356 units and result in the improvement of about half of Hickam's inventory. The one thing that is unique in that project is that, because of Hickam's fairly nice location, the developer will renovate 36 units inside the base, even though those units won't transfer. They'll stay under the control of the base housing office. Renovating units without using taxpayer dollars, at least in the initial costs, is pretty nice.

AFCE: Do housing and utilities privatization play out differently on PACAF bases than on those in the continental U.S.?

Col DeFoliart: They do to some extent because with housing and utilities privatization on our U.S. bases in Alaska, Hawaii and Guam, we follow the same rules as the other stateside bases do. But in Japan, for example, the host nation is the owner of the utilities systems. So in the overseas locations there just isn't the opportunity to privatize as there is in the stateside locations. Right now, we're looking at utility and/or housing privatization projects at Andersen AFB, Guam; Elmendorf AFB and Galena and King Salmon Airports, AK; and Hickam AFB, HI — all stateside locations.

AFCE: How are plans for infrastructure revitalization at Wake Island progressing?

Col DeFoliart: At Wake, we have a funding stream that will bring infrastructure up to the minimum required for its wartime contingency tasking. We have $9.6 million in the fiscal year 2002 MILCON program. We originally had $25 million, but it was cut to $9.6 in congressional committees. What that money will do is fund the wharf and the marine bulkhead, providing access for contractors to bring in the heavy materials required for replacing airfield pavements, electrical, and so forth. You name it — it's in need of replacement on that island. The fuel systems are in reasonable shape, but other than that it needs a lot of work. The funding stream is basically $25 million per year through 2006 to bring those systems up to necessary levels. This comes under the 36th Civil Engineer Squadron at Andersen.

The other thing that's being worked at Wake is, starting in 2003, the Air Force will pick up responsibility for funding the base operating support (BOS) from the Army. We're looking at enhanced-use leasing as a means to reduce our operating cost. This involves bringing on a tenant, private or government, who can co-exist with the Air Force and, as payment, provide either facilities or services. We've begun a marketing study to see what possibilities are out there, but it'll have to be something that truly benefits the Air Force and reduces our operating costs before we jump in.

AFCE: What role will PACAF CEs have in the cleanup and closure of operations on Johnston Atoll?

Col DeFoliart: The 15th ABW at Hickam has a detachment (Det 1) that accomplishes host management responsibilities on Johnston Atoll. What we're doing right now is working with those folks and the Air Force Center for Environmental Excellence (AFCEE) to develop demolition and cleanup plans. We've received $26 million in a program budget decision (PBD) to contract the demo effort, and we also have a $20 million environmental cleanup effort that will be executed over fiscal years 2002 and 2003. That should take care of our remaining environmental responsibilities at Johnston.

AFCE: The 554th at Osan recently became the first RED HORSE Squadron with both Air National Guard and Air Force Reserve Command components. What benefits do you see in this for the unit?

Col DeFoliart: The 554th is going to gain quite a bit. First, they will have a greater on-peninsula capability to do construction for wartime preparation as well as fighting, should a contingency start. RED HORSE maintains a full equipment set there, which reduces the airlift and personnel deployment requirements needed in that situation.

Also, over the last several years the active forces have lost some of their very specific expertise. We've become generalists in some ways. When the Guard and Reserve come in they'll bring their civilian expertise with them, resulting in opportunities for a cross-pollination of skills. I think it's a win-win arrangement for everyone, and it's a trend across the Air Force.

The U.S. Department of Defense is currently commemorating the 50th Anniversary of the Korean War, which lasted from 1950-1953, by honoring veterans and their families with events and ceremonies that began in June 2000 and will last through November 2003.

Aviation Engineer *Contributions* to the Air War in Korea

A KOREAN WAR RETROSPECTIVE

by Don K. Tomajan III

This article is based on research conducted for a presentation to the Korean War Air Power Symposium sponsored by Pacific Air Forces (PACAF) in Honolulu, HI, in June 2001. The symposium's purpose was to feature personal accounts of those who served in Korea whose jobs covered all aspects of the air war. My role was to discuss the contributions of the aviation engineer units that were responsible for upgrading and building air bases. By the war's end, 10 Engineer Aviation Battalions had served in Korea, working on more than 50 airfields, including some in North Korea.

Creation of SCARWAF

The Air Force did not automatically have a full-fledged civil engineer force when it became a separate service in 1947. The Directorate of Air Installations was established in Washington, DC in October 1947. On each Air Force base a handful of air installation officers, all of whom had transferred to the Air Force from the Army and many of whom had served with the Army Corps of Engineers in World War II, directed the maintenance and repair of base facilities and provided fire protection and aircraft crash rescue. At most bases, those missions were accomplished by a largely civilian workforce.

Providing civil engineer support to the newly created Air Force raised two questions: what organization would perform contract construction for the Air Force, and what would be the status of the Engineer Aviation Battalions (EABs) that had performed combat construction during World War II. The Department of Defense designated the Army as the construction agent for the Air Force, and construction projects on air bases continued to be programmed and managed by the Army Corps of Engineers. To perform combat engineering support, an agreement was reached whereby the Army would organize, staff and train units placed under Air Force operational control for the exclusive support of the USAF mission. Those battalions were designated Special Category Army with Air Force — SCARWAF.

An Ill-Equipped Force

Aviation Engineer units had been allowed to atrophy following World War II and were ill-prepared for war in Korea. When war broke out on June 25, 1950, battalion commanders estimated SCARWAF battalion combat effectiveness averaged 10 to 15 percent of the capabilities of the same units in World War II. Many assigned to SCARWAF felt their units were "neither fish nor fowl," with neither the Army nor the Air Force taking full responsibility for maintaining an effective force structure. The Army failed to send trained replacements in adequate numbers to maintain the skill levels required to perform assigned missions, and the Air Force failed to institute an efficient chain of command and organizational structure to maximize the effectiveness of SCARWAF units.

Two SCARWAF groups subordinate to Far East Air Forces (FEAF) were available to support operations in Korea at the beginning of the conflict. The 930th Engineer Aviation Group (EAG) Headquarters and Service Company, assigned to Fifth Air Force, directed construction by civilian contractors at Nagoya, Japan. The 931st EAG, assigned to Twentieth Air Force, had four EABs on Okinawa (802nd, 808th, 822nd and 839th) and one on Guam (811th). These units were manned at only slightly more than half their authorized strength. They were hardly

SCARWAF INSIGNIA

It was not until October 1952 that the Department of the Army approved a distinctive shoulder sleeve insignia to be worn by Army personnel in SCARWAF units. The design used the engineer red and white colors and featured a winged sword on a solid red shield.

Talking Numbers

Korean base names were unusual and unfamiliar to the multi-national pilots who flew missions over Korea. To avoid confusion and miscommunication, Far East Air Forces adopted a numbering system for Korean bases. Some bases became better known by their number than by their name. The more important of these airfields included:

K-1 ..... Pusan West	K-8 ..... Kunsan	K-24 ..... Pyongyang East
K-2 ..... Taegu #1	K-9 ..... Pusan East	K-27 ..... Yonpo
K-3 ..... Pohang	K-10 ..... Chinhae	K-37 ..... Taegu #2
K-4 ..... Sachon	K-13 ..... Suwon	K-46 ..... Hoengsong
K-5 ..... Taejon	K-14 ..... Kimpo	K-47 ..... Chunchon
K-6 ..... Pyongtaek	K-16 ..... Seoul	K-55 ..... Osan
K-7 ..... Kwangju	K-23 ..... Pyongyang	

Repair and maintenance of pierced steel planking was a constant job on Korean airfields that saw up to 10,000 takeoffs and landings per month. *(All photos USAF unless otherwise noted)*

equipped to perform the battalion-size heavy construction and repair jobs that would be expected of them to upgrade Korean airfields and build new bases.

SCARWAF Units Deploy to Korea

At the outbreak of hostilities, most Korean airfields were unsuitable for sustained USAF operations. Most runways in Korea were short (less than 5,000 feet) and had generally the same sod or gravel surfaces used by the Japanese during World War II. The South Koreans had kept only a few of these fields in use. Suwon (K-13) and Kimpo (K-14) were the only airfields suited for high performance aircraft. Kimpo had been improved during the American occupation, starting in 1945, and was the most modern Korean airfield. Suwon had a 4,900-foot concrete runway and adjacent air facilities. The initial, high-priority mission of SCARWAF units would be to improve existing air bases to handle the more powerful and capable post-World War II aircraft.

There was no Aviation Engineer unit and no USAF tactical air unit based in Korea when the war started and no adequate base infrastructure to support moving troops from Japan and Okinawa. The first deployment of Aviation Engineers to Korea was an emergency deployment in July 1950. Company A, 802nd EAB was the first Aviation Engineer unit to land in Korea. It sailed from Naha Port, Okinawa, on July 4 and started rehabilitating Pohang Airfield (K-3) for use by F-51s. They installed a 500-foot pierced steel plank (PSP) extension to the east end of the runway and constructed a 40-foot wide taxiway with 27 hardstands. In early August, they were forced to evacuate their equipment and were deployed as infantry to defend the base against advancing North Korean troops. Company A later received a Distinguished Unit Citation from the FEAF commander for its construction work and for defending the air base against North Korean forces.

Pierced steel plank (PSP) was developed and widely used in World War II and used extensively in Korea as the primary, expedient runway surfacing material in the early years of the war. By July 1953, nearly 30 million square feet of PSP had been used.

Corporal Don Wingate of Company A furnished this account:

We offloaded at a little village about 15 miles south of K-3 Airfield. We were a reinforced company with about double the official strength of an EAB company. We had a platoon of heavy equipment, a platoon of dump trucks, our own maintenance people, and the personnel with skills to build airfields. We had our own half-track with quad .50s on back and about triple the number of heavy automatic weapons. Our unit was strafed and bombed three times by Yak-9 aircraft while working on the strip in the early days of July 1950. When we were forced to withdraw in August 1950, we went to Pusan and worked on K-9 Airfield for about a month and then went back to K-3 at Pohang. The South African F-51s stationed at Pohang left and came back with us at the same time.

FEAF alerted other SCARWAF units on Okinawa for deployment to Korea. The 822nd EAB and the 919th Engineer Aviation Maintenance Company (EAMC) Contact Platoon were in Korea July 30 and began work on Taegu Airfield (K-2). They were ordered to repair the existing runway without hindering air operations; this runway was later designated Strip B. Then, working around the clock and aided by 500 Korean laborers, they started work on a new 5,000-foot PSP runway parallel to the existing runway, designated Strip A. On August 16, North Korean forces attacked Taegu, and the Aviation Engineers at K-2 were forced to evacuate to Pusan. Returning a month later, they completed the runway to a length of 5,700 feet, with an overrun of 1,000 feet. The pattern of coming under attack, retreating, having to abandon their work and then re-accomplish the same work once territory was regained was a source of constant frustration for the engineers.

By the end of 1950, the 930th EAG headquarters and the equivalent of three battalions, including the 811th EAB from Guam, were also deployed in Korea working on platoon- and company-sized projects.

A Tough First Year

In the 41 days between June 25 and August 4, 1950, United Nations Command (UNC) forces were driven back to a 140-mile perimeter west and north of Pusan on the southeast tip of the Korean peninsula. Initially, bad weather seriously hampered USAF close air support. However, North Korean supply lines quickly became

over-extended as enemy forces advanced, and as the weather improved heavy UNC air attacks significantly reduced the enemy forces' effectiveness. FEAF achieved air superiority, and UNC warships wiped out North Korean naval opposition and tightly blockaded the entire Korean coast.

With the Inchon Landing on September 15, 1950, by X Corps, and the Eighth Army breakout from the Pusan Perimeter during September 16-27, the Fifth Air Force commander decided the situation in Korea had turned around, and planning resumed to move additional air units to Korea. Before fighter-bomber groups could be based there, Fifth Air Force had to prepare a minimum of six airfields, a construction objective of major magnitude given the conditions there and lack of engineers available.

However, before additional engineers and tactical air units could be deployed, the Chinese Communists massed ground and air forces on the border north of the Yalu River. During the night of November 25, they began a massive attack. By the 28th, the UNC positions began to crumble.

Pyongyang was abandoned December 5, leaving 8,000 to 10,000 tons of supplies and equipment broken or burning inside the city. The 822nd EAB had been in the Pyongyang area rehabilitating two airfields, K-23 and K-24, for UNC air operations. When the order was given to withdraw they loaded all their equipment on rail flatcars, but the explosion of an ammunition freight car destroyed track and halted the withdrawal by train. The battalion had to destroy 75 percent of its equipment.

Company A, 802nd EAB, had been working in North Korea since October 1950. A reinforced platoon with a D-7 dozer, two dump trucks and a road grader was sent north from Hamhung West (K-28) and Yonpo (K-27) to keep the small field near Koto-Ri in operating condition. In early December, Company A pulled back from the Changjin Reservoir with the 1st Marine Division and evacuated to Pusan.

Corporal Don Wingate reported:
We left the village near Yonpo about the 7th of December 1950, and we carried a bunch of wounded Marines with us. We drove our equipment through Hamhung to the port at Hungnam and departed Hungnam for Pusan. We then went to Tsuiki Air Base in Japan for a while before deploying to K-13 Suwon by way of Inchon by ship. I believe we arrived at Suwon about a month before the rest of the unit arrived. All I can remember for sure is how cold it was in North Korea. We had to keep the equipment running all the time.

In mid-January, United Nations forces stopped the Chinese offensive south of Seoul. Eventually, a UNC offensive was sustained and by mid-June had pushed the enemy back to a line along and above the 38th Parallel. This line stayed about the same for the next two years. The static phase of the war had begun. With the Communist drive south contained and a fairly stable front line

A heavily sandbagged control tower overlooks the runway at Kimpo, which had to be repaired twice following North Korean and Chinese offensives against the airfield.

(Above) **1903rd EAB engineers haul rock from surrounding hills to be crushed for use in airfield and road construction. The greatest single day haul for the 1903rd as of March 1952 was 855 truckloads.**

(Below) **The 930th EAG was responsible for new construction and heavy maintenance on airfields in the southern part of Korea, while the 931st EAG performed similar duties in the Seoul-Suwon area.**

established, Air Force planners again put in motion the plan to upgrade and expand facilities to handle an increasing number of air units equipped with high-performance jet aircraft and newer transports.

Additional Deployments to Korea

The shortage of aviation engineers was impeding the ability to deploy tactical air units to Korea, and planners had the added concern that all new bases would have to be capable of bedding down jet fighters. The air war was exhausting the supply of F-51s and F-80s in the Air Force inventory, and the appearance of MiGs over Korea accelerated plans to bring the F-84 and F-86 into the conflict. In March 1951, the FEAF commander requested permission from the Air Force Chief of Staff to immediately convert Fifth Air Force to the new planes and requested five EABs and other supporting engineer units from the United States to build new airfields in Korea.

Air Staff directed FEAF to satisfy the request for additional aviation engineers by moving units stationed in Okinawa to Korea, turning their existing projects over to civilian contractors. In April and May 1951, the 931st EAG with its three battalions (802nd, 808th and 839th) and the remainder of the 919th EAMC moved to Korea. To increase the effectiveness of the SCARWAF battalions, their authorized strength was increased from 800 to 997 personnel in July 1951. By mid-1951, there were two EAG headquarters and more than five SCARWAF battalions working on air base projects in Korea. Additional units arrived from the United States later in the year. The 809th EAB and the 622nd EAMC arrived in September and the 1903rd EAB in November.

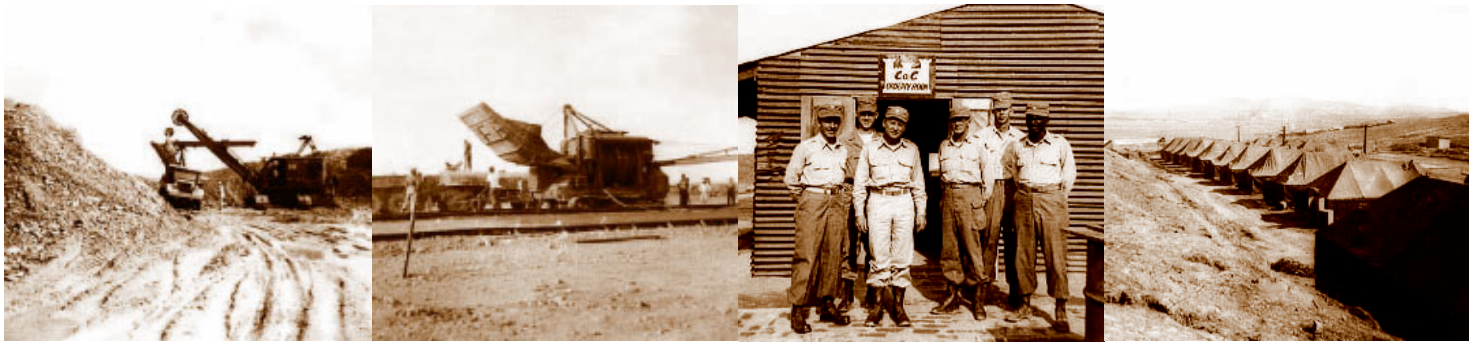
The 930th EAG was responsible for new construction and heavy maintenance at airfields in the southern part of Korea, while the 931st EAG performed similar duties in the Seoul-Suwon area. Engineers began construction of permanent bases with 9,000-foot concrete runways at Taegu, Kunsan and Suwon. Longer, smooth-surface runways not only reduced the safety risk for fighters but also saved on tires and damage to the aircraft structure. Jets needed to be based as far forward as possible to have more time over targets and to increase daily sortie rates.

Problems with terrain, soil conditions, personnel and equipment shortages delayed progress. Topographical conditions in Korea — mountains, numerous streams and rivers, and a high water table — made it difficult to find suitable flat land for new air bases. Inclement weather and primitive communications and transport infrastructure also presented significant engineering challenges for air base construction. Taegu was not completed until June 1952, and Kunsan, which had some of the worst soil and drainage conditions in Korea, was not completed until the fall of 1953.

K-55 Air Base

In mid-1951 Lt Col Robert Wood, 931st EAG, received a call from Fifth Air Force directing him to start site selection for a new air base for two jet fighter wings. The area he chose near the Osan-Suwon region was on the flood plain of the Chinwi-chon River, 8 miles south of Suwon and 38 miles south of Seoul. Occupying the site were four villages near the hillsides and a large number of rice paddies where the runway, taxiways and hardstands would be located. The villages of Jeuk-Bong-Ri, Chang-Deung-Ri, Shin-Ya-Ri and Ya-Ri were moved prior to starting construction. The village of Osan-ni remained near Route 1, also known as the main supply route, where the new base access road would be constructed.

On September 11, 1951, Fifth Air Force directed the 931st EAG to start constructing access roads and an aviation engineer campsite and motor pools. In November, the engineers began planning construction of a 9,000-foot concrete runway capable of handling jet fighters and modern transport aircraft. The paddy land had been drained and presented a dry surface. However, ground water was only 2-4 feet below the surface. The underlying soil to a depth of at least 15 feet was saturated clay and silt, which would not support construction



Snapshots provided by 1st Lt Fred Williamson *(second from left in third picture)* show the 839th EAB using power shovels to load gravel and rock into dump trucks for transporting to the rock crusher; loading crushed rock into a concrete mixer; officers of C Company, 839th EAB, in front of the company orderly room; and one of the rudimentary Army camps where aviation engineers lived. Camps were composed of squad-sized tents for enlisted personnel and metal buildings for company orderly rooms, battalion and group headquarters, officer quarters, mess halls and armories.

equipment. At least one D-8 Caterpillar tractor from the 839th EAB was lost, actually sunk, during the early phase of construction.

Companies A, B and C of the 839th EAB arrived incrementally at K-55 between December 1951 and June 1952. The condition of the main supply route, which was gravel and dirt in most places and one lane or less wide in each direction, made it difficult to deliver heavy equipment. A single rail line west of the road was used to bring in oversize equipment. Bulldozers cut a road from the supply route through the hills in the area that would later include the Main Gate. The hills were cleared and flattened to construct the engineer campsites and motor pools. A secondary benefit was the tons of dirt made available for road construction and for fill in the paddy areas.

The Chinwi-chon River ran parallel, north of the new runway, which meant constructing a system of dikes and drainage canals. Finding suitable rock for concrete aggregate and dirt for fill was a continuous problem. Unfortunately, much of the rock in the hills around the base was decomposed granite, which crumbled and was unsuitable for concrete aggregate. Company B set up a new rock crusher in a streambed 11 miles north of Suwon and established its company living area there, affectionately referred to as "The Boondocks." The 839th also set up and operated an asphalt plant brought from Okinawa.

The 839th became an integrated battalion prior to its deployment from Okinawa to Korea. It had been an all-black unit, except for officers, during World War II. White troops from other SCARWAF battalions on Okinawa were assigned to the unit prior to the Korean deployment and in subsequent replacements in Korea. The 811th and 822nd EABs were integrated in the same manner.

The master plan for Osan called for: a 9,000 x 150-foot concrete runway with overruns; a parallel concrete main taxiway with five connecting taxiways; two parking aprons; four diamond-shaped aircraft dispersal areas with 20 hardstands each; three maintenance aprons; a warehouse area; two cantonment areas with housing and headquarters for two air wings; a four-fuel POL system to support two wings of jet and conventional aircraft; a motor pool and bomb dump; a railroad line connecting to the main Osan-Pyongtaek line with two spurs; a road net to tie the installation together and provide access to anti-aircraft gun installations around the base; and the full range of utility systems and perimeter security installations.

Rare color photograph of civil engineers in Korea. Runway grading at K-55 (Osan AB), 1952.

In May 1952, command responsibility for all aviation engineer units in Korea was consolidated under the newly organized 417th Engineer Aviation Brigade Headquarters. Fifth Air Force continued to serve as the coordinator for construction projects and specified the requirements. On June 16, the 417th was directed to make construction of K-55 the highest priority.

To help pick up the pace, two reserve EABs (the 840th from Kingsport, TN, and the 841st from Miami, FL) were activated for service in Korea. They were subordinate to the 934th EAG, which was also activated from the Army Reserve in the Montana Military District. The 934th arrived at Inchon May 15, 1952, and picked up responsibility for the 839th EAB. Adequate troops, training and equipment for the two reserve battalions was a problem. The 841st, for example, had only 37 officers and NCOs as its initial cadre when it was called up for active duty.

F-94B jet fighters assigned to the 319th Fighter-Interceptor Squadron at Suwon AB fly over the partially completed runway and taxiway at Osan AB on the banks of the Chinwi-Chon River. *(Photo by Lt Robert W. Haller, courtesy Warren Thompson)*

Airfield construction started July 9, 1952, with two shifts. The typical work schedule was two 12-hour shifts, with one hour out of the 12 for equipment maintenance, seven days a week. Some SCARWAF units worked two 10-hour shifts with equipment maintenance between shifts. Availability of lighting equipment to support the night shifts was a problem. Equipment arrived after the project was underway, but there were never enough sets to adequately illuminate the project.

The 840th started runway paving August 10 with a 20-foot wide paver modified to lay a 25-foot concrete strip. Another modified concrete paver was put into operation August 15 by the 839th. Later, all three battalions were given various assignments on the runway and taxiways. The fill dirt, sand, base course rock and rock for concrete aggregate produced in the riverbed near Suwon were inadequate to keep up with the pace of construction. A quarry was established at Hill 170 to provide fill, a second rock crusher was put into operation at Hill 180, and sand was brought in from the Chinwi-chon River.

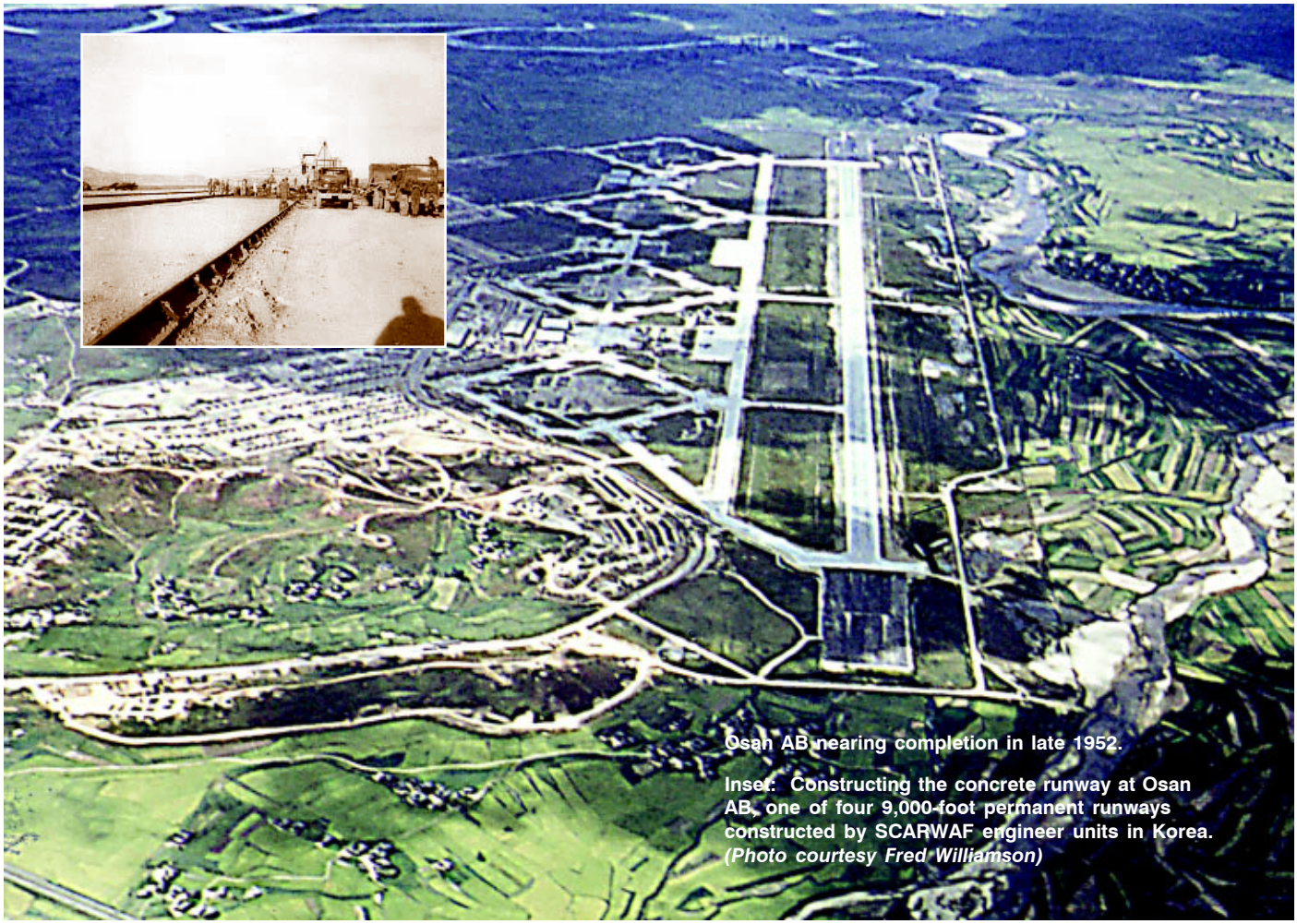
Inclement weather disrupted the schedule in mid-July when two weeks of rain caused the river to rise and flood into parts of the construction site. This turned the project and the motor pools into a quagmire so that heavy equipment could not work. Fill and sand had to be diverted from the project and used in the motor pools to create a firmer surface to support the weight of the heavy equipment. Two weeks of rain in mid-August and intermittently during the subsequent three months caused delays and increased the time required for concrete to dry. In November and December, cold weather set in and freezing temperatures created additional problems, especially for equipment operators.

Many personnel who worked on the runway and taxiways have stated that the concrete "floated" on the waterlogged, former paddy land. Although the area had been pumped dry before construction began, 1st Lt Fred Williamson, B Company commander, 839th EAB, tells the story of water "squishing" out from the sides of the runway when heavy aircraft landed.

In the end, K-55 was built faster than some bases were upgraded to concrete runways. The 18th Fighter-Bomber Wing (FBW) was the first unit assigned to K-55. The wing commander, Col Frank Perego, faced significant challenges overseeing the transition from F-51 to F-86 aircraft and the move from Chinhae to the new base still under construction. The 18th moved to Osan on December 26, and the first three F-86s arrived on base on January 28. The 18th FBW flew its first F-86 combat mission on February 25.

B Company commander with the 841st, Capt Ed McManus, furnished personal insights on the construction at K-55:

We had just about everything drop in. Our first customer was a Marine F9F from MAG 33 at Pyongtaek that made an emergency wheels-up landing in the July timeframe when the runway was under construction. Our big problems were the water table, flooding from the river north of the runway, spare parts, operator training (heavy on OJT and hard on equipment maintenance), supply of construction materials, light sets/generators for night operations, and weather conditions — monsoon rains, heat and cold. My big problems at the quarry were the loss of drill steel rods due to the granite fissures, explosives availability, replacement engine and jaws for the 150-ton primary crusher unit. We wore that baby out with continuous two 10-hour shifts per day. My dynamite came from Japan, when it came. I got a boxcar of frozen dynamite that we had to



Osan AB nearing completion in late 1952.

Inset: Constructing the concrete runway at Osan AB, one of four 9,000-foot permanent runways constructed by SCARWAF engineer units in Korea. ***(Photo courtesy Fred Williamson)***

defrost, a dangerous operation. My demo people, unlike the USAF EOD/bomb people, were not authorized demolition pay, and we blasted every day. When we ran out of dynamite we resorted to the use of black powder and C-4 demolition blocks scrounged from the Army.

Statistics compiled by the 417th Brigade during the course of the construction showed the engineers moved more than 325,000 cubic yards (CYs) of earth, unloaded and used 59 railroad cars of cement and 104 railroad cars of asphalt; hauled 136,470 CYs of base course material, 148,053 CYs of sand, and 549,923 CYs of fill; and poured 93,650 CYs of concrete.

The military armistice agreement at Panmunjom was signed at 10 a.m. July 27, 1953. Work on K-55 continued for the next two years by aviation engineers. The 839th EAB was the last SCARWAF unit to leave K-55 when the battalion was inactivated May 1, 1956.

K-55 was designated Osan AB in September 1956. The base transitioned to standby status and hosted only temporary duty or transient units involved in PACAF tactical operations. Concrete surfaces were restored in 1957, and total renovation projects were completed in 1958 when the base became a permanent installation. Upgrades to strengthen the runways and taxiways,

Members of the 811th EAB barely take notice of a C-46 Commando coming in for a landing as they work on a runway overrun.

Runways in Korea went into operation as quickly as aviation engineers could pave them. A B-26 light bomber taxis alongside grading equipment operated by the 808th EAB.

concrete resurfacing and reconstruction to the flight operations areas have been accomplished from time to time over the years, but the flightline layout, taxiways and aircraft dispersal areas remain essentially the same as they were when the base was built in 1952. This is a tremendous tribute to the work of the aviation engineers, whose original task was to design and quickly build a wartime airfield that could be used for five years.

SCARWAF Effectiveness

Aviation engineers in SCARWAF units accomplished impressive construction feats during the Korean War, even though the odds were stacked against them and the quality and timeliness of their work were sometimes criticized.

During the first year of the war, most units were under strength and personnel were often poorly trained and inexperienced. This was reflected in their accomplishments. Air Force leaders lamented that "no single factor so seriously handicapped Fifth Air Force operational capabilities as the lack of adequate air facilities." They complained that "operations from short and rough runways damaged and deteriorated combat aircraft, posing inordinate maintenance, supply and attrition burdens upon the combat wings and tactical air forces." Given what the engineers had to work with in the early days of the conflict, that wasn't surprising.

Some of the equipment used by Regular Army SCARWAF units that had been overseas since the end of World War II was obsolete and worn out, and in many cases there were no readily available spare parts. The hasty construction techniques and materials engineers were forced to use at the beginning of the war sometimes came back to haunt them. PSP that was laid on a poorly prepared base, for instance, was almost impossible to keep repaired. In May 1951, the PSP runways at Taegu

Trucks use a self-propelled conveyor loader to remove the curing sand from a 9,000-foot runway completed by the 930th EAG.

literally disintegrated under the pounding of 10,000 landings and takeoffs per month. The three groups of F-80s stationed there had to relocate to other bases.

Setbacks in fighting forced the engineers to complete work more than once. The runway at Kimpo had to be repaired twice; first after the North Koreans were driven back in the fall of 1950, then after fighting in the Seoul area during the Chinese offensive. American B-29s bombed the runway so the enemy could not use it. More than 40 bomb craters had to be filled, the runway resurfaced and buildings repaired. Suwon also required extensive repairs due to the same battles that damaged Kimpo.

Early problems with poorly trained engineers were remedied with the arrival of replacement personnel and additional units that had gone through engineer training at Ft. Belvoir, VA, and Fort Leonard Wood, MO. They were short of modern equipment, however, and problems due to lack of spare parts and logistics support were never solved.

Some units, especially the Reserve SCARWAF battalions that arrived in mid-1952, were issued new equipment, but there was no time to put in place an adequate pipeline of spare parts and technical manuals. In-commission rates of vital equipment sometimes reached as low as 15 percent. The double shifts the engineers worked also took a toll on equipment. In addition, the number of maintenance personnel needed to support the two-shift operation never kept pace with operational needs.

KOREAN SERVICE MEDAL

Executive Order No. 10179, November 8, 1950, established the Korean Service Medal. Members of the armed forces are authorized to wear the Korean Service Medal if they participated in combat or served with a combat or service unit in the Korean Theater on permanent assignment or on temporary duty for 30 consecutive or 60 nonconsecutive days between June 27, 1950, and July 27, 1954. The medal features an embossed gateway encircled with the inscription "Korean Service." Centered on the reverse side is the Korean symbol that represents the unity of all beings, as it appears on the national flag of the Republic of Korea. Encircling the symbol is the inscription "United States of America." A spray of oak and laurel graces the bottom edge.

Aerial view of the Osan front gate and 839th EAB areas, from a Bell helicopter spring 1953. (*Photo courtesy Duane Pfister*)

Aviation engineer units stepped up to the many challenges facing them, though, and by the end of the war their work was described as "remarkable." When the war started, there were only three operating air bases in Korea — Taegu, Pohang and Pusan. By the end of the war, one engineer aviation brigade, three groups, 10 battalions and three separate companies had seen action in Korea. They had built or repaired 55 separate airfields, including some in North Korea, from which the Air Force flew nearly 700,000 sorties. They also worked on a number of other airfields, including some used by U.S. Marine air units, and they built the new K-55 Air Base in a record six months.

Osan and Kunsan Today

Today Osan AB is the primary USAF base in the northern part of the Republic of Korea, serving as home for Seventh Air Force and the 51st Fighter Wing. The 51st flies F-16 C/D, A/OA-10A, and C-12J aircraft. Other units and aircraft operating on the base include U-2 operations flown by the 5th Reconnaissance Squadron and search and rescue missions flown by Det 1, 33rd Rescue Squadron. Kunsan AB is home to the 8th Fighter Wing flying F-16 C/D aircraft.

Principal civil engineer forces in Korea today are the 51st Civil Engineer Squadron at Osan, the 8th CES at Kunsan and the 554th RED HORSE Squadron at Osan.

Don Tomajan was assigned to K-55 with the 839th EAB Headquarters & Service Company as a heavy equipment mechanic and operator from November 1954 to April 1955, and served with B Company, 808th EAB at Naha Air Base, Okinawa, from April 1955 to April 1956. His last assignment on active duty was with the 103rd Engineer Company, Heavy Equipment, at Ft. Leonard Wood, MO. From 1963-1968, he worked as a South Vietnam Current Intelligence Analyst, Defense Intelligence Agency. From 1968 to present he has worked for IBM Federal Systems, Loral Federal Systems, and Lockheed Martin.

The author wishes to acknowledge the research assistance of Col (USA, ret) Ed McManus; Lt Col (USAR, ret) Fred Williamson; Col Bill Tomlin, Georgia State Defense Force; and MSgt Don Wingate (USAF, ret), fellow SCARWAF engineers who contributed research materials for this article. Ms Lois Walker, AFCESA historian, and Dr. Doug Merkle also assisted with this article.

Fifty years after the war that split the country in two, Korea is still one of the most dangerous places on earth. The U.S. military presence remains, with units such as the 554th RED HORSE Squadron serving as part of a combined deterrent force against further aggression across one of the world's most fortified borders.

"Semper Ducimus"

Always Lead

1965-2002

by Capt Dave Kellner, *554th RHS*

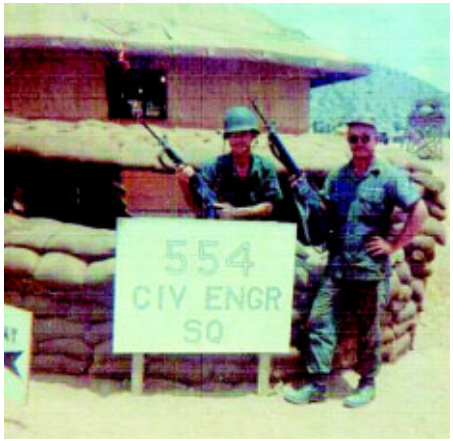
October 2001 marked the 36th Anniversary of the 554th RED HORSE Squadron — the first, oldest and only continuous active duty RED HORSE unit. The 554th was established at RED HORSE's inception during the Vietnam War in 1965. Anniversary events included a vehicle and equipment parade through Osan Air Base, Korea, an open house for more than 100 grade school children, establishment of a Society of American Military Engineers Post Detachment at Osan (attended by U.S. Army and Republic of Korea Air Force civil engineer personnel), and a Combat Dining-Out attended by Lt Col (retired) Robert Mix and Mr. Don Averett, both charter members of the first 554th unit stationed at Phan Rang, Republic of Vietnam.

The Air Force Gets a HORSE

In August 1965, the Air Force was granted approval to organize, train and equip a civil engineer squadron, heavy repair, to consist of 400 personnel and be totally self-sufficient.

As a result, the 554th was officially created by special order G-173 on Oct. 11, 1965. Activation of the squadron occurred at Cannon Air Force Base, NM, on Nov. 16, 1965, where the 554th became the first of eight active duty RED HORSE squadrons.

In January 1966, the 554th deployed to Phan Rang AB, Republic of Vietnam. From 1966 to 1971, the squadron was involved in projects there and throughout Vietnam at locations such as Cam Ranh Bay, Da Nang, Phu Cat, Pleiku, Ton Son Nhut, Nha Trang and Tuy Hoa. During this time, the squadron was relocated twice, first moving to Cam Ranh Bay in January 1970 then to Da Nang in December 1971.



Early 554th RHS members at Phan Rang AB, Republic of Vietnam. The unit deployed there in January 1966, just two months after it was activated. *(Photos courtesy 554th RHS)*

The 554th left Vietnam in 1972, relocating its headquarters to U Tapao Airfield, Thailand, where it was assigned until 1976. During that time, the unit maintained its reputation for outstanding work on projects at Udorn, Ubon, Takhli, Nakhon Phanom (known as NKP) and Korat. The squadron also began to expand its horizons, deploying detachments throughout the western Pacific. In 1973, Detachment 1 was formed at Osan AB, and the squadron began projects there and at Taegu and Kwang Ju. Detachment 6 was formed at Clark AB, Republic of the Philippines, and began projects there and at Camp O'Donnell and Wallace Air Station. During this period, the squadron was also involved in Operation Baby Lift and the Mayaguez rescue. At the end of 1975, the squadron's presence in Thailand came to a close.

In January 1976, the squadron formally moved to Osan AB. It has since been called on to do work throughout the Republic of Korea, from Taegu, Kwang Ju, Kotar Range and Pilsung to Camp Hialeah, Koon-Ni Range, Kunsan, Kimhae, Suwon, Chong Ju and Pohang. During its time in Korea, the 554th has deployed units to Japan, Guam, Wake Island, Thailand, Alaska, Micronesia, the Republic of China and the Republic of the Philippines. The squadron has also supported disaster relief and humanitarian recovery efforts throughout the Pacific.

Installation Engineering

The 554th RHS recently executed its most robust troop-training program in the past eight years, closing out a $10 million FY00 program, executing a $10.4 million FY01 program and developing a $10.6 million FY02 program. These troop-training projects are pivotal to developing wartime skills. Through projects like super K-Span facilities, pre-engineered buildings, revetments, concrete and asphalt airfields, and electrical, water and wastewater utility construction, members hone the skills necessary to support any theater tasking.

A small sample of projects completed in FY01 includes: a $400,000 K-Span facility at Suwon AB, a $430 thousand material handling equipment

Craftsmen pour alternating concrete pad sections for Kunsan's hazardous cargo marshalling pad. The 554th completed the $475,000 project in 2001.

facility at Osan AB and a $475,000 hazardous cargo marshaling pad at Kunsan AB.

In addition to utilizing in-house RED HORSE resources, the 554th is plugged into the Air National Guard, Air Force Reserve and Army Reserve network — using more than 5,500 man-days in FY01. The unit partnered with the 254th RED HORSE Flight, 134th Air Refueling Wing Prime BEEF team, 215th Electronics Installation Squadron and Army units to relocate a forward air controller communications tower and facility from Yongsan to Camp Red Cloud — absolutely critical to Air Force command and control. It also worked with the Army's 200-person 368th Engineer Combat Battalion (Heavy) to build concrete operating pads for Osan's entire Army Patriot missile battery at no cost to the Air Force.

Expeditionary Engineering

Arguably, the 554th RHS was the Air Force's exercise tempo leader during FY01, participating in an Operational Readiness Inspection (ORI), eight wing and peninsula-wide exercises, the Defense Department's Restoration of Operations (RestOps) exercise, Joint Chiefs of Staff Exercises Ulchi Focus Lens (UFL) and Foal Eagle, as well as exercises with the 254th RHF, 134th ARW and 215th EIS. During these exercises the squadron revolutionized its entire mobility marshaling operation, eliminating actions, pre-positioning assets and re-training troops to cut a 96-hour process down to only 16 hours.

The unit earned "Outstanding" Command and Control and "Excellent" Theater Engineering and Ability To Survive and Operate (ATSO) ratings during the March 2001 peninsula-wide ORI — a truly awesome exhibition of RED HORSE firepower. The HORSE totally smashed marshalling, staging and deployment time requirements while "maintaining perfect accountability of all personnel, vehicles and assets." While preparing for the ORI, the 554th orchestrated its largest deployment in more than eight years — 121 troops and 55 vehicles in just 52 hours.

RED HORSE also set the standard during the RestOps exercise, with zero casualties, zero assets contaminated and zero mission degradation. For UFL and Foal Eagle, the 554th provided extensive beddown planning and support for more than 2,500 in-bound forces.

As U.S. Forces Korea and Seventh Air Force's "Mr. 911," the 554th supports aircraft recovery at Osan and Kunsan; snow removal for Commander in Chief USFK, Osan and Kunsan; flood relief at Osan; and range support at Koon-Ni and Pilsung; just to mention a few.

Looking to the Future

During the Vietnam conflict, the 554th RHS was awarded 16 campaign awards and the Republic of Vietnam Gallantry Cross with Palm device. Since its inception, the 554th has also earned 19 Air Force Outstanding Unit Awards. The unit's ability to go above and beyond mission requirements continues to garner praise — with the 554th RHS being recognized as Pacific Air Forces' Outstanding Civil Engineer Unit (Small Base Category) for 2001, as well as receiving a Secretary of Defense Installation Excellence Award (Special Unit Category) for leadership and innovation resulting in an "enormous impact across the Republic of Korea — greatly enhancing readiness and quality of life of all the Services."

Though the 554th is the first and oldest continuous active duty RED HORSE unit, it is still evolving, transforming into the Air Force's first "Total Force" unit. Together with the 555th RHS (Reserve component), Nellis AFB, NV, and the 254th RHF (Guard component), Camp Murray, WA, it will form a 404-person squadron capable of any wartime mission. The unit's progression from the early days has been a long journey, culminating in a most diverse and productive RED HORSE squadron.

Whatever the future may be, bring it on! We are ready!

Capt Dave Kellner is chief, design and demolition, 554th RHS, Osan AB, Korea.

Editor's Note: A RED HORSE Reunion will be held in Branson, MO, May 5–8, 2002, and is open to all Horsemen, past and present, and their families. Reservations must be made before Apr. 1. For more information, e-mail Paul Sattler at redhorse820@qwest.net.

In addition to providing emergency services, disaster relief and humanitarian assistance on the Korean peninsula, the 554th sponsors the Song Sim Orphanage, providing financial support, facility maintenance expertise and companionship for 125 mentally and physically challenged orphans. ***(Photo by MSgt James Lemen)***

The 554th RHS is stationed at Osan AB, Korea. Its 138 personnel make up the Air Force's only forward-deployed combat engineer unit. It provides worldwide, highly mobile, rapid-deployable, self-sufficient heavy engineer construction capability for Air Force contingencies. The 554th supports Seventh Air Force, 51st and 8th Fighter Wings, several collocated operating bases and the sister Services with a $10 million annual troop-training program, and ensures $33 million in mobility vehicle and equipment assets are mission-ready.

From Drought To Flood

Randolph CEs battle one crisis, then another

by MSgt Luis A. Adams, 12th CES

(From top to bottom) **The pit of well number 1 on Aug 4, 2001. This is where Randolph's water contamination problems began.** ***(Photo by A.C. Thomas)*** **SrA Shaun Ballor, 37th CES equipment operator, stands by as emergency repairs are made to Randolph's water lines.** ***(Photo by CMSgt Kenneth Thomas)*** **TSgt Duane Cruz** ***(left)*****, 12th CES, and TSgt David Riggs, 37th CES, repair a section of broken pipe.** ***(Photo by CMSgt Ercilia Ramos)***

Water problems made for an interesting summer for those who live, work and play at Randolph Air Force Base, TX. It all started with a long dry spell — not too unusual for Texas in July. Then a mystery substance contaminated one of Randolph's wells, beginning a two-week ordeal that came to an end only for base residents to be propelled into another in a matter of weeks. As a result, people who habitually used base water no longer trusted what they were drinking and quickly turned to civil engineers and base authorities for relief.

Don't Drink the Water

On Thursday, Aug. 2, base residents swamped the 12th Civil Engineer Squadron's service desk with calls. TSgt Charles Lineberry, 12th CES General Officer Quarters manager, was one of the first to call in and inform the controller about a "strong smell of fuel and a black, gooey substance seeping out of kitchen and bathroom faucets." Something had contaminated the water supply system at Randolph, which employs about 12,000 people and is home to almost 2,700.

Lt Col Allen J. Benefield, 12th CES commander, and Maj Greg Williams, 12th CES operations chief, quickly assessed the situation and implemented the squadron's emergency contingency plans. Unit Control Center standup was initiated, and a 12th Flying Training Wing-wide emergency contingency plan went into effect, closing the base to all but mission-essential personnel. The main water supply was cut off, leaving base residents dependent on bottled water for everything from cooking to toilet flushing, and training flights suspended, silencing the base's two active runways for the first time in memory.

An overwhelming influx of support from retired military, neighboring Air Force bases and the local community helped CE with the monumental task of isolating the problem, identifying the needs of the base community and repairing the countless number of broken water mains which eventually trailed the exhaustive recovery efforts.

The syrupy, crude oil-like substance in the water appeared to be coming from a 75-year-old well in the Edwards Aquifer. The well supplies distribution lines that primarily feed the Wherry housing complex (which is home to many junior enlisted families), the area that received most of the contaminated water. The Edwards Aquifer Authority sampled the base's water supply Friday and determined that none of Randolph's four other on-base wells or nearby off-base wells showed petroleum contamination.

By Saturday, base officials gave the go-ahead to restore water service to 659 housing units, excluding the 360 Wherry units near the contaminated well.

In the meantime, Mr. Bob Louthen, 12th CES infrastructure chief, and Mr. Roger Kiker, 12th CES energy manager, had developed a preliminary comprehensive strategy to systematically isolate and flush the water towers, primary lines and water mains. Mr. Robert Still, 12th CES lead plumber, and Mr. Larry Kosub, 12th CES plumber, various 12th CES craftsmen, and SrA David Shinn and SSgt Jeramie White, both plumbers from the 37th CES at nearby Lackland AFB, led the charge to manipulate more than 500 valves on a 400,000-foot water system in the course of a few days. Not surprisingly, there were weak areas in the system that created problems when the water flow increased.

When several water mains burst early Sunday, base water service was once again shut down; this time to repair the broken pipes. The local community responded with gyms, high schools and fire departments providing use of their showers, and local hotels offering discounted rates with no tax for Randolph housing residents.

Randolph's water system is made up of 40- and 50-year-old pipes, as previously identified through the Recurring Maintenance Program, that threatened a quick recovery by cracking, leaking and ultimately breaking. This led to a concerted effort to repair 10 water main breaks and replace more than 10,000 feet of pipe in a

72-hour span. Augmented with repair teams from the 37th CES, the 307th RED HORSE Squadron and San Antonio Water System, members of the 12th CES and the base's contracting squadron worked around the clock to finalize the scope of work and award emergency repairs via "letter contract."

Meanwhile, 12th CES firefighters coordinated a source of potable water for water buffalos with the local city fire department via their mutual aid agreement. They also arranged to connect to the municipal water system with 1,000 feet of 5-inch hose to supplement system pressure. CE members tapped experts at the Air Force Institute for Environment, Safety and Occupational Health Risk Analysis and the Air Force Center for Environmental Excellence for advice early, as the sophisticated science of groundwater, aquifer and wells quickly exceeded local CE expertise.

The efforts and coordination of several base agencies and support units in and around Randolph were needed for purchase, delivery and 24-hour distribution of more than 20,000 gallons of drinking water per day. This, along with the rental and strategic placement of more than 300 portable toilets, authorized off-base accommodations and free, chapel-sponsored lunches helped put Randolph AFB on the road to recovery.

When the base reopened the following Tuesday, potable water was still being trucked in since the contaminant, and how it got into the well, remained a mystery. Non-potable water was restored late Tuesday after tests showed it was suitable for non-drinking purposes.

State environmental officials eventually declared Randolph's water safe for human consumption on Aug. 15, ending a two-week period during the hottest month of the year in which base personnel had to keep a jug of water nearby to wash their hands, brush their teeth or mix a glass of tea.

"Three independent laboratories analyzed the water contamination source, and the chemical analysis results were the same from all three labs," said Anthony Martinez, 12th CES Environmental Flight chief. "A geological study in September found that the water contamination was naturally occurring crude. Because this was a geological study and used previous findings to assist in its conclusion, we think this is the most plausible answer." Martinez said the source of the contamination is believed to be highly degraded naturally occurring crude oil that originated either in the Austin Chalk or Edwards rock formations. The base is still working with the Texas Natural Resource Conservation Commission in determining the origin of the contaminate.

What's being done to prevent another water contamination crisis? One of the major lessons learned from the Randolph AFB water crisis was to install sensoring and monitoring devices in the wells that would detect impurities in the water system immediately, alert water plant operators, and automatically shut down the contaminated well.

When it rains, it pours

After a one-week reprieve from the water crisis, Mother Nature decided to "show up and show out" with a storm that brought torrential rains and once again challenged the Randolph community.

As record levels of rain fell, roads on base began to flood and snarl traffic. When the clouds cleared, several facilities on base were flooded. The 12th CES pumped more than 100,000 gallons of water from the basement of two critical (West Airfield Vault and Headquarters Military Personnel Center) and three mission-essential facilities. They cleared tree limbs and debris off 5 miles of road throughout Randolph and used forklifts and front-end loaders to place more than 110 sandbags in high flood areas. They located 10 dumpsters and positioned several jersey bouncers to assist security forces in controlling and directing traffic both in and out of the base and away from flooded roads.

"The CE and Wing teams did an awesome job during both crises," said Lt Col Benefield, "They came together and got the job done."

(From top to bottom)* Approximately 3 feet of water stood in the basement of Randolph's west airfield vault when the top photo was taken and 4 feet when the second photo was taken. David Washington *(in doorway)* and SrA Andrew Diehl, both from the 12th CES, at the vault. Approximately 30,000 gallons was pumped out of the basement that day. *(Photos by MSgt Luis A. Adams)

SrA Victor Ramon *(right)* and Justin Gardner, 37th CES, cut a water main in preparation for repairs at Randolph AFB. *(Photo by Jennifer Valentin)*

MSgt Luis A. Adams is the non-commissioned officer in charge of infrastructure for the 12th CES, Randolph AFB, TX.

Green, or renewable, power comes from wind, biomass, geothermal or photovoltaic sources. If, like most, you think it is overpriced and certainly not a serious choice for an Air Force base, then think again. Last May, the Air Force Civil Engineer Support Agency (AFCESA), Air Force Materiel Command (AFMC), Edwards AFB and the Western Area Power Administration (WAPA) participated in awarding the first competitively priced green power contract in the Department of Defense. It was also the largest. This article highlights the steps taken, problems overcome and overwhelming success.

Edwards Goes "GREEN"

by Michael J. Santoro, *HQ AFCESA*

In 1994, California was emerging from a deep recession. Average electric prices were among the highest in the country — only five states were higher. In 1996, the California legislature tried to relieve prices and stimulate the economy by deregulating the electric utility industry. Deregulation laws, signed in 1996 and implemented in 1998, allowed customers to purchase electricity from a third party supplier (an Energy Service Provider, or ESP).

Deregulation laws froze utility rates until April 2002, or until the utility recovered "stranded" costs incurred by deregulation. The laws also established the California Power Exchange (PX) as a clearinghouse for utility companies and ESPs to buy and sell their power. After monitoring the PX prices for the first few months, and after unsuccessful attempts to get ESPs, we determined it was advantageous for Edwards to continue buying power from the local utility company, Southern California Edison (SCE), at its frozen tariff rate.

This proved correct until the summer of 2000, when the California deregulation market became dysfunctional. Prices tripled on the PX, going as high as 60 cents per kilowatt hour, rolling blackouts began and the utility companies were losing billions of dollars. Although Edwards' utility rates did not increase during this period, its frozen rate was in danger of ending. SCE stated its stranded costs had been recovered and requested the California Public Utility Commission (CPUC) allow it to unfreeze its tariff so it could charge market-based rates. Edwards was facing major rate increases and also a decision by the California legislature to prohibit customers from obtaining power from an ESP.

A Bold Idea Develops

These events highlighted the need to find an ESP to provide power at a fixed price for a term of three to five years (our estimate of the time needed for the California deregulation market to resolve its problem and become truly competitive, or for the state to return to regulation). Mr. Paul Weaver, energy manager for Edwards' 95th Civil Engineer Group, had already engaged with ESPs that indicated an interest in such an arrangement, plus they suggested renewable power could be provided at a price comparable to the frozen tariff rate. After further discussion, we verified the approach and engaged.

Edwards' contracting office issued a Source Sought Notice (SSN) in October 2000 to determine interest in providing green power at or near the current frozen rate. We weren't sure what to expect because we were asking for green power at a fossil fuel price — something no other government agency had successfully done. But based on previous discussions with ESPs, we knew we had to try.

We received five responses. After additional clarification relating to green power, we decided that a Request for Proposal (RFP) should be issued. A pre-solicitation notice for the RFP was issued in January 2001. The base received several responses, but only two appeared to satisfy all the requirements. Another potential bidder who could meet the requirements was identified later.

The RFP was issued in April 2001 to the three identified sources to provide all the supplemental power (60 percent of the total load) that Edwards AFB needed above the Western Area Power Administration (WAPA) hydropower allocation for a period of five years. Two of the three sources responded. An evaluation team composed of AFCESA and Edwards personnel reviewed the bids in April 2001. Only one of the responders could fully meet the requirements; then negotiations began. At the same time, negotiations began with SCE for a modified Power Displacement Agreement (PDA). The PDA is a crediting mechanism in which SCE actually delivers all the power to the base, but credits the base for its WAPA hydropower allocation, and now green power, received at other points on their grid.

Paydirt

During negotiations, we discovered it was faster to use WAPA as the contracting agent to award the green power contract. Timing was critical since we expected the CPUC to suspend use of ESPs on July 1, 2001. The base executed an interagency agreement with WAPA to permit them to award the contract. Negotiations were completed in May 2001, and a contract was awarded to Enron to supply green power to Edwards AFB starting June 1, 2001.

Does your base have the potential to go green?

These maps show the potential for wind, photovoltaic and geothermal power for Air Force bases in the continental United States. Green power initiatives abound. For more information on ways to acquire this type of energy for your base, e.g., a local supplier, Native American group, or RFP for on-base generation, call the AFCESA utility rates management team at DSN 523-6463. *(Maps courtesy DOE/NREL)*

The contract requires 25 percent green power for the first two years and steps up to 100 percent green power at the end of the third year. The green power would be a mix of wind and biomass power initially, with the possibility of being 100 percent wind power in the last three years of the contract.

Delivery started June 1, 2001, using the PDA with SCE. This agreement is a win-win-win-win. Edwards gets lower prices. SCE gets power at competitive prices to meet demand where they need it, and California gets power from out of state, reducing their generation shortages. Enron benefits with their first large-scale renewable power sale in California, helping them further develop renewable power products.

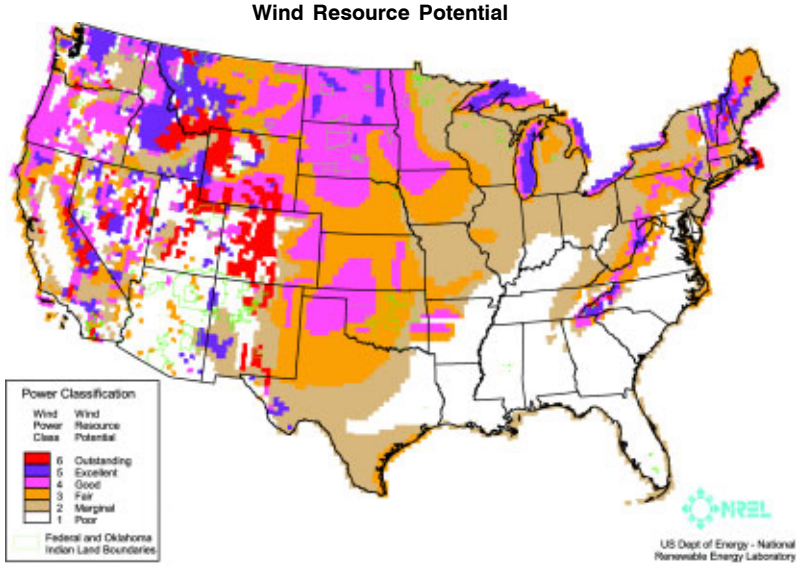
The green power purchase will save the base approximately $42 million in electricity costs over the five-year period of the contract based on the current SCE tariff rate. In addition, the green power will help Edwards meet its current energy conservation goals and green power goals as dictated by Executive Order 13123.

The initiative took a number of unexpected turns and experienced some setbacks, but stayed alive with the support of open-minded base leadership. It was truly a team effort that could not have been accomplished without the hard work, dedication and persistence of Capt Amy Hoffer and Paul Weaver of Edwards' 95th CEG, Mike Keeling from base contracting, John King and Ray Haug of SCE, Penny Casey of WAPA, and Maj Jeff Renshaw of AFCESA, and the senior leadership of Lt Col Greg Emanuel, Col James Judkins and Col Robert Hood of Edwards.

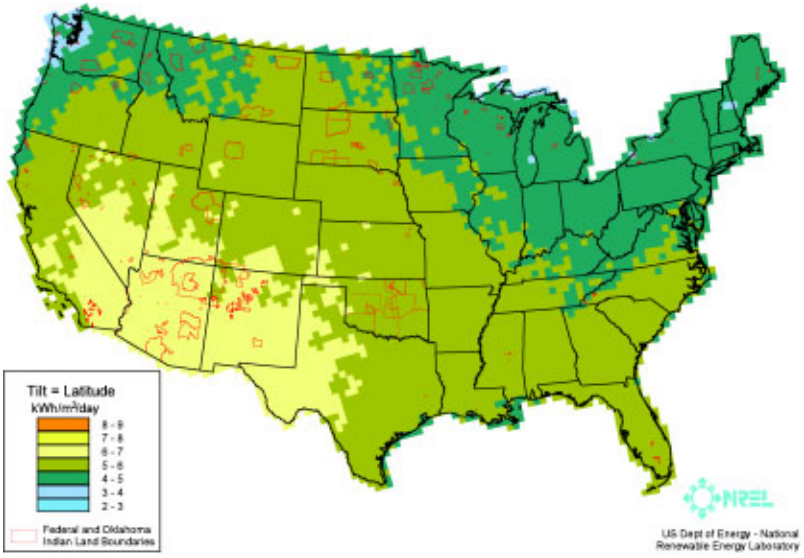
Mike Santoro is a senior engineer for the utility rates management team at HQ AFCESA, Tyndall AFB, FL, and was a team member on this project.

Editor's Note: While Enron may be experiencing contract problems elsewhere, the Edwards AFB contract is in good shape and continued service is not endangered. It has remained profitable for Enron and it is highly likely the contract could be successfully assigned to another energy company in the event Enron desires to withdraw.

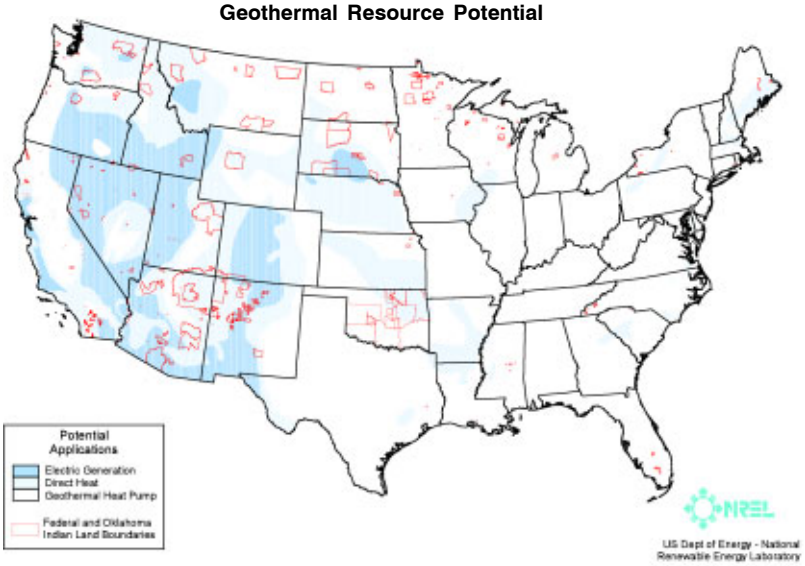
Wind Resource Potential



Solar Photovoltaic (PV) Resource Potential



Geothermal Resource Potential



Engineering the High Ground

"Masters of Space" Support Enduring Freedom

by 1Lt John R. Vipperman
50th CES

Sophisticated equipment used to accomplish the satellite mission requires civil engineer support in the form of uninterrupted power supply. *(Photos courtesy 50th CES)*

Uninterruptable power for satellite operations has never been more critical to the Air Force than right now, as the United States and its allies fight terrorism in Afghanistan and around the world.

The 50th Space Wing at Schriever Air Force Base, CO, operates the Defense Satellite Program (DSP) satellites, Global Positioning System (GPS) and various communications satellites including NATO, SKYNET IV and Milstar. DSP is designed to detect missile launches, space launches and nuclear detonations. GPS delivers navigational signals with pinpoint accuracy to guide bombs to their targets. NATO and SKYNET IV satellites ensure reliable space-borne communications to the National Command Authority and Allied Forces. Milstar maintains survivable, enduring C2 communications through all levels of conflict to warfighting commanders in chief (CINCs) worldwide.

The sophisticated equipment used to accomplish this mission requires an extraordinary amount of civil engineer support in the form of uninterrupted power supply (UPS). The 50th Civil Engineer Squadron maintains $420 million in real property, ensuring uninterrupted power in support of the $11 billion Air Force Satellite Control Network (AFSCN). The "Masters of Space" provide fire and environmental protection; contingency planning; disaster response; operations and maintenance and support services for vital national navigation, weather, communications and surveillance satellite missions assigned to Schriever AFB and 12 worldwide sites.

UPS batteries are the first line of defense against loss of commercial power. In all, there are 1,800 batteries in a redundant configuration that will carry the technical load. This system is designed to maintain power to mission-critical equipment for a minimum of 15 minutes. However, well before this design limit arrives, a series of generators will spin up and draw the load from the batteries. A total of seven diesel generators make up Schriever's power plant and produce an astounding 16.5 megawatts of power. The remarkable size and capacity of this standby power plant make it the largest one in the Department of Defense. The combined system of commercial feed, battery back-up and power production sustain the missions of Schriever AFB with 99.999 percent reliability.

The 50th CES heads an aggressive MILCON program resulting in the largest amount of infrastructure growth Schriever AFB has seen since its inception in 1985.

"The mission of the Wing is to provide command and control to military satellites within the AFSCN.

A total of seven diesel generators make up Schriever's power plant and produce an astounding 16.5 megawatts of power.

The 50th CES is actively supporting this mission and, in turn, Operation Enduring Freedom." said Lt Col George "Scott" Horan, commander, 50th CES. The 195-member squadron is also heading up an aggressive MILCON program resulting in the largest amount of infrastructure growth Schriever AFB has seen since its inception in 1985.

The 50th CES has a proud heritage of providing superior support to the 50th Space Wing and tenants of Schriever AFB. Teamwork among service members, DoD civilians and contractor support make it possible for these CE professionals to "Engineer the High Ground."

1Lt John R. Vipperman was maintenance engineering manager for the 50th CES, Schriever AFB, CO. He is now assigned to the 554th RED HORSE Squadron, Osan Air Base, Korea.

A Strategic MISSION

CEs Support Air Superiority and Counter-Narcotic Operations

by CMSgt John D. Albaugh
ACC PMS

Ever heard of Air Combat Command's Program Management Squadron? If you haven't, you will, because its utility and mission are increasing dramatically. PMS is a unique organization specializing in large-scale and dynamic program management.

The squadron manages a variety of air superiority and counter-narcotic surveillance and support programs, including: base operating support (BOS) at forward operating locations (FOL), the Iceland Air Defense System (IADS), the Tethered Aerostat Radar System (TARS), the Counterdrug Surveillance and Control System (CSCS), Precision Measurement Equipment Laboratories (PMEL), Contracted Advisory and Assistance Services (CAAS), and the Over-the-Horizon Backscatter Radar System (OTH-B). Within this composite organization is a 12-member Civil Engineer Division responsible for project development, engineering and design, construction management, environmental management, safety and health, real estate management, and large-scale contract development and program management.

"My division operates similar to a base-level CE squadron," said Maj Jacqueline Crum, "except our base is a collection of remote installations located around the globe."

Her team maintains well over $400 million worth of real estate at 26 geographically separated locations in five foreign countries, the Caribbean, Puerto Rico and nine states. Maintaining, repairing and modernizing real estate at a multitude of remote and austere surveillance locations really keeps them moving. "We're constantly on the road surveilling projects and our contracted workforces," said TSgt Robert Steele, NCOIC of construction management.

The Civil Engineer Division manages facilities at remote locations around the globe, such as this counter-drug site in Marandua, Colombia.

Working on processes to improve real property and enhance mission success requires site visits to surveillance installations to develop quality designs to upgrade infrastructure and facilities. "We're currently working several major initiatives, including standardizing our TARS fleet and mooring systems," said Kris Wilson, TARS Project Engineer.

With nearly 900 facilities at 26 installations, the Real Estate Management branch stays busy capitalizing work orders and project initiatives, conducting facility and boundary surveys, and negotiating leases. "For the most part we don't mind the TDYs, provided Colombian guerillas keep their distance," said Coby Davis, Real Estate Branch chief.

A heavy TDY commitment is just one of the unique challenges associated with managing projects and programs from afar. Another challenge is strict compliance with environmental standards. "At some locations we are forced to ship hazardous waste out of the host nation for proper disposal," said Major Crum. As with any CE squadron, the division is sensitive to the host nation and associated environmental regulations.

Also similar to a typical CE squadron, their production control section serves as the single-point work requirement collection center. The production control section processes all work requirements including validating, budgeting and tracking work from conception through completion. "We work with and support a wide variety of agencies including NATO, U.S. Customs, sister services and large defense contractors," said MSgt Alan Goodson, production control chief.

The Civil Engineer Division is currently working an initiative to standardize the Tethered Aerostat Radar System fleet and mooring systems. Here, the TARS Aerostat is moored on a launch pad at Deming, NM. *(Photos courtesy PMS/CE)*

The division was entrusted by U.S. Southern Command Air Forces with the development and program management of a new FOL BOS, supporting aerial counter-narcotic missions in the Caribbean and South America. During development of the FOL BOS, PMS/CE broke the ice by being the first to completely competitively source fire protection at Manta Air Base, Ecuador, helping relieve Air Force firefighter ops tempo.

"These civil engineers provide outstanding services to critical missions directly supporting a variety of end-users and customers," said John Heiser, PMS deputy director. "Another success story for our proud CE community."

CMSgt John D. Albaugh was the FOL program superintendent, HQ ACC PMS/CE, Langley AFB, VA. He is now the chief enlisted manager, 718th CES, Kadena AB, Japan.

New Structure Offers Protection from chemical attack

by 2Lt Olivia Duer Nelson *305th Air Mobility Wing Public Affairs*

Air Mobility Command civil engineers are learning to assemble a new structure that allows deployed airmen to operate normally under threat of an airborne chemical attack.

The structure, called a Transportable Collective Protection System, is an expandable Temper tent with a special, protective lining combined with a powerful air management plant. The plant over-pressurizes the inside of the tent with filtered air so that airborne contaminants cannot penetrate the outside lining.

305th CES members practice setting up the new Transportable Collective Protection System, or TCPS. *(Photo by Steven Robertson)*

Fielding the new system is expected to have an important impact on operations and training for civil engineers all over AMC, said Steve Robertson, 305th Civil Engineer Squadron Readiness Flight chief at McGuire Air Force Base, NJ. "This deployable system was only a dream a few short years ago — now it's a welcome reality."

There will be 12 TCPS units postured at McGuire, ready to deploy anywhere in the world, Robertson said.

"The vision surrounding this equipment is that our folks should be able to take it to high-threat areas, set it up and maintain it so deployed personnel can live and work inside a shirtsleeve environment," said MSgt Alonzo Doe, 305th CES Readiness Flight superintendent.

"With this system, deployed operations can continue even during a chemical attack," he said. "If you were attacked in a tent city right now, you'd be moved to a contamination control area, decontaminated and taken to a clean site, which could take hours depending on the number of personnel affected."

But with so many parts, experienced people must assemble the system.

Contractors from Brooks AFB, TX, where the system was originally developed by the Army as a medical facility, and civil engineers from Headquarters AMC at Scott AFB, IL, conducted a three-day setup and maintenance training class that included people from Air Force Special Operations Command and Air Combat Command. The training allowed the group to practice setting up the different components.

The TCPS is like a "Ziploc bag inside a tent, attached to an air conditioner on steroids," said TSgt Michael Biggerstaff, 305th CES readiness training noncommissioned officer in charge. "The completely assembled system can be used for any functions normally found in tent cities," he said.

Some functions airmen could expect to use a TCPS for include living quarters, dining facilities, medical facilities and workspace.

"If I were deployed and had to work in one of these facilities, I'd feel comfortable," said A1C Monica McMullan, 305th CES. "There are so many safety measures to let you know it's working right."

Two weeks following training, the 305th CES seized another opportunity to erect the system during their annual bivouac. This time the "deployed" Prime BEEF teams had a personal interest in assembling the 96-foot system well within exercise timelines — the sooner it was operational, the sooner it would be home for some during the bivouac. Despite temperatures and humidity in the upper 90s, the teams accomplished all exercise objectives in record time, including TCPS setup.

"Our bivouac preparation, time-sensitive scenarios and stellar execution is yet another example of how the 305th CES makes the impossible possible," said Col Charles Smiley, 305th CES commander. "Our superb Readiness Flight realistically tested our skills and as a result I'm completely confident our troops can assemble the TCPS, anywhere, anytime."

Future training will include civil engineers from all over the command as they attend the Air Mobility Warfare Center's Phoenix Readiness course. The training will be accomplished by warfare center instructors using 305th CES assets and expertise.

First GeoBase Technologies Course Offered

Members of the Defense Mapping School, Headquarters U.S. Air Force Geo Integration Office (HAF GIO) and Army National Guard Headquarters jointly conducted an "Introduction to U.S. Air Force GeoBase Technologies" course at Fort Belvoir, VA, Dec. 10-14. In the first offering of this prototype class, 20 civil engineers representing all the major commands learned a variety of operational concepts of the Air Force's GeoBase, Geospatial Information & Services (GI&S) and Global Positioning System (GPS) technologies. The course was hosted by the National Imagery and Mapping Agency.

For more information on the course, contact HAF GIO or SMSgt Pat Abbott, engineering career field manager, HQ Air Force Civil Engineer Support Agency, Tyndall Air Force Base, FL.

CMSgt Mike Doris, Chief, Enlisted Matters, Office of The Civil Engineer, discusses the importance of geospatial information systems technology to the civil engineer mission. *(Photo by SMSgt Pat Abbott)*

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Continuing Education

AFIT
Civil Engineer and Services School

Course No.	Title	Off	Start Date	Grad Date
ENV 022 (S)	Pollution Prevention Program Ops. & Mgmt.	02B	01-Apr-02	05-Apr-02
MGT 423 (S)	Project Programming	02B	08-Apr-02	19-Apr-02
ENG 550	Airfield Pavement	02A	15-Apr-02	26-Apr-02
MGT 400	Civil Engineer Commander/Deputy Course	02A	15-Apr-02	26-Apr-02
MGT 585	Contingency Engineer Command Course	02B	15-Apr-02	19-Apr-02
ENV 101	Intro. to Environmental Management Flight	02A	15-Apr-02	19-Apr-02
ENV 418	Environmental Contracting	02B	22-Apr-02	03-May-02
Sat. Seminar	Hzds. Waste Accum. Site/Initial Point Mgmt.	02B	25-Apr-02	25-Apr-02
Sat. Seminar	Stormwater Seminar	02B	03-May-02	03-May-02
MGT 420	Engineering Flight Commanders' Course	02A	06-May-02	10-May-02
ENV 416	Environmental Flight Commanders' Course	02A	06-May-02	10-May-02
MGT 433	EOD Flight Commanders' Course	02A	06-May-02	10-May-02
MGT 427	Fire Protection Flight Commanders' Course	02A	06-May-02	10-May-02
MGT 406	Housing Flight Commanders' Course	02A	06-May-02	10-May-02
MGT 430	Operations Flight Commanders' Course	02A	06-May-02	10-May-02
MGT 410	Readiness Flight Commanders' Course	02A	06-May-02	10-May-02
MGT 411	Resources Flight Commanders' Course	02A	06-May-02	10-May-02
ENV 531	Air Quality Management	02C	13-May-02	17-May-02
ENV 020 (S)	Env. Compliance Assessment	02C	20-May-02	22-May-02
MGT 446 (S)	Utilities Privatization	02A	21-May-02	24-May-02
Sat. Seminar	ECAMP Seminar	02C	23-May-02	23-May-02
MGT 426 (S)	SABER Management	02A	28-May-02	31-May-02
ENG 464	Energy Management Technology	02B	03-Jun-02	07-Jun-02
MGT 102	Intro. to BCE Org. for Reserve Forces	02A	03-Jun-02	17-Jun-02
ENV 220 (S)	Unit Environmental Coordinator	02C	03-Jun-02	07-Jun-02
ENV 419	Env. Planning, Programming & Budgeting	02C	04-Jun-02	06-Jun-02
ENG 466	Energy Management Policy	02B	10-Jun-02	14-Jun-02
MGT 412	Financial Management	02B	10-Jun-02	21-Jun-02
ENV 222 (S)	Hazardous Material Management Program	02C	12-Jun-02	14-Jun-02
ENV 022 (S)	Pollution Prevention Program Ops. & Mgmt.	02C	17-Jun-02	21-Jun-02
MGT 484	Reserve Forces Air Base Combat Engineering	02B	17-Jun-02	28-Jun-02
Sat. Seminar	Energy Savings Performance Contract	02B	25-Jun-02	25-Jun-02
Sat. Seminar	Hzds. Waste Accum. Site/Initial Point Mgmt.	02C	27-Jun-02	27-Jun-02

Registration for resident courses, which are offered at Wright-Patterson AFB, OH, begins approximately 90 days in advance. Applications must go through the student's MAJCOM Training Manager. Registration for the satellite offerings, marked with an (S), closes 40 days before broadcast. For satellite registration, course information, or a current list of class dates, visit the CESS website at: http://cess.afit.edu.

366 Training Squadron

Sheppard AFB, TX

Course No.	Title	Start Dates	Grad Dates
J3AZR3E051-012	Fire Alarm Systems	02-Apr/30-Apr/28-May/24-Jun	25-Apr/23-May/20-Jun/18-Jul
J3AZR3E071-001	CE Adv. Elec. Troubleshooting	03-Apr/01-May/30-May/27-Jun	30-Apr/29-May/26-Jun/25-Jul
J3AZR3E051-008	Electrical Distribution Sys. Maint.	15-Apr/15-May	10-May/12-Jun
J3AZR3E051-003	Cathodic Protection	15-Apr/6-May	26-Apr/17-May
J3AZR3E051-007	Airfield Lighting	16-Apr/01-May	25-Apr/10-May
J3AZR3E051-010	Bare Base Electrical Systems	15-Apr/29-Apr/28-May	26-Apr/10-May/10-Jun
J3AZR3E472-000	Liq. Fuels Stor. Tank Entry Spvsr.	08-Apr	18-Apr
J3AZR3E472-001	Liq. Fuel Sys. Maintenance Tech.	15-Apr	26-Apr
J3AZR3E451-004	Fire Suppression Systems Maint.	08-Apr/29-Apr/20-May/12-Jun	26-Apr/17-May/10-Jun/02-Jul
J3AZR3E471-101	Bare Base Water Purification and Distribution Systems	03-Apr/17-Apr/01-May/05-Jun/19-Jun	12-Apr/26-Apr/10-May/14-Jun/28-Jun
J3AZR3E453-003	Pest Management Certification	01-Apr	26-Apr
J3ARR3E453-002	Pest Management Re-Certification	29-Apr/13-May/03-Jun	03-May/17-May/07-Jun
J3AZR3E052-013	CE Advanced Electronics	01-Apr/3-Jun	26-Apr/28-Jun
J3AZR3E072-002	Troubleshoot. Elec. Pwr. Gen. Eq.	22-Apr/16-May/12-Jun	13-May/07-Jun/03-Jul
J3AZR3E072-113	Bare Base Power Generation	01-Apr/29-Apr	25-Apr/23-May
J3AZR3E151-013	HVAC/R Controls Systems	01-May/11-Jun	05-Jun/16-Jul
J3AZR3E151-014	Direct Expansion Systems	22-Apr/10-Jun	22-May/11-Jul
J3AZR3E151-015	Indirect Expansion Systems	15-Apr/06-May/28-May/17-Jun	02-May/23-May/14-Jun/05 Jul
J3AZR3E050-001	CE Work Estimating	20-May	10-Jun

Ft. Leonard Wood, MO

J3AZP3E571-003	Engineering Design	01-Apr/29-Apr/3-Jun	12-Apr/10-May/14-Jun
J3AZP3E571-004	Construction Surveying	15-Apr/13-May/17-Jun	26-Apr/24-May/28-Jun
J3AZP3E971-003	Advanced Readiness	17-Jun	21-Jun
J3AZP3E971-005	NBC Cell Operations	01-Apr/22-Apr/10-Jun	05-Apr/26-Apr/14-Jun

Indian Head, MD

J5AZN3E871-001	Adv. Access and Disablement	01-Apr/22-Apr/13-May/03-Jun/24-Jun	12-Apr/03-May/24-May/14-Jun/08-Jul
J5AZN3E871-002	Advanced EOD Course	01-Apr/13-May/03-Jun	12-Apr/24-May/14-Jun

Gulfport, MS

J3AZP3E351-001	Low Slope Maint. & Repair	08-Apr/29-Apr/03-Jun	18-Apr/09-May/13-Jun
J3AZP3E351-002	Fabrication Welded Pipe Joints	29-Apr	10-May
J3AZP3E351-003	Metals Layout Fab. & Welding	08-Apr/13-May/03-Jun/24-Jun	25-Apr/31-May/20-Jun/12-Jul

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

Readiness Challenge VIII Canceled for 2002

Air Force officials have announced that Readiness Challenge VIII, a biennial multi-national combat support competition, is canceled for 2002 because of current and possible future mission requirements in support of Operations ENDURING FREEDOM and NOBLE EAGLE.

The competition, originally scheduled for April 18-27, demonstrates the leadership, readiness, warfighting and contingency support capabilities of U.S. and international teams. U.S. teams are composed of members from the Air Force civil engineer, services and personnel career fields. They compete in real-world scenarios designed to showcase their skills in setting up and maintaining self-sufficient field operations in a bare base environment during a deployment or contingency. The competition has been tentatively rescheduled for spring 2003.

"While we regret canceling the competition, the main focus of all our fighting forces is the current and future support of activities related to Operations ENDURING FREEDOM and NOBLE EAGLE," said Col Bruce Barthold, commander, Air Force Civil Engineer Support Agency. "In addition, the increased operational tempo being experienced now and into the foreseeable future makes it uncertain whether appropriate personnel and resources will be available to support the competition next spring."

In 1999 Readiness Challenge VII was canceled just days before it was to begin because of the U.S. military campaign in Kosovo region. The competition was held in 2000.

In addition to the U.S. Air Force teams, five foreign teams — Canada, the United Kingdom, Germany, Japan and Norway — were scheduled to participate. The competition is jointly hosted by AFCESA and Detachment 1, 823rd RED HORSE Squadron and is held at the Silver Flag Exercise Site on Tyndall AFB, FL. *(TSgt Michael A. Ward, HQ AFCESA Public Affairs)*

CE Worldwide 2001

Air Force civil engineering's senior leaders gathered in San Antonio, TX, Nov. 26–30 for the annual Air Force Civil Engineer Worldwide Conference. The meeting covered the spectrum of CE topics, from enlisted matters and real property maintenance activities to planning and basing issues. However, so soon after the September 11 terrorist attacks, special emphasis was on Air Force civil engineer support to Operation ENDURING FREEDOM.

Col Timothy Byers, Readiness and Installation Support Division chief, Office of The Civil Engineer, *(top row, second from left)* briefed attendees on civil engineer operations in Afghanistan. "All of our personnel are well-trained, they know what they're doing and they get the job done when they get there," said Colonel Byers in an interview following the conference. This year's meeting was sponsored by the Air Force Center for Environmental Excellence, Brooks Air Force Base, TX. *(Gil Dominguez, AFCEE Public Affairs)*

Civil engineers gathered at this year's CE Worldwide Conference to work the career field's most pressing issues. *(Photo by Chuck Brewer)*

"Triple Nickel" Re-activated at Nellis

After a nearly 32-year hiatus, the 555th RED HORSE Squadron has been re-activated in the Reserve. Headquarters Air Force Reserve Command announced the activation of the 555th RHS at Nellis Air Force Base, NV, Oct. 1, 2001, to supplement the active force's 554th RHS at Osan Air Base, Republic of Korea.

Re-activation of the 555th was part of a program to give the Korean-based 554th a more robust capability. That unit's size was significantly reduced in the mid-1990s, but a plus-up began in 1999. By November 2000 it was back up to an assigned strength of 144.

The second phase of the plus-up involved partnering with the Guard and Reserve to form a composite squadron. On Oct. 1, 2000, an Air National Guard unit at Camp Murray, WA, was redesignated as the 254th RED HORSE Flight. This was similar to the partnership between the 819th RHS at Malmstrom AFB, MT, and its ANG partner unit, the 219th RED HORSE Flight.

One year later, on Oct. 1, 2001, AFRC activated the 555th and assigned it to the 610th Regional Support Group at Nellis. Lt Col Franklin L. Myers was assigned as the first commander of the re-activated unit.

A formal ceremony activating the squadron was held at Nellis AFB Feb. 23. *(Lois Walker, Air Force Civil Engineer Support Agency historian)*

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Two CEs Among Sijan Winners

The outstanding leadership ability of two civil engineers has earned each of them a 2001 Lance P. Sijan Air Force Leadership Award. Lt Col Carlos R. Cruz-Gonzalez received the senior officer award and SSgt Kile W. Stewart received the junior enlisted award.

Lt Col Cruz-Gonzalez was recognized for his efforts while assigned to Air Force Space Command. As commander of the 90th Civil Engineer Squadron at F.E. Warren Air Force Base, WY, the colonel's decisive leadership helped win approval of an $11.5 million consolidated missile maintenance facility. He also helped F.E. Warren capture the Command's Installation Excellence Award.

"Carlos Cruz embodied his personal motto; 'Fortune favors the bold,'" said Lt Col Stephen Czerwinski, 90th Support Group deputy commander. "He proved himself a bold commander who took initiative and was rewarded for it."

Lt Col Cruz-Gonzalez is currently assigned to Air War College at Maxwell AFB, AL. "I'm grateful for the award," he said, "but God, my family, and the great people at the 90th CES deserve the recognition. It's always easy to look good when you have a superb team supporting you!"

Lt Col Carlos R. Cruz-Gonzalez is the senior officer recipient of a 2001 Lance P. Sijan Award.

SSgt Kile Stewart is assigned to the 18th CES, Kadena Air Base, Japan. As a rescue crew chief, Sergeant Stewart led his crew during numerous crash, structural and medical emergencies. He provided fire protection for 4,000 facilities, more than 35,000 residents, and 135 assigned aircraft that perform 80,000 movements per year. Sergeant Stewart was also named the Air Force and Department of Defense Firefighter of the Year for 2001.

Despite his successes this year, he remains humble about his achievements. Sergeant Stewart says he tries to pass on the knowledge of good leadership to those under him.

"I want to be a good representative," Stewart said. "I think what has helped me is that I always try to do the right things for the right reasons. CMSgt Anthony Rabonza instilled that in me." Chief Rabonza is a former Kadena fire chief who now teaches at the DoD Fire Academy at Goodfellow AFB, TX.

SSgt Kile W. Stewart is the junior enlisted recipient of a 2001 Lance P. Sijan Award. *(Photo courtesy 18th Wing Public Affairs)*

"I tell my troops to do that, (and) apply the Air Force core values to their daily lives. I credit those three lines with getting me through every day, no matter how hectic or normal."

The Sijan Award was created in 1981 to honor the first Air Force Academy graduate to receive the Medal of Honor. The award annually recognizes a senior and junior officer and a senior and junior enlisted airman who demonstrate outstanding leadership abilities and are assigned to organizations at the wing level or below. *(SrA Jason Lake, 18th Wing Public Affairs, and SSgt Bryan Gatewood, 90th Space Wing Public Affairs, and AFPC News Service contributed to this report.)*

Burns Promoted to Brigadier General

Col Patrick A. Burns was promoted to the rank of brigadier general effective Jan. 1. General Burns is The Civil Engineer, Headquarters Air Combat Command, Langley Air Force Base, VA.

The general served four years enlisted duty with Air Force Security Service prior to being commissioned after completing Officer Training School as a distinguished graduate in 1974. He has commanded a support group and civil engineer squadron and has served in a range of civil engineer positions at base level, numbered air force, major command and Air Staff. He also served as an aide to the First Family for the 1985 Presidential Inauguration. In 1990 he deployed to Saudi Arabia as Combat Support Commander to bed down the 48th Tactical Fighter Wing during Operation Desert Shield. He was The Civil Engineer, Headquarters Pacific Air Forces, prior to his current assignment.

Among the general's awards and decorations are the Legion of Merit and the Meritorious Service Medal with six oak leaf clusters. He is a Fellow of the Society of American Military Engineers and was a 2001 recipient of the Army Corps of Engineers Bronze deFleury Medal. The general is a registered professional engineer in Virginia.

Brig Gen Patrick A. Burns

Firefighter Combat Challenge Competition

Firefighters from Travis and Edwards Air Force Bases, CA; Little Rock AFB, AR; Ramstein Air Base, Germany; and the DoD Fire Academy at Goodfellow AFB, TX, participated in the 10th annual Firefighter Combat Challenge International Championship Oct. 31-Nov. 3 in Memphis, TN. The Travis, Edwards, Ramstein and Academy teams advanced to the finals in the relay event. Out of 277 fire departments represented at the competition, the Travis team made it all the way to the top eight, while Goodfellow advanced to the top 16. Edwards and Ramstein made it to the top 64. The fastest Air Force member in an individual event was SSgt A. J. Eversley from Travis. He clocked in at 1:38.67 seconds, just 19 seconds off the new world record set during this year's competition.

The FCC is conducted annually across the United States and in several other countries, culminating in the International Championship event. *(TSgt Michael A. Ward, HQ AFCESA Public Affairs)*

Team Air Force

A member of the SAM Squad (Soldiers, Sailors, Airmen and Marines) competes in the forcible entry event.

Little Rock and Ramstein AFB team members start the Combat Challenge with a race up five flights of stairs.

A Travis AFB firefighter competes in the hoist pull at the Firefighter Combat Challenge in Memphis, TN. *(Photos by Blu Webster)*

2001 Chief Master Sergeant-Selects

The following Air Force civil engineer NCOs have been selected for promotion to chief master sergeant. Congratulations to all on their leadership and achievement.

Hugh Ali
Roger L. Austin
Bradley H. Bell
Tim C. Bosch
Agustin M. Bramwell
Jesse J. Busby III
Jesus Cabrera
William J. Casey Jr.
Harley M. Connors
Marilyn A. Cunningham
Lester A. Daly
Richard A. Forbrich
Darryl J. Foster
Chito E. Gaviola
Robert D. Jenkins
Steven L. Lage
James A. Martin
Dirk O. McDowell
David L. Mounsey
Perry A. Oates III
John D. Olive
Suzanne E. Phillips
Kenneth J. Rivers
Daniel W. Rohrbach
Edward J. Rosemeier
Stephen J. Rudat
Timothy J. Seigal Sr.
Kenneth D. Thomas Jr.
Charles T. Walker
Jeffrey A. Williams
David W. Williamson
Richard T. Windover

Civil Engineer Senior Officers and Civilians

General Officers

HQ USAF	Maj Gen Robbins, Earnest O. II	Pentagon	The Civil Engineer
HQ DeCA	Maj Gen Courter, Robert J. Jr.	Fort Lee	Director, Defense Commissary Agency
HQ AFMC	Maj Gen Stewart, Todd I.	Wright-Patterson AFB	Director, Plans and Programs
HQ AMC	Brig Gen Fox, L. Dean	Scott AFB	Director, Civil Engineering
HQ AFMC	Brig Gen Cannan, David M.	Wright-Patterson AFB	Command Civil Engineer
HQ ACC	Brig Gen Burns, Patrick A.	Langley AFB	The Civil Engineer

Colonels

HQ USAFE	Alston, Lavon	Ramstein AB	Deputy USAFE Civil Engineer
AETC	Amend, Joseph H. III	Wright-Patterson AFB	Dean, CE and SVS School, AFIT
AETC	Anderson, Benjamin	Maxwell AFB	Student, Air War College
HQ PACAF	Angel, Edward (AF Res)	Hickam AFB	MA to The Civil Engineer
AFSPC	Augustenborg, Jay (AF Res)	Malmstrom AFB	IMA to 341 SW Commander
HQ AFCESA	Barthold, Bruce R.	Tyndall AFB	Commander, AF Civil Engineer Support Agency
PACAF	Baughman, James D.	Johnston Atoll	Det 1, 15 ABW/CC
USSPACECOM	Bednar, Bryon J. (AF Res)	Peterson AFB	IMA to the Deputy Director of Operations (J3)
AFMC	Bird, David F. Jr.	Eglin AFB	Commander, 96 ABW
USAFA	Borges, Scott K.	USAF Academy	The Civil Engineer/Commander, 10 CEG
HQ AMC	Bousquet, Roy V. (AF Res)	Scott AFB	ARC Advisor to The Civil Engineer
HQ AFSPC	Brackett, James S. (sel)	Peterson AFB	Chief, Programs Division
ODUSD/I&E	Bradshaw, Joel C. III	Pentagon	Chief, Air Force Programs
USAFA	Bratlien, Michael D. (AF Res)	USAF Academy	MA to the Superintendent
HQ CFC	Brendel, Lance C.	Yongsan Garrison	Assistant Deputy Chief of Staff, Engineer
HQ PACAF	Bridges, Timothy K.	Hickam AFB	Chief, Environmental Quality Division
HQ AFCESA	Brittenham, Larry W.	Tyndall AFB	Director, Operations Support
HQ USAF	Byers, Timothy A.	Pentagon	Chief, Readiness & Installation Support Div.
HQ AFSPC	Carmody, Cornelius J. “Connie”	Peterson AFB	The Civil Engineer
HQ USAFE	Chisholm, Maryann H.	Ramstein AB	Chief, Programs Division
AMC	Coker, Gregory W.	Dover AFB	Deputy Commander, 436 SPTG
FL ANG	Cook, Jere (ANG)	Camp Blanding	Commander, 202 RHS
HQ AFCESA	Cook, Michael J.	Tyndall AFB	Director, Technical Support
AMC	Correll, Mark A. (sel)	Travis AFB	Commander, 60 CES
ACC	Crummett, Thurlow E. “Terry”	Malmstrom AFB	Commander, 819 RHS
HQ ACC	Daly, Patrick R. “Lou”	Langley AFB	Chief, Agile Combat Support Mission Area Team
HQ PACAF	DeFoliart, David W.	Hickam AFB	The PACAF Civil Engineer
USAFE	Dinsmore, Raymond E. (sel)	RAF Mildenhall	Deputy Commander, 100 SPTG
HQ ACC	DiRosario, Joseph P.	Langley AFB	Chief, Programs Division
HQ PACAF	Drake, William J.	Hickam AFB	Deputy Command Civil Engineer
ACC	Eulberg, Delwyn R.	Nellis AFB	Commander, 99 ABW
HQ USAFE	Fetter, Clifford C.	Ramstein AB	Chief, Environmental Division
HQ AETC	Fink, Patrick T. (BSC)	Randolph AFB	Chief, Environmental Division
PACAF	Fisher, Charles B.	Yokota AB	Fifth Air Force Civil Engineer
HQ USAF	Fisher, Marvin N.	Pentagon	Chief, Programs Division
AETC	Floyd, William R.	Sheppard AFB	Commander, 782 TRG
PACAF	Formwalt, William A.	Kadena AB	Commander, 18 CEG
HQ PACAF	Fouser, John D.	Hickam AFB	Chief, Operations Division
PACAF	Fryer, Richard A. Jr.	Elmendorf AFB	Commander, 3 CES
HQ ACC	Fukey, Michael F. (Pilot)	Langley AFB	Chief, Base Support Division
HQ AMC	Gaffney, Timothy P. (sel)	Scott AFB	Chief, Operations Division
HQ AFCEE	Garcia, Samuel E.	Brooks AFB	Executive Director
HQ AETC	Gilbert, Russell L.. “Rusty”	Randolph AFB	The Civil Engineer
HQ AMC	Green, Gordon S.	Scott AFB	Chief, Programming Division
HQ USAF	Greenough, William T. (sel)	Pentagon	Chief, Programs & Analysis Branch
HQ AMC	Griffin, Bobbie L. Jr. (sel)	Scott AFB	Chief, Environmental Programs Division
HQ AETC	Guy, Homer L.	Randolph AFB	Chief, Engineering Division
HQ USAFE	Haggstrom, Glenn D.	Ramstein AB	The USAFE Civil Engineer
HQ AFSPC	Hale, James	Peterson AFB	Commander, Civil Engineering Flight
OSD/RA	Hart, Thomas H. (AF Res)	Pentagon	Deputy Director, Environmental Mgmt.
AFRC	Haulman, David (AF Res)	Barksdale AFB	Commander, Det. 1, 307 RHS
HQ PACAF	Hayden, Thomas F. III	Hickam AFB	Chief, Readiness Division
AFRC	Haythorn, Thomas B. (AF Res)	Dobbins ARB	Commander, 628 CEF
PACAF	Hoarn, Steven E.	Hickam AFB	Commander, 15 CES
MO ANG	Hobbs, C. Ron (ANG)	Lambert IAP	Commander, 231 CEF
HQ USAF	Holland, James P. (sel)	Pentagon	Chief, Environmental Division
AETC	Horsfall, John D.	Maxwell AFB	Director, Air University Inspector General

HQ PACAF	Howell, Richard C.	Misawa AB	Commander, 35 SPTG
AETC	Howe, David C. (sel)	Fort McNair	Student, Industrial College of the Armed Forces
HQ USAF	Ingenloff, Richard J.	Pentagon	Chief, Engineering Division
OASD	Jameson, Stephen A. (ANG)	Pentagon	Deputy Director, Construction
AFRC	Jamieson, Richard (AF Res)	Kelly AFB	Commander, 307 RHS
HQ AFSPC	Janiec, Gordon R.	Peterson AFB	Deputy Civil Engineer
AMC	Jeffreys, John R.	McChord AFB	Director, RODEO 2002
ACC	Jeter, Drew D. (sel)	Langley AFB	Commander, 1 CES
AFMC	Judkins, James E.	Edwards AFB	Commander, 95 CEG
PACAF	Kanno, Neil K.	Osan AB	Commander, 51 SPTG
AMC	Keith, Edmond B.	Andrews AFB	Commander, 89 SPTG
HQ AFMC	Kennedy, James R.	Wright-Patterson AFB	Chief, Organization and Privatization Division
SAF/IEI	Kohlhaas, Karen D. (AF Res)	Pentagon	MA to the Assistant Secretary of the Air Force, Installations
AFSPC	Kopp, Robert D.	Vandenberg AFB	Commander, 30 CES
HQ AFCEE	Korslund, Per A.	Brooks AFB	Director, Environmental Restoration
ACC	Kuhlmann, Bryan L.	Langley AFB	AEFC/Combat Support Division
HQ AFCESA	Kuhns, James E. (AF Res)	Tyndall AFB	IMA to the Commander
HQ AMC	Lally, Brian J. (AF Res)	Langley/Scott AFB	IMA to the Director, Civil Engineering
HQ PACAF	Lancaster, Louis K.	Hickam AFB	Chief, Programs Division
HQ AFRC	Lemoi, Wayne T. (AF Res)	Robins AFB	Chief, Readiness Division
USAFE	Leptrone, Jeffrey L.	Ramstein AB	Commander, 86 CEG
MD ANG	Lew, Alan E. (ANG)	Martin State Airport	Commander, 235 CEF
HQ AFRC	Lillemon, Steven K.	Robins AFB	Chief, Environmental Division
HQ USAF	Loomis, Paula J. (AF Res)	Pentagon	IMA to the Environmental Division Chief
ACC	Lyon, James D.	Holloman AFB	Commander, 49 MMG
HQ USAFE	Macon, William P.	Ramstein AB	Chief, Readiness Division
ACC	Mayfield, Edward D.	Hurlburt Field	Commander, 823 RHS
USEUCOM	McClellan, Richard G.	Garmisch, Germany	Student, George C. Marshall Center
PACAF	Medeiros, John S.	Elmendorf AFB	Deputy Commander, 611 ASG/11 AF Civil Engineer
HQ AMC	Miller, Brian L.	Scott AFB	Deputy Director, Civil Engineering
ACC	Minto, Paul E.	Nellis AFB	Commander, 820 RHS
AFMC	Mykes, Terrance G.	Robins AFB	Commander, DDWG
AFMC	Norrie, Michael D.	Robins AFB	Commander, 78 CEG
HQ AFSOC	Parker, Richard P.	Hurlburt Field	The AFSOC Civil Engineer
AETC	Patrick, Leonard A. (sel)	Maxwell AFB	Student, Air War College
AFMC	Peters, David T.	Hanscom AFB	Commander, 66 SPTG
SAF/IEI	Pokora, Edward J.	Pentagon	Director for Facility Management
AFMC	Purvis, Quincy D.	Eglin AFB	Commander, 96 CEG
HQ AFMC	Quinn, William R.	Wright-Patterson AFB	Chief, Engineering Division, AFMC CES/CC
11 Wing	Richardson, Cardell K.	Bolling AFB	Commander, 11 SPTG
PACAF	Rojko, Paul M.	Osan AB	Seventh Air Force Civil Engineer
AETC	Romano, Sebastian V.	Randolph AFB	Commander, 12 SPTG
HQ AFCEE	Rosson, Roark M. (AF Res)	Brooks AFB	IMA to the Director
AFRC	Russell, John P. Jr. (AF Res)	Scott AFB	Commander, 932 SPTG
HQ ACC	Ryburn, James T. "Tom"	Langley AFB	Chief, Readiness Division
AFSPC	Saunders, William R. (sel)	Los Angeles AFB	SMC, Environmental Management Branch
HQ AFRC	Scrafford, Andrew R. (sel)	Robins AFB	Chief, Engineering Division
USAFA	Seely, Gregory E. (BSC)	USAF Academy	Prof. & Dept. Head, Civil & Environmental Engineering
OSD	Selstrom, John P. Jr.	Pentagon	Environmental Restoration Program Manager
HQ ACC	Shelton, Kenneth P.	Langley AFB	Chief, Operations Division
ACC	Showers, Duncan H. "Scott"	Cannon AFB	Commander, 27 SPTG
HQ AETC	Singel, Kenneth R.	Randolph AFB	Chief, Programs Division
AMC	Smiley, Charles P.	McGuire AFB	Commander, 305 CES
11 Wing	Snyder, Cynthia G. (sel)	Bolling AFB	Commander, 11 CES
AFMC	Somers, Paul W.	Hill AFB	Commander, 75 CEG
HQ AFSOC	Speake, Nancy L.	Hurlburt Field	Chief, Engineering Division
CO ANG	Sprenkle, Dave (ANG)	Buckley AFB	Commander, 240 CEF
AFMC	Stanley, Tad A.	Robins AFB	Vice Commander, 78 ABW
HQ ANG	Strandell, William J. (ANG)	Andrews AFB	Deputy Civil Engineer
AMC	Streifert, Scott F.	Travis AFB	Commander, 60 SPTG
HQ ANG	Stritzinger, Janice M. (ANG)	Andrews AFB	The ANG Civil Engineer
HQ AFCEE	Strom, Randie A.	Brooks AFB	Director, Environmental Conservation & Planning
HQ ACC	Sweat, David A.	Langley AFB	Assistant Civil Engineer
HQ USAFE/XP	Thady, Randall J.	Ramstein AB	Chief, Forces, Programs and Bases Div.
HQ AFMC	Thorpe, York D.	Wright-Patterson AFB	Chief, Operations Division
AETC	Tinsley, Hal M.	Sheppard AFB	Commander, 82 CES
HQ AIA	Torchia, Linden J.	Kelly AFB	Chief, Civil Engineer Division

HQ AETC	Turner, Randall L.	Randolph AFB	Chief, Operations Division
SAF/IEI	Vazquez, Luis A. (AF Res)	Pentagon	Assistant for Reserve Affairs
HQ AFRC	Verlinde, Jon D.	Robins AFB	The Civil Engineer
HQ AFMC	Wallington, Cary R.	Wright-Patterson AFB	Deputy, Installations and Support
AFRC	West, Robert G. (AF Res)	NAS/JRB TX	301 FW Office of the Inspector General
HQ USAF	Whalen, Daniel P. (AF Res)	Pentagon	IMA to Readiness and Installation Support Division Chief
ACC	White, Arvil E. III "Bobby"	Nellis AFB	Commander, 99 CES
HQ AFMC	Wittliff, Danny J. (AF Res)	Wright-Patterson AFB	IMA to Command Civil Engineer
SAF/IEE	Wolf, Lewis F. (ANG)	Pentagon ANG	ANG Advisor to SAF/IEE
HQ AFCESA	Worrell, Josuelito	Tyndall AFB	Director, Contingency Support
HQ USAF	Zander, Steven W.	Pentagon	Chief, Housing Division
HQ AFSPC	Zelenok, David S. (AF Res)	Schriever AFB	IMA to 50 Space Wing Commander

Senior Executive Service

HQ USAF	Aimone, Michael A.	Pentagon	The Deputy Civil Engineer
HQ AFCEE	Erickson, Gary M.	Brooks AFB	Director, Air Force Center for Environmental Excellence
HQ USAF	Ferguson, Kathleen I.	Pentagon	Chief, Combat Support Div., AF/ILS
AFBCA	Lowas, Albert F. Jr.	Arlington VA	Director, Air Force Base Conversion Agency
HQ AFMC	Pennino, James R.	Wright-Patterson AFB	Deputy Command Civil Engineer

GS/GM-15s

HQ AFCESA	Anderson, Myron C.	Tyndall AFB	Chief, Civil and Pavements Division
AFBCA	Antwine, Adam	Kelly AFB	Senior Representative
HQ AFCEE	Bakunas, Edward J.	Brooks AFB	Chief, Comprehensive Planning
HQ ACC	Barrett, Robert C., III	Langley AFB	Chief, Environmental Division
AFBCA	Beda, Carol Ann	Arlington, VA	Chief, Environmental Division
HQ AFMC	Bek, David J.	Wright-Patterson AFB	Director, Programs Division
USSOCOM	Bosse, Harold	MacDill AFB	Command Civil Engineer
HQ AFSPC	Bratlien, Michael D.	Peterson AFB	Chief, Environmental Division
AFBCA	Brunner, Paul G.	McClellan AFB	Director, Environmental Management
AFMC	Callaghan, Gerald	Edwards AFB	Chief, Environmental Compliance
HQ AMC	Carron, Norman	Scott AFB	Chief Engineering Division
AFMC	Clark, Michael J.	Eglin AFB	Deputy Base Civil Engineer
HQ ANG	Conte, Ralph	Andrews AFB	Chief, Programming Division
AFBCA	Corradetti, John J., Jr.	Arlington VA	Program Manager, Division A
AFMC	Coyle, Stephen	Robins AFB	Director, Environmental Management
HQ AFRC	Culpepper, Hilton F.	Robins AFB	Assistant Civil Engineer
AFMC	Dalpais, E. Allan	Hill AFB	Director, Environmental Management
CCDP	Daugherty, Patrick C.	Mons, Belgium	Senior Staff Engineer, HQ SHAPE
HQ AFCESA	Day, Alvin L.	Tyndall AFB	Chief, Mechanical/Electrical Engineering Division
SAF/IEIR	Edwards, William E.	Bolling AFB	Director, AF Real Estate Division
HQ AFCESA	Einwaechter, James R.	Tyndall AFB	Executive Director
HQ ACC	Firman, Dennis M.	Langley AFB	Chief, Engineering Division
AFBCA	Frank, Joyce K.	Arlington VA	Deputy Director, AF Base Conversion Agency
HQ USAF	Franklin, George H., Jr.	Pentagon	Chief, Program Management Branch, Housing Div.
AFMC	Gray, William G.	Arnold AFB	Technical Director
HQ USAF	Halvorson, Kathryn M.	Pentagon	Deputy Chief, Housing Division
AFMC	Harstad, Richard D.	Wright-Patterson AFB	Chief, Acquisition ESH Division
AFBCA	Jenkins, Richard	Arlington, VA	Realty Officer
AFMC	Johnson, Gary K.	Wright-Patterson AFB	Director, Civil Engineer Directorate, 88 ABW
AFBCA	Kempster, Thomas B.	McClellan AFB	Senior Representative
AFBCA	Leehy, Lawrence R.	Arlington, VA	Program Manager, Division C
HQ AFCEE	Leighton, Bruce R.	Brooks AFB	Technical Assistant, Environmental Conservation Planning
AFMC	Lester, Ronald J.	Wright-Patterson AFB	Director, Environmental Management, 88 ABW
AFCEE	Lopez, Edward	Dallas, TX	Director, Central Region Environmental Office
HQ AMC	Mack, Robert D.	Scott AFB	Chief, Housing Division
HQ AFSPC	Maher, Gary	Peterson AFB	Chief, Engineering Division
HQ USAF	Maldonado, Rita	Pentagon	Chief, Resources Division
AFMC	McBride, Michael	Hill AFB	Chief, Materiel Management Division
HQ USAF	McGhee, Michael	Pentagon	Chief, Environmental Quality Branch
HQ USAF	Moore, Robert M.	Pentagon	Chief, Program Management Branch, Engineering Div.
HQ AFMC	Mundey, Karl J.	Wright-Patterson AFB	Chief, Environmental Division
HQ AFCEE	Noack, Edward G.	Brooks AFB	Director, Financial Management & Mission Support
HQ AETC	Parker, Paul A.	Randolph AFB	Deputy Command Civil Engineer
HQ AFCEE	Perritt, Rolan M.	Brooks AFB	Chief, Design Group Division
DLAMP	Pohlman, Teresa	Pentagon	Program Manager, Pentagon Renovation Office
AFMC	Polce, Ronald L.	Arnold AFB	Technical Director for Facilities

AFMC	Preacher, Vicki	Tinker AFB	Director, Environmental Management
AFBCA	Reinertson, Kenneth	Arlington, VA	Program Manager, Division D
HQ AFCEE	Ritenour, Donald L.	Brooks AFB	Director, Design and Construction
HQ AFCEE	Russell, Thomas C.	Brooks AFB	Technical Assistant, Environmental Restoration
HQ AFMC	Sculimbrene, Anthony F.	Wright-Patterson AFB	Exec. Director, Dayton Aviation Heritage Commission
HQ USAFE	Shebaro, Bassim D.	Ramstein AB	Chief, Engineering Division
AFCEE	Sims, Thomas D.	Atlanta, GA	Director, Eastern Region Environmental Office
SAF/IEI	Smith, John Edward B.	Pentagon	Deputy to the Deputy Assistant Secretary
AFMC	Stephens, Eric L.	Brooks AFB	Director, AF Inst. for Env., Safety and Occupational Health Risk Analysis
HQ AFCEE	Tanner, Gordon	Brooks AFB	Legal Advisor
HQ USAFE	Thompson, John D.	Ramstein AB	Program Manager, Rhein Main Transition PMO
AFMC	Tuss, Margarita Q.	Wright-Patterson AFB	Chief, Engineering Division, 88 ABW
HQ ANG	VanGasbeck, David C.	Andrews AFB	Chief, Environmental Division
HQ ANG	Whitt, William B.	Andrews AFB	Chief, Engineering Division
AFMC	Wood, Richard A.	Edwards AFB	Director, Environmental Protection
HQ PACAF	Yasumoto, Stanley Y.	Hickam AFB	Chief, Engineering Division
SAF/IEE	Yonkers, Terry A.	Pentagon	Deputy to the Deputy Assistant Secretary

Elmendorf CEs unveil gift of pride, patriotism

Members of the 3rd Civil Engineer Squadron's exterior electric shop at Elmendorf Air Force Base, AK, are charged with brightening the holiday season each winter on base, making Pease Avenue sparkle by stringing the thoroughfare's trees with Christmas lights. This year, with many U.S. service members spending the holidays in harm's way, the squadron wanted to do more.

Touted as a surprise gift to the community, the 3rd CES unveiled the product of their inspiration just before the holiday season — 22,000 light bulbs in the glimmering form of the U.S. flag.

The flag was the brainchild of SSgt Thomas Pontes from the exterior electric shop. Maj Sal Nodjomian, CE Operations Flight commander, had asked the shop to come up with ideas to improve this season's display.

"In addition to what we normally do on Pease, we wanted to do something more spectacular," Nodjomian said. "So I gave the project to exterior electric and three or four days later SSgt Pontes came into my office with the concept of the flag in lights."

The details were hammered out over several days, as CE people came up with a "really classy" display, Nodjomian said.

"We wanted something that could be used again and again," Nodjomian said. "We picked Nov. 9 to unveil it because it went with Veterans Day. What started as a holiday display was now a patriotic display, so while we originally planned to have it up through the holidays, it will be up until spring."

"We all just wanted to do something for those who are deployed and show some spirit back here at home base," Pontes said.

CE leadership was equally pleased with the way the 30-plus people who worked on the project went about getting the job done, Nodjomian said.

"I want to emphasize that the majority of work was done after duty hours and on weekends," Nodjomian said. "There was a whole lot of volunteer time."

CE people also got the chance to work in disciplines outside their normal work areas, with carpenters brushing up on their welding skills, and interior electricians working on an exterior project, Nodjomian said. *(From an article by SSgt Jim Fisher, 3rd Wing Public Affairs Office)*

Members of the 3rd Civil Engineer Squadron, Elmendorf AFB, AK, illuminate their holiday gift to the Elmendorf community — a 22,000-bulb display of the American flag. ***(Photo by MSgt Valerie Weaver)***

36th Civil Engineer SQUADRON

Parent Unit: 36th Air Base Wing (Pacific Air Forces) **Location:** Andersen Air Force Base, Guam **Commander:** Lt Col Randy D. Eide **Assigned Personnel:** 229 military, 213 civilians, 5 contractors **Mission:** Provide combat-ready engineers for worldwide deployment and provide maintenance, construction, fire protection, explosive ordnance disposal and environmental support for Thirteenth Air Force, 36th Air Base Wing and 15 associate units.

Unique Requirements: The 36th CES provides essential engineer support to the largest air base in PACAF, supporting transient fighter, bomber and tanker aircraft. Andersen AFB has the largest conventional munitions storage facility in PACAF, the second largest fuel storage facility in the Air Force, and is home to more than 9,000 active duty and retired military, civilian and dependent personnel. Andersen is an important forward-based logistics-support center for exercise and contingency forces deploying throughout the Southwest Pacific and Indian Ocean area.

The 36th CES executes a $68 million maintenance and repair budget for the 20,270-acre complex, which includes 1,390 homes, 31.7 miles of fuel system, 8 miles of off-base water distribution piping and two airfields. The squadron also supports units in Diego Garcia, Singapore, Wake Island, Pohnpei and Chuuk.

Recent Accomplishments: The 36th CES recently completed a five-month construction project that transformed 180 acres of jungle to a joint drop zone training site. The site is destined to become the premier Army, Navy, Marine and Air Force cargo and personnel drop zone training site in the Pacific. The entire Horizontal Shop was involved over the length of the project, expending 3,620 man-hours and $137,000.

The 36th CES is especially proud of its support to Operations Noble Eagle and Enduring Freedom. The squadron logged over 4,100 man-hours in support of a 1,500-plus personnel beddown. They provided 24-hour support, including fuel system maintenance, seven days a week for an influx of transient aircraft and more than 16,000 personnel and a 200 percent increase in runway, taxiway and ramp sweeping operations.

During this time, Guam was hit by a magnitude 7.0 earthquake and narrowly missed being hit by Super Typhoon Faxai. The 36th CES responded quickly following the earthquake, inspecting facilities and taking damage reports despite a 30-hour, island-wide power outage. When news reached the squadron just before Christmas that Super Typhoon Faxai was headed straight for Guam, the 36th CES jumped into action, performing all actions necessary to ensure the installation was typhoon-ready. Thankfully, Faxai turned north, missing Andersen AFB and the island of Guam.

The 36th CES' recent awards include the 1999 PACAF Engineering and Environmental Flights of the Year, 2000 PACAF Base Appearance Award, 2000 PACAF "Golden Hammer" Award for Best Self Help Store, 2001 PACAF Design Excellence Award, 2000 and 2001 PACAF Resources Flight of the Year, and 2001 AF Resources Flight of the Year.

To all the men and women who serve in the 36th CES: Who ya with? … CE!

Unit Spotlight

Civil Engineer Contributions to the Korean War: Osan Air Base

F-94B jet fighters assigned to the 319th Fighter-Interceptor Squadron at Suwon Air Base, Republic of Korea, fly over the partially completed runway and taxiway at Osan AB, ROK, on the banks of the Chinwi-Chon River. Osan AB, known as K-55 during the Korean War, was built by aviation engineer units in a record six months. By the end of the war, aviation engineers had built or repaired 55 separate airfields, including some in North Korea.

The U.S. Department of Defense commemoration of the 50th Anniversary of the Korean War began June 25, 2000, marking the 50th anniversary of the invasion of South Korea, and will continue until Nov. 11, Veterans Day, 2003.

Photo by Lt Robert W. Haller, courtesy Warren Thompson