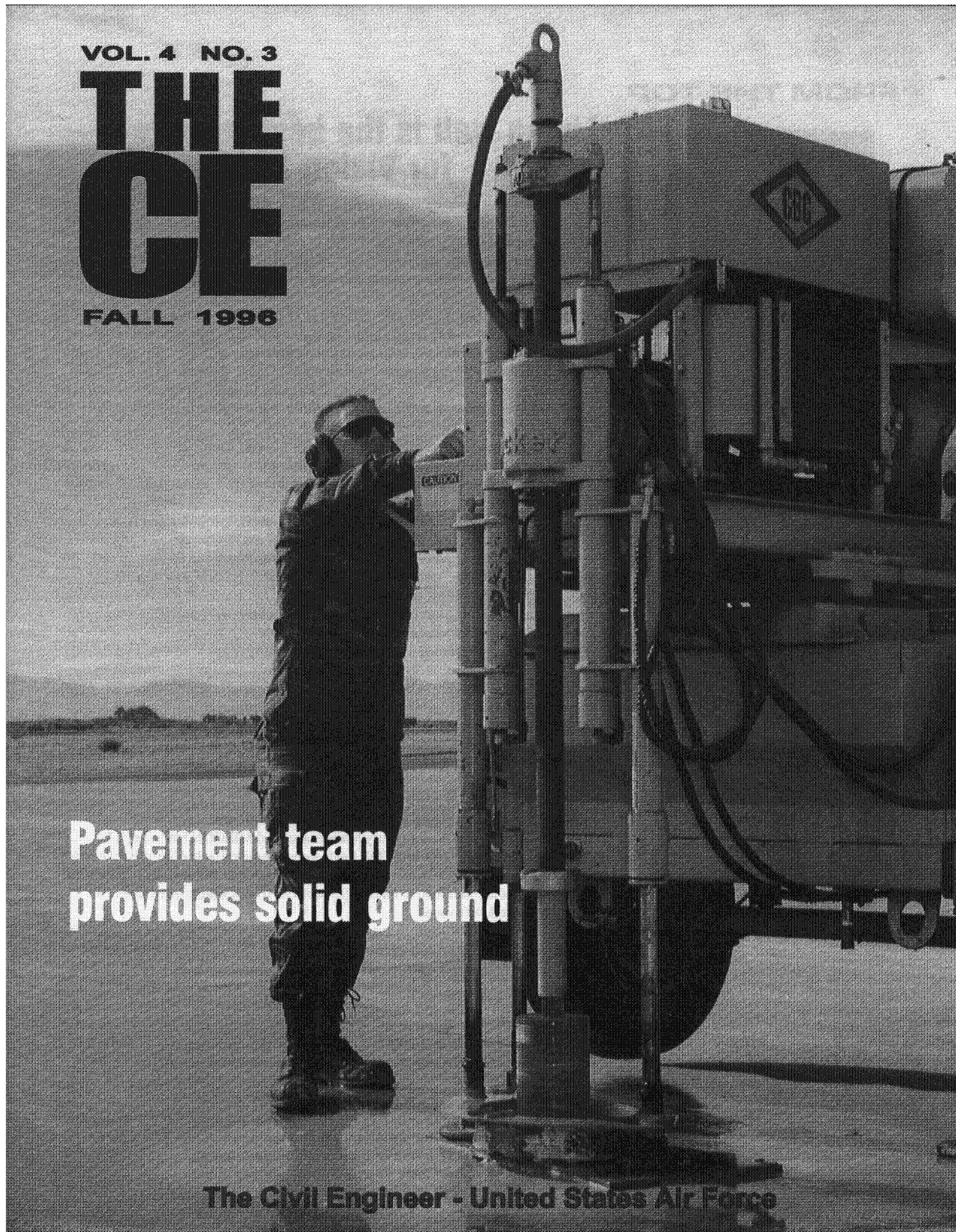


VOL. 4 NO. 3

THE CE

FALL 1996



**Pavement team
provides solid ground**

The Civil Engineer - United States Air Force

FROM THE TOP



Maj. Gen. Eugene A. Lupia
Air Force Civil Engineer

Living well is the best resource — for Vision 2020

It's been a long-standing goal of mine to provide the best dorms possible for our unaccompanied troops. I'm convinced force retention, re-enlistment and morale depend on maintaining and always improving Quality of Life. Although a DoD task force determined Air Force personnel enjoy the best housing of the services, even the best leaves plenty of room for improvement; particularly when re-enlistment may depend on it.

Vision 2020 is the Air Force response to a 1993 Congressional tasker to report on the status of dormitories and barracks, and prepare a plan to fix them. Congress was distressed about the conditions of unaccompanied housing and believed single service members should have living conditions comparable to those experienced by accompanied service members. As a result, the cause of a quality living environment for quality troops is being championed at the highest levels throughout our Air Force and the Congress.

"1+1" is the new construction standard for dormitories. It provides the one thing 88 percent of our airmen claimed they were missing the most — privacy. A smaller Air Force means a greater workload and more responsibility for everyone. Today's airman expects and deserves more than a bunk and a gang latrine.

The new dorm construction standard offers a private sleeping/living area, a kitchenette with refrigerator, range/oven, sink, optional microwave and a bathroom shared with one other person. 1+1 also provides increased *personal* living area and a 20 square foot closet/storage space. In the old 2+2 standard, the *total* area was 90 net square feet, including closets and the entryway. In the 1+1 standard, it's 118 square feet per person, not counting closets, shared bathroom or entryway space. This adds up to greater than a 50 percent increase in *private* living space.

For some unaccompanied personnel, "1+1" is no longer just a "vision," but actual bricks and mortar. Officials at Scott AFB, Ill., are currently constructing a new dormitory in keeping with the higher standard. (See *The Civil Engineer*, Summer 1996, p. 15). Many bases around the world have broken ground on similar projects.

Since 1979, the Air Force has been moving away from the old bunk bed and gang latrine dormitory to the 2+2 standard. In our three-part dormitory strategy, central latrines will be eliminated by FY00, then we will build dorms where there is a deficit, and finally, we'll replace or renovate existing 2+2 dorms as their condition warrants. This strategy will all be laid out in our Dormitory Master Plan.

The dormitory program has banner support in FY96-97 with a *half-billion dollar* investment in dorms with Real Property Maintenance and MILCON funds. In FY96, approximately \$180 million of MILCON funds were committed to 31 dorm construction or renovation projects. Despite declining resources, 17 percent of the total Air Force FY97 MILCON budget is committed to funding 23 projects, five of which are overseas, to create or renovate 4,000 rooms.

The Air Force is pushing forward with new goals. The development of a dorm master plan is the first step. The Air Force Dorm Master Plan will be based on assessments of dorms at all major installations to determine what needs to be accomplished. Practical considerations, such as whether it is structurally or financially sound to renovate existing buildings that have already been reconfigured multiple times, must be taken into account. We will not be able to take a 2+2 dormitory and simply convert it to a 1+1. It won't be that easy and we don't have the resources. Additionally, a "worst first" approach is being taken to help alleviate the problem. Other efforts to ensure greater privacy include a private room assignment standard for junior enlisted airmen. The new assignment policy was phased in this past October and is projected to result in private rooms for all permanent party airmen by FY02. The new dorm 1+1 construction standard, master plan and private room assignment policy are an investment in our troops today and tomorrow; a commitment Air Force senior leadership is making for the betterment of our unaccompanied enlisted force.

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The Civil Engineer

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The U.S. Air Force Civil Engineer

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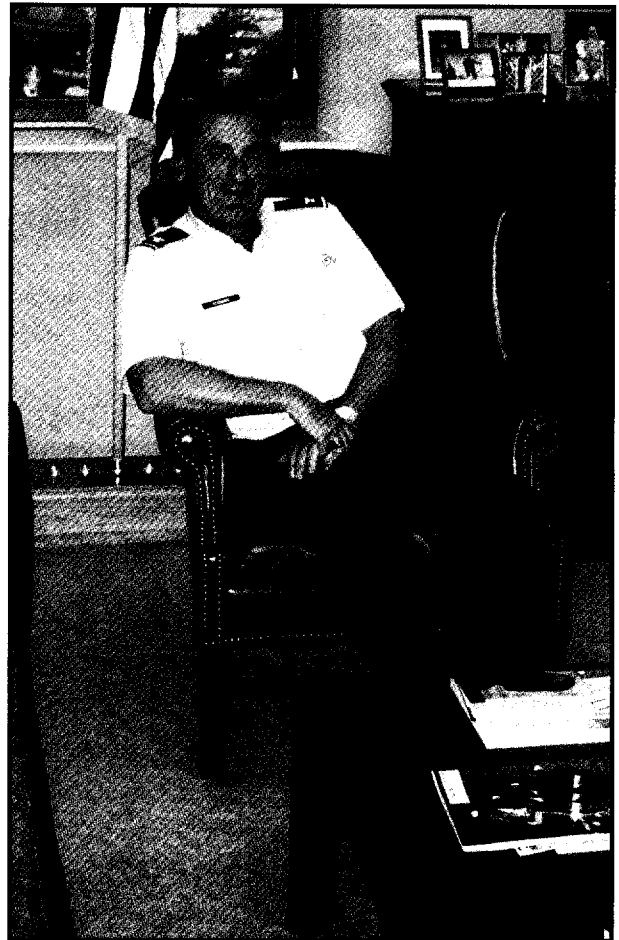
Reflecting on a dynamic career

Brigadier General (S.) Earnest O. "Earnie" Robbins II, Air Combat Command Civil Engineer, looks back on his career and the changes he's seen in the past 27 years, plus the ones he expects to see in the years to come.

CE: During the course of your military career, you've been commander of a Civil Engineer squadron, a Contingency Planner and Director of Environmental Programs at a MAJCOM, served three tours at the Pentagon and been the Command Civil Engineer at Space Command. With such diverse experience, please comment on some of the more significant changes you've seen to the civil engineer field.

Robbins: Interestingly enough, somebody asked me that question a few years back when I had just reached 20 years in the Air Force. So I went back and dug out an edition of the old Civil Engineer Magazine, from the time when I came on active duty in 1969, to see what's changed in Air Force civil engineering. While some things have, a lot of things haven't. For example, in that edition, they interviewed Major General Guy Goddard who was then the Director of Civil Engineering. He had General (Eugene A.) Lupia's job. He listed seven or eight things that needed to be changed within Air Force civil engineering. Among them were doing a better job of writing and clarifying policy, increasing productivity of the work force, doing better research on maintenance techniques and incorporating new technologies. That was 27 years ago. I would suggest to you that we're still doing those same things, 27 years later. Not that we haven't made any progress, it's just that the challenges do not change that much. They might change in scope, but the nature of the job and our perception of changes we need to make haven't changed much in 27 years. Nonetheless, I don't want to give the impression that things have remained static. There have been changes, most of them good.

First of all, I think that the importance of the things civil engineering does for facilities and infrastructure is more recognized by Air Force leadership today than it may have been 27 years ago. That could be a byproduct of downsizing and the fact that we have fewer installations, so there's more of an inclination to try to keep them in good condition. It's obviously reflected by the Air Force's quality of life emphasis which certainly did not prevail 27 years ago. Quality of life was a nonexistent phrase in 1969. A second change is the emphasis on environmental programs, because quite frankly, there was almost no emphasis on environmental programs back then. In fact, it wasn't until probably ten, twelve years ago that environmental emphasis reached the very preeminent stage where it is today. The change has come at some expense to the rest of our programs because as you spend dollars on environmental requirements, you have fewer dollars to spend on other things. I'm certainly not say-



Brig. Gen. (S.) Robbins in his office at Langley AFB, Va.

ing that that's wrong, I'm just saying it reflects a change in society that is mirrored in the Air Force.

Another positive change is the educational level of the people that we work with. All officers today have degrees and most officers have master's degrees by the time they compete for major. Many of our NCOs and airmen have associate's or bachelor's degrees and some of them have advanced degrees. That was not common at all when I first entered the Air Force. So, we're surrounded by people who are much better educated. I think that has driven us to some of these changes I mentioned a moment ago, in terms of the emphasis on Quality of Life. As people became more educated, their expectations became much higher. You can no longer lead merely by giving orders. You have a much more intelligent enlisted and young officer force that isn't hesitant to ask why we're doing things. Therefore, a leader or commander has to be able to articulate things much more clearly.

I think young officers and junior NCOs have a chance to move into positions of responsibility and authority much quicker than when I came in the Air Force. That's partly a consequence of downsizing. As we reduced the number of bases, particularly the number of bases overseas, and brought the size of the force down, we've also brought the grade structure down. To get to be a squad-

ron commander, you had to be a colonel. To be a BCE, a base civil engineer, you had to be a colonel. A chief of ops (operations) was typically a lieutenant colonel or a senior major. Today, there aren't very many CE squadron commanders who are full colonels, most are lieutenant colonels and a few are majors. Many young captains get to be chiefs of ops. Responsibility has gone up as the grade structure has come down.

I can only think of one really big downside and this is a personal perception. I don't see the same sense of family, same sense of camaraderie and unit cohesiveness in the young CE officers today that I saw when I was a junior officer. I think we could say part of it's societal. You've got both spouses working and everybody goes home and takes care of the kids and goes to bed, whereas back in my lieutenant/captain days, not that many wives worked and there was a lot of cohesion, a lot of after-duty hours and weekends spent socializing. I see more of an attitude of the Air Force being an 8-5 job with perhaps less interest in or understanding of the need to work longer-than-normal hours. Again, I'm not saying that's all bad, it's an observation of the differences I see.

CE: What experience in your professional career has best helped prepare you for leadership at this level?

Robbins: I don't know that I would say it was any single experience that prepared me. I've been really lucky since I was a relatively junior captain to have worked with, for and around great officers and great mentors. When I was a young captain, I was lucky to have gone to work for Colonel Duke Wright, who I then followed around for the next ten or eleven years of my career. He introduced me to his cohorts, peers and mentors; General Bob Thompson and General Bill Gilbert, who were directors of civil engineering, as well as Colonel Judd Ellis and Colonel Bud Ahearn. I had the privilege of working for both of the latter two officers and each went on to become director of civil engineering. I worked with Lieutenant Colonel Jim McCarthy, who went on to become General Jim McCarthy, also the director of civil engineering. Also, guys like Mick McAuliffe, who retired a couple of years ago from the job I have today. He is a close personal friend and a great professional mentor in terms of what's good and what's bad for the Air Force and for civil engineering. Just by observing them, listening to the questions they asked and then paying close attention to the answers they got, I learned a lot and apply it everyday of my life.

I've been equally blessed in terms of the people I've worked with on the non-civil engineering side. My first job as a MAJCOM Civil Engineer, at Space Command two and a half years ago, I worked for General Chuck Horner who had put on his fourth star and had recently returned from Southwest Asia, where he was the Air Commander for General Schwarzkopf. I got the opportunity to travel with and observe General Horner for about a year and I learned more about the warfighting business from him, listening to his experiences in Southwest Asia and all those things that the coalition forces did, than I'd learned in my previous 23 years in the Air Force.

His vice (commander) in Space Command at the time was General Tom Moorman. General Moorman is currently the Vice Chief of Staff of the Air Force and also a great, inspirational person not only because he was one of the smartest guys I'd ever seen but because he was a non-rated officer; he didn't wear wings. For someone that is non-rated to be associated with someone like General Moorman

who goes on to the second highest rank, second highest position, in the United States Air Force; it's kind of a motivating thing for me and others. I'm able to use that, as I talk with folks in civil engineering. I tell them, "Look, he's (Gen. Moorman) done pretty well, so never say there's not an opportunity in our Air Force for non-rated officers to compete...there is."

Finally, in the list of folks I've worked with and for, I have to mention General Joe Ashy, my last commander at Air Force Space Command, who just recently retired. While he was a tough, tough mentor and a demanding commander, he showed me what a person can do if he devotes 100 percent of his talent and time to the United States Air Force. Air Force Civil Engineering in general, and Earnie Robbins in particular, owe General Ashy a lot for the great support he gave us for our programs and, equally important, for the standards he set for facilities excellence wherever he served. He did great things for Space Command and I'm glad to have had the opportunity to work with him to help him do some of those things he wanted done.

CE: What are some of the goals you've set for Air Combat Command Civil Engineering?

Robbins: They're pretty simple, straightforward goals. It's obvious that we want our CE goals to track with the command's overall goals because we're here to support our commanders. When you in essence boil it down to our number one job, it's to make sure we're ready to support the mission whether it's peacetime, wartime or something in-between involving military operations. That's always been the number one priority in Air Combat Command and before that TAC (Tactical Air Command) and SAC (Strategic Air Command). And today, we have to ensure our civil engineers are ready to conduct contingency operations and/or the day-to-day O&M (Operations and Maintenance) of the bases. Secondly, a lot of emphasis is on program execution. You've heard or read General Lupia's position on that; he is using a carrot and stick approach to execution. I personally believe that is absolutely the way it should be done. Those that execute programs should be rewarded and those that don't execute; I don't know that they should be penalized, maybe they just shouldn't share in any rewards. We want to support the Air Force and General Hawley, the Air Combat Command (ACC) Commander, in our Quality of Life initiatives. Even in times of tough budgets, we still have some things we have to get done and I believe we will. Finally, I want to improve on what I believe is already the Air Force's best environmental program. There are still things that we can do in ACC in the environmental arena. I'm awfully proud of what's been done in the last five to seven years, but we can do better, especially in compliance and pollution prevention.

CE: ACC's Civil Engineer Squadron is somewhat unique within the Air Force. What is the role of this organization and how does it serve the civil engineer community?

Robbins: I'm going to give you the textbook mission statement, which tells you what their role is; to provide technical support, program management and readiness support for ACC civil engineers. Across the spectrum, whether it's MILCON, family housing, environmental, or NAF (Nonappropriated Funds), any design and construction is managed by the squadron's engineering flight. The pollution prevention flight oversees the Pollution Prevention Pro-

gram across the command, while the environmental flight works the Defense Environmental Restoration Act (DERA). The engineering flight also manages acquisition and disposal of real property across the command; it's a big job. The infrastructure operations flight develops standards and also acts as technical consultants when the bases need help. We dispatch people out to provide whatever support the bases need across a wide range of systems. Some of our readiness business is conducted by the squadron's readiness flight, primarily the planning side, the C4I and Research, Development and Acquisition for new equipment, such as disaster preparedness equipment.

Last but not least, the readiness flight manages our command IMA program. If given an option, you probably would not separate a part of your staff the way that the squadron is separated from us on the organization chart. We sacrifice some efficiency, and communication sometimes suffers, because they're geographically separated. They're about eight or nine miles up the road. But we're forced to do that because of the limits on the size of management headquarters staff and a lack of office space here at Langley.

Nonetheless, the men and women in the squadron are an important part of our ACC Civil Engineering team, they're oriented toward execution of programs and they do it very well. The line between the squadron and the rest of our staff is essentially invisible as we go about doing our job.

CE: In order to provide better customer service, ACC/CE instituted the Sustain Business Line. What does this team do, and how successful has it been in meeting its objectives?

Robbins: I've only been here for about six months now, and I've spent some time looking at the business lines that we have. We basically have a matrixed staff. Our organizational structure and manning document reflect the traditional divisions; i.e. programs, operations and maintenance, environmental, readiness, and resources, plus the squadron we discussed before. We've built four teams that draw upon expertise from any or all of these divisions and the squadron.

The four teams are the Sustain Team, the Build Team, the Fight Team, which is primarily our Readiness function, and finally the Protect Team, which covers the environmental program. The Sustain Team is focused primarily on infrastructure, operations and maintenance. The day-to-day, bread and butter stuff that our base civil engineers do, primarily oriented toward the operations flight at the base level, but with some components of the others in there. The Sustain Team cuts across the Operations Division (CEO) of my staff and the Infrastructure Operations Flight of our ACC Civil Engineer

Squadron. They're developing standards for every aspect of the infrastructure and they've done an excellent job, for example, on airfield standards. What's an airfield look like? How should it be maintained? How good should it be? They developed a brochure that outlines all that, what a wing commander or an Operations Group Commander can use to assess "How well am I doing? How good is my airfield? How good is the airfield lighting system that supports that airfield?" So the sustain team has done a great job there. They've done a great job in developing standards for services contracts, like custodial services, grounds maintenance, refuse collection, those kinds of things to make sure that we're investing our money in a uniform pattern across the bases. There's no more county option about how many times you have your garbage picked up or your trash emptied or your windows cleaned because we've got a standard developed by these folks that will do that. We give that to each wing commander and say that's how we're going to fund you.

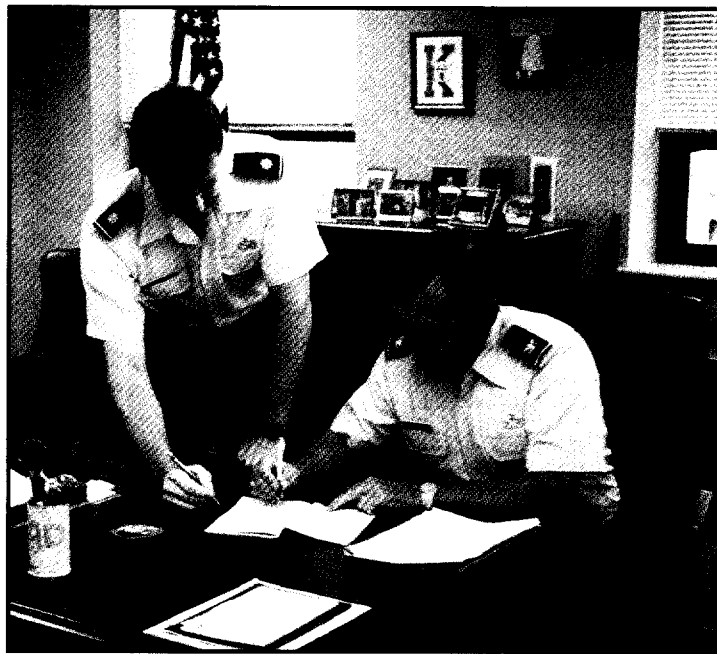
I think that the Sustain Team is doing great; they have a tremendous amount of contact with the base civil engineers and the base civil engineering staffs and that's very key. Members of the Sustain Team have a "You call, we'll haul" attitude toward helping our bases.

CE: More often we are seeing smaller, more frequent contingency situations around the world. As a result, operations tempo for RED HORSE and Prime BEEF

personnel is increasing. Do you see this as a permanent trend, with more TDY deployments for civil engineer personnel?

Robbins: I don't know if there'll be more but I think it's unlikely they'll fall very much below where we're at now. Since I've been here, we've been averaging 500-600 blue suit civil engineering folks from Air Combat Command deployed at any one time. That's been a big issue with General Hawley, our commander. He believes that we're overtasking some of our people, causing them to be away more than they should be. He's set a goal of 120 days as the maximum that a person should be TDY in a 12-month period in Air Combat Command. We're looking at that hard within CE to make sure we don't cross those kinds of thresholds and to distribute the workload evenly among the wings and, in the case of our two RED HORSE squadrons, to make sure that the two squadrons are sharing the load, the work distribution, and TDY days evenly.

General Hawley's concern, as everybody else's is, if you send folks TDY too much it's going to finally end up really detracting from their ability to do the mission. They worry about their families back home. The quality of life in these deployed locations is not



(Left to right) Executive Officer Maj. Craig Campbell and Brig. Gen. (S.) Robbins review a program.

always the greatest and so there is a concern there. It impacts the ability to do training because when you're in a deployed mode, you typically aren't training. Another problem is it impacts the people who have to stay behind. The job doesn't go away because the person is not there to do it. You end up extending your available work force beyond the norm and you can do that for a while. Can you do it forever? The answer is probably no.

CE: If operations tempo stays at this rate; what advantages do frequent TDYs offer?

Robbins: In the best case, a deployment in support of an exercise or in a real contingency acts as a great crucible for leadership. Typically, we're deploying young officers, mid-grade NCOs and airmen, putting them in situations where they have an uncommon, extraordinary opportunity to excel. By excel, I mean they are doing something in support of a very visible mission. For those who do excel, the experience will continue to payback for the rest of their career, should they opt to stay in the Air Force. They will look back and say, "That was the hardest time of my life and it's probably the best time of my life." You have great responsibility, and there are typically very rapid results of your endeavors, something you don't always see when you're back home doing your day-to-day job.

When you're deployed, you're there for hopefully a short time, you have a job to do, you get it done and you can walk away and say, "I did it well." As opposed to waiting three years until you go PCS and somebody pins a medal on your chest. Another advantage is you can learn a lot that can ultimately help not only you but help the Air Force. In every one of those deployments, there are lessons learned and if we, the collective Air Force, handle it right, we'll take those lessons learned, we'll put them to paper, we'll disseminate them so that the next time there's a deployment, we don't repeat the mistakes made last time. I'm not sure that we do as well as we should in sharing those lessons learned, but if we do, good on us, because there's no reason to reinvent mistakes.

CE: Outsourcing and privatization are becoming increasingly central to accomplishing the civil engineer mission. How do you see this impacting ACC?

Robbins: Up front, let me declare that I support outsourcing and privatization. I recognize the realities of life that say we cannot continue to do all the things in-house, whether blue suit or Air Force civilian, that we've done in the past. We will clearly have to divest ourselves of those missions, those jobs, those functions that aren't a military necessity. ACC will play in that game.

With regard to family housing privatization, I'm foursquare behind it and I'm trying to get us into the game so we can do some of that within the command early. My biggest concern with this whole outsourcing and privatization initiative is that people may overlook readiness impacts. We may be rushing to outsource and/or privatize functions or missions or jobs without first assuring that we can divest ourselves of that capability without detracting from our ability to respond to a real war or to a real contingency or to a real military operation other than war.

Maybe my fears are unfounded, maybe it's just because I don't have the big picture of what's going on. There's discussion of cookie cutter types of allocation of positions to be outsourced or privatized without anybody really seriously looking to see what the long

term consequences are.

The final concern I have is the ability of the Air Force to provide adequate funding in the future to sustain the same levels of service, same quality of life, same support for commanders that we've achieved using in-house forces. Fortunately, there are lots of smart people involved in this, all across the Air Force, and in the end I'm sure the right thing will be done.

CE: Budget cuts are dramatic for such areas as MILCON and Real Property Maintenance. As this is expected to continue for the next few years, how will this affect maintenance of base infrastructure?

Robbins: If the budget stays as it's projected, my belief is that we'll do only the absolutely most essential work at our installations. Obviously, I understand the need for the Air Force to modernize. The fighter force is 30 years old or will be, so I understand the reasons behind taking MILCON and RPM down. However, having said that, I'm not sure that the budget as it's projected today will hold. I think money will migrate from other accounts to maintain our bases just because there will be failures of systems, including pavements and utility systems, that will force us to find the money somewhere to repair them. While I don't anticipate bringing the RPM level or MILCON up to where they have been, I do think funding will increase over projected levels. Again, I think we'll be doing only the most essential work.

It's going to force us to change the way we operate in Air Combat Command. Instead of sending a large sum of money out to the wings at the beginning of the fiscal year and allowing them to prioritize and do projects as they require them, we'll probably get into some kind of line item management where this headquarters will decide what is most important among our twenty bases and send dollars tied to a specific base for a specific project. It's a big change. It's centralization, which is contrary to everything that I've ever believed in, everything I've ever supported. But when you reach a certain point you have to do it because you're looking out for an entire command. Some programs are in jeopardy of dying. Self-help is operating on a respirator right now at some bases and I'm not real sure that we're going to be able to continue to have a viable self-help program at every installation. SABER is in for some tough times. Some of the things that we've grown very comfortable with, that have meant so much to us in the last 10-20 years, are going to be in jeopardy unless, as I said, we get an infusion of cash.

CE: Civilian and military personnel numbers are expected to decrease through 2003. What will the impact of such streamlining be on Air Combat Command's Civil Engineer function?

Robbins: I'm not sure that I agree with the term "streamlining." We are reducing the number of people. We are reducing dollars. But I've seen no reduction in workload, in standards or expectations. We are privatizing, we are outsourcing, we are cutting budgets and cutting people. I'm not sure that necessarily leads to streamlining. Instead, it may at long last mean doing less with less, whereas we've always said we're going to do more with less. It may be that we can do more with less but it's going to take a tremendous amount of ingenuity, intelligence, resourcefulness and perhaps some lowering of expectations and standards. Expectations remain very high. Standards remain very high and they should be. The Air Force is known for the

See *Robbins*, page 23

News from The Civil Engineer Career Program Policy Council

By Dr. Robert D. Wolff, Deputy Civil Engineer

The Policy Council met on March 11-12, 1996 to address important issues concerning Civil Engineering Career Program (CECP) registrants; training and development, interns, promotion, and reclassification of positions. This article highlights some of the discussions and decisions at that meeting. We will try to include a similar article in each edition of the Civil Engineer magazine to better communicate career program issues and programs to our registrants.

Fire Protection Series

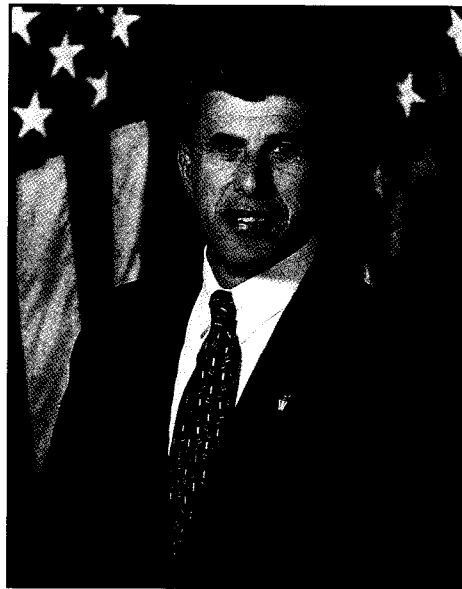
Supervisory Assistant Fire Chiefs positions are not currently covered in the CECP. These positions are filled through the Central Skills Bank. The Policy Council is comparing the consistency of coverage between fire protection, realty and housing in the CECP to determine whether to include the Assistant Fire Chief positions in the Career Program.

Returned Certificates

In FY95, approximately 25 percent of all certificates were returned without action (RWOA). The Policy Council is concerned about certificates RWOA for two reasons. First, our goal is to have a process that yields quality candidates for selection officials. RWOA may indicate that we are not meeting our customers' requirements. Second, our goal is to promote the best qualified candidates. If the certificate has the best qualified and none are selected, there may be a problem in the selection process. The CECP will continue to track and report certificates RWOA to the Policy Council.

Masters Program

In 1996, 28 registrants earned masters' degrees by attending either part-time or full-time training funded by the CECP. The Policy Council commends these individuals for their hard work in earning these degrees. We believe that advanced degrees are important, and support the current funding level that



Dr. Robert D. Wolff

ensures qualified applicants have an available funding source. The names of those individuals earning advanced degrees with Career Program assistance will be in an upcoming activity report. This is a great success story for our career program.

Career Field Education and Training Plans (CFETPs)

The CFETP templates are a starting point for employees and supervisors to develop career plans and training. The templates for engineering, environmental, housing, realty, fire protection and wage grades were developed by AFCESA. After the employee and supervisor review the CFETPs, individual development plans should be developed. We will be providing these CFETPs to the field in the near future as a guide to our registrants.

Rating and Ranking Criteria Matrix

The Policy Council approved a rating and ranking criteria matrix to identify individuals for CECP sponsored training slots. The matrix results in a score based on education, performance appraisal rating, awards and diversity of experience both in terms of

location and level of command. Performance receives about one-half the points with the other half being split between the other categories.

Deputy Base Civil Engineers Reclassification

A proposed reclassification of the Deputy Base Civil Engineers to interdisciplinary engineer, architect, physical scientist, and biological scientist raised concerns with using interdisciplinary classifications for these positions. The purpose of the reclassification was to allow non-engineers who have the education and experience to compete for a deputy BCE, MAJCOM or headquarters management position. The Policy Council plans to identify a process to review the education and experience of all CECP registrants for possible qualification in the 801 series.

Once qualified, individuals that have not worked in an 801 position but have the education and experience to qualify as an 801 would be eligible to compete for 801 engineering management positions. The Policy Council will determine the next step in this process at its next meeting.

If you have any concerns, please feel free to e-mail them to me at:

wolffr@afce.hq.af.mil

You can also contact the Civil Engineer Career Program Office at:

fernandr@hq.afpc.af.mil

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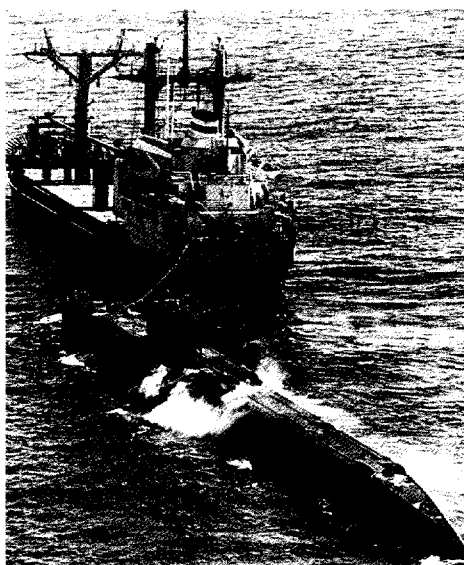
We're waiting to hear from you!

U.S., Russian and Norwegian militaries sign treaty

by Maj. James Byron
Environmental Program Manager,
Pentagon

The Arctic Military Environmental Cooperation (AMEC) marks a milestone for Russia, Norway and the United States. This treaty recognizes that these militaries play an important role in addressing existing Arctic environmental issues. It also builds a bridge to the future. This bridge supports a vision of managing ongoing military activities in the Arctic so waste streams are not a source of future contamination.

"We are dealing with a variety of environmental conditions in the Arctic," says Major General Eugene A. Lupia, Air Force Civil Engineer. "There are liquid and non-liquid radioactive materials that need to be managed from military operations there. There are also non-radioactive materials; hazardous substances and petroleum products at their Naval, Army and Air Force in-



Soviet strategic missile submarine Komsomolets on fire approximately 600 kilometers north of Norway. It sank in April 1989 with 41 crewmen on board.

stallations that present serious problems," said the General.

Six initial projects have been formally endorsed by the Secretaries of Defense of these three countries. Four projects address the transport, cleanup, treatment and storage of radioactive materials. Two non-radioactive material projects evaluate shipboard waste processing and remediation of hazardous substance sites on military bases.

AMEC will receive about \$2 million in roughly equal amounts from the three countries in initial funding. Each country draws scientists and engineers from the military, other government agencies and the private sector, as needed. The Air Force has partnered with the Navy, Department of Energy, and Environmental Protection Agency to implement the AMEC program.

The United States has spent the last several decades integrating environmental
See Arctic, page 23

RC-VI committee: plans well under way

By Tech. Sgt. Eddie C. Riley
HQ AFCEA Public Affairs

Readiness Challenge VI committee members say the plans are well underway for the contingency competition slated for April 26-May 3 at Tyndall AFB, Fla.

"We are making good progress," said Lt. Col. Randall L. Turner, officer-in-charge of this year's competition. "The last competition's organizers left us a very solid framework to work from. This competition's planning committee has been able to pick up from there in high gear and meet our targets," added the colonel selectee, who is director of Contingency Support, Headquarters Air Force Civil Engineer Support Agency.

Readiness Challenge is the biennial civil engineer, services, public affairs and chaplain contingency skills competition that demonstrates the participants' leadership, readiness, wartime capabilities and quality of home-station training.

RC-VI has been sanctioned as an official Air Force 50th Anniversary event.

"Tying the competition to the United States Air Force 50th birthday makes a lot of

sense and will serve to make the bottom-line purpose of Readiness Challenge even more meaningful," Turner said.

The competition's scope escalates with every occurrence. Public affairs joined the RC contingent last year, and the chaplain service will participate in RC-VI. Readiness Challenge became an international event in 1993 when the Canadians joined the competition. RC-VI planners are trying to give the training event even more of a multinational flavor with invitations extended to the United Kingdom, Germany, Norway, Italy, Turkey, Israel and Japan.

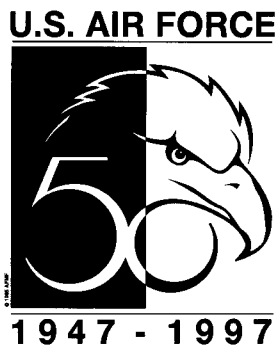
The competition will include teams from each major command, direct reporting unit, Air Force Reserve and Air Force Guard, as well as any international guests accepting the invitation. The teams will be composed of about 33 members, including an officer, 20 civil engineers, six services personnel, one public affairs specialist, and a chaplain and chaplain service support person. Each team may bring up to three alternate members from any of the functional areas.

Each contingent will compete in 21 events divided into four main categories:

Prime BEEF, Prime RIBS, joint and general. The events will test major mission areas of force beddown, base recovery after attack, readiness and explosive ordnance disposal. In addition to fully participating in the mission-related events, public affairs will play its support role of overseeing communication tools and being the official command speaker. The chaplain service will perform its traditional duty of ministering to the teams.

The designated teams to represent the Guard and Reserve will be drawn randomly at the 1996 Civil Engineer Worldwide Conference in December. The active-duty teams will be selected randomly Feb. 20 at the National Engineers Week Luncheon. The earlier selection date for the reserve component teams provides equal training days for the units.

"The expanded scope of the competition, including invitations to our fellow Air Force specialists from public affairs and the chaplain service, and our allies should make RC-VI the best and most memorable contingency skills competition ever held," Turner said. [E]



BUILDING A READINESS

FOUNDATION:

An Interview with

Maj. Gen. Robert H. Curtin

by Dr. Ronald B. Hartzler, AFCESA Historian

Maj. Gen. Robert H. Curtin was commissioned as a second lieutenant in 1939 and assigned to the 11th Engineering Regiment, Canal Zone. Following assignments in Europe during World War II and obtaining his master's degree from Harvard, General Curtin began his first of several tours in the Pentagon. Between 1948 and 1953, he worked in both the Engineering and Construction Divisions, Directorate of Installations, HQ USAF. Following his Pentagon tour, General Curtin attended the Air War College and in August 1954, returned to England as Assistant Chief of Staff, Installations, Third Air Force. Returning to the United States in 1957, he attended the Industrial College of the Armed Forces followed by an assignment to Air Force Headquarters as Deputy Director for Facilities Support, then as Deputy Director for Real Property, and following that, as Deputy Director for Civil Engineering Operations. In 1961 he was named Deputy Director for Construction and in July 1963 was appointed as Director of Civil Engineering. General Curtin spent nearly five years as director during which the Prime BEEF and RED HORSE programs were established. He retired in 1968.

Dr. Ronald B. Hartzler: Could you describe your early life and describe why you decided to join the military?

Maj. Gen. Robert H. Curtin: That was pretty easy. I came up through high school in a little town called, Winchendon, Massachusetts, up on the New Hampshire line. I was fortunate enough to get a four-year scholarship to Rensselaer Polytechnic Institute in Troy, New York. After the first year, I ran out of supporting money and decided I had to do something or else go back to work in the foundry. Fortunately, I was in the post office in Troy mailing my laundry back home and saw an advertisement on taking an examination for West Point. My congressman from the third district in Massachusetts was one of the few who then wanted competitive exams for entrance into West Point. I took it and was fortunate enough to come in second, but there was only one vacancy. So I was pretty well committed to going back home. However, I received a call from the Boston Army Post and they told me to come down and take a physical. I asked, "Why do you need me to take a physical, there is only one vacancy?" They said, "We've got news for you, he didn't pass his physical." So I went and graduated from West Point.

Hartzler: Why did you want to go into engineering?

Curtin: Engineering was something I had aspired to all my life. It was largely based on a book I had read about building the Brooklyn Bridge in New York. I wanted to build bridges. After all these years, I never did build a real bridge.



Maj. Gen. Robert H. Curtin

Hartzler: Near the end of World War II, you were assigned to Europe?

Curtin: I was with the Airfields Section in the Engineering Division of Supreme Headquarters, Allied Expeditionary Forces, Europe. We did coordination with the British on airfield construction. I was heavy into airfield work, both in Normandy and Europe. Later, I stayed and got involved in the airfields that we would need after the war.

Hartzler: The engineers had built more than 200 airfields in Europe during the war, some of them just temporary airfields, did you have to decide which ones to make permanent?

Curtin: Yes, which ones to continue after the war or maybe even build a new one. For example, I went into Rhein-Main when there was almost nothing there. The Germans had tried to blow up the

control tower, but it wouldn't fall. We had to get the utility systems back in operation, without any hardware. We also worked on the airfield at Wiesbaden, Germany, to get it back into operation and lots of other places.

It was a good experience. Materials were the hardest thing to get then. There was a lot of labor available, including German POWs. We were trying to get airfield lighting cabling, but it was almost impossible. The hardest one I had to get it for was Templehof in Berlin. But we got it.

Hartzer: What made you decide to transfer to the Air Force?

Curtin: My experience was almost entirely with airfields and the Army Air Forces. I figured that when the Army Air Forces separated out, they would have their own engineering section and I would be qualified for it. Another thing was that when I had come back to the Chief of Engineers' office on leave in the intervening time, they said, "You are so young, the first thing we will have to do is demote you to major." I was a full colonel at the time. That didn't seem like much to look forward to. It wasn't the reduction in grade, because I knew that would be temporary. Even when I transferred to the Air Force I was reduced to a lieutenant colonel. I was looking for a job assignment where I could get out and get experience—get my hands dirty. It wasn't done lightly. Somewhere around here I still have my castles that I was wearing at the time. I had a lot of good experiences with the Corps.

Hartzer: Your first assignment with the Air Force was in the Pentagon, with the Directorate of Installations. You were the Chief of the Construction and Utilities branch of the Engineering Division. What were your impressions of the Pentagon?

Curtin: I had never been there before. I couldn't imagine what the devil the military did with 30,000 people and then when I found out only about half of them were military and the other half were civilian, I was really confused!

I spent my first couple of years volunteering for everything to get out of the Pentagon—drilling water wells in Brazil or whatever came up, I volunteered. After it didn't work, I decided I might as well get involved in this thing.

Hartzer: In 1954 you went to England.

Curtin: I was with Third Air Force. That was a real good job. We were rehabilitating World War II airfields for use by jet aircraft, both bombers and fighters. Alconbury for example, was in disarray. We had to convert it and 25 other fields into medium bomber and fighter fields. I worked very closely with the British Air Ministry.

I remember Greenham Common, an airfield down in southwest England. General Curtis LeMay was going to come over from the states and was flying in big bombers. We had a lot of rain that fall. We had finished the runways, but couldn't finish the overruns because it was all muck. We got as much gravel out there as we could and hoped that nothing happened. I was standing there near General LeMay as the planes were coming in and all of a sudden you could tell that the brakes on one weren't working. It rolled right off the runway into the mud, and received minor damage and General LeMay turned to me and puffed on his cigar and said, "Bob, that's the way we should build all the overruns." (Laughs). I lucked out on that one!

Hartzer: Later when you moved back to the Pentagon, did you testify before Congress to advocate for projects?

Curtin: I testified with four committees every year. I had a team that I would bring with me that included people like Mr. Jack Gibbons. We did fairly well with Congress and I attributed it to the fact that we had good programs and the fact that we "leveled with them." That paid off. One time I worked up the number and I think we got something like 97 percent of the money we went after. We would go over and work with the committee staff to keep them informed, quite independent from a hearing. If something came up that we thought they should know about, we would go tell them. We kept those communications open.

Hartzer: In 1963 you became Director of Civil Engineering. The one thing that seemed to dominate your time as director was the Vietnam War and the changes that took place in civil engineering as a result of the war. What were some of the challenges it presented?

Curtin: The big one was getting people. We were very fortunate to have quite a few colonels with considerable wartime experience to lead our efforts.

One way we dealt with the problem was to get Prime BEEF going. We had about 100,000 people in the civil engineering activity at 216 installations worldwide. The mixture of civilian and military varied from installation to installation. The question came from the Air Force Organization and Manpower office. They said that we had to do something or else we would lose a lot of the military. We came up with the idea of Prime BEEF. It made a lot of sense—still does. If the flying unit leaves the base, the maintenance needs go down and the support is needed by the deployed flying unit. We then repostured the force. As a consequence of that, we lost about 5,000 total through the Congressional reviews, but we had a much more effective structure. It was a good illustration of working with people on the staff and getting things done that made sense.

Both Prime BEEF and RED HORSE are somewhat related. We looked at the RED HORSE squadrons as being quote, heavy maintenance. We couldn't call them construction units, because that would be in conflict with the Corps' mission.

How RED HORSE came about was interesting. Again General LeMay wanted two more bases in Vietnam, maybe even three. He said we had to get them built. He told me to get in the middle of the action. That is when I went to the Chief of Engineer's office and the Navy yards and docks and they were swamped with requirements. We determined that we had to do it ourselves and the only way we figured we could do it as "heavy maintenance" and if we had to do some construction along with heavy maintenance, then we will have to let the definition stand by itself.

Now, having done this I realized that I would have to go and make my "peace" with the Army and Navy. I went to the Chief of Engineers, Lt. Gen. [William F.] Cassidy, and I started telling him the philosophy behind the whole program and he said, "You just can't do that, it is counter to the charter of the Corps of Engineers. We will have to take it up with the Joint Chiefs. Besides, I don't think it can be done."

I said, "General Cassidy, it isn't a question of it could be done, it has been done."

See *Curtin*, page 21

How Does Your Privatization project Stack Up?

by Col Joseph Munter

Director of Outsourcing and Privatization, Pentagon

We've all heard a lot in recent months about privatization. What's all the talk about and why is it taking so long to see some results? Once there's a general understanding of the process and the time required to deliver a privatization project, the next question is, what does it take to have a good privatization project?

The short answer to these questions is that privatization is not easy and requires a change in the way we think about providing facilities and services and conducting our day to day business. The formula for success includes four basic ingredients: a cross-functional project management approach to developing the project; a project which is beneficial to the government; a project which is acceptable to the government and a project which is attractive to industry.

The longer answer to these questions requires a little more discussion.

What is privatization?

Executive Order No. 12607, September 2, 1987 describes privatization as finding ways to divest the government of programs and functions that can be provided more efficiently by private citizens, businesses and organizations.

The National Performance Review (NPR), initiated in 1993 to lay the foundation for reinventing government, included privatization initiatives as one means to cut red tape, put customers first, empower employees to get results and cut back to basics. The companion Defense Performance Review (DPR) indicated DoD should develop a comprehensive, long-range approach to managing DoD capital assets, similar to capital Asset Management systems common in the private sector. It emphasized that DoD should encourage private-sector financed alternatives for acquiring, operating and maintaining required facilities at the lowest total life cycle cost.

Similarly, the Marsh Commission, chartered by Secretary of Defense Perry to recommend solutions to improve the quality of life for service members and their families, had as one of its top recommendations the use of private expertise and capital to accelerate improvement of living conditions. Privatization could be viewed as using somebody else's money to get the job done. But it's not as easy as just borrowing money.

What are some examples?

Privatization in DoD is not new. Many of the family housing

units in the U.S. were obtained through privately financed contracts authorized by the Capehart Act. Others were obtained through *Public Law 98-115, Section 801*, Build Lease and *Section 802*, Rental Guarantee programs. In addition, many of the family housing units in Europe were built by using long-term leases to attract private developers.

New Housing Initiatives 1996 National Defense Authorization Act

- *Guarantees*
- *Leases*
- *Investments and Loans*

New housing privatization initiatives were recently enacted in the 1996 National Defense Authorization Act. This act enables the government to use a wide range of "private sector tools" including guarantees, leases, investments and loans to attract private sector capital and expertise to provide housing for service members and their families

In most of these cases, housing allowances, or the money the government would have paid in housing allowances, are available to help offset costs of construction, operation and upkeep of the units during the life of the project.

On-Base Banks and Credit Unions

- *Lease land from Air Force*
- *Profit from operations*

In a very general sense, the long standing existence of commercial banks and credit unions on military installations is also a form of privatization. In this case, the government leases land to banks and credit unions on which they construct a facility to provide banking and financial services to the base military and DoD civilian community. The banks and credit unions derive profit through the services they provide.

Energy Savings Performance Contracts (ESPC)

- *Private sector invests in energy saving devices in government facilities*
- *Private sector shares in savings from lower energy costs*

Similarly, privately owned cogeneration plant projects were developed to replace some outdated, government owned plants. This creative privatization solution involves a privately financed, constructed, and operated cogeneration facility on government

land leased to the private firm. The private firm generates most of its income by selling electricity, the primary product of the cogeneration process, to a public utility and provides the by-product, e.g., steam, to meet the government's requirement at a greatly reduced cost.

Other privatization approaches in the area of energy have included ESPC projects which involve the Air Force entering into contracts with an energy service company, who pays all upfront costs, to complete energy audits and install energy efficiency improvements. The acquisition of these energy conservation projects requires no installation resources and no payment if savings do not result. Energy savings conservation projects to update aging equipment with newer, more efficient products, like new light fixtures, have been done.

While the privatization concepts mentioned above were developed for contracting under specific legislation enacted for those purposes, the Hope Hotel project at Wright-Patterson AFB involved using the unspecified authority of 10 U.S.C. 2667. This unspecified authority allows the Service Secretary to outlease non-excess government land. In this instance, land on Wright-Patterson AFB was leased to a private entrepreneur at a nominal cost for 40 years. As a condition of the "low" cost lease, the entrepreneur would finance, build, own and operate a visitors quarters and conference center similar to mid price/quality hotels. The government would not guarantee occupancy or make any financial commitments. Instead, government travelers pay to use the facility and receive normal per diem reimbursements when in an "official duty" travel status. Those not in an "official duty" travel status can also use the facility at their own expense.

Hope Hotel

- *Government-only leased land*
- *No other contract and no occupancy or financial guarantees*

What is the process to deliver a privatization project?

No matter how privatization is authorized in legislation, you can readily see that most of the concepts mentioned here required a lot of thought and a very innovative approach. The process dictated for such innovative approaches is very involved and takes time — a lot of it.

The delivery process includes conceiving and fully developing the project, demonstrating that it's economically viable, orchestrating Congressional and Department of Defense consensus and performing a competitive acquisition of some type.

The privatization process, currently being outlined for housing initiatives enabled by the 1996 National Defense Authorization Act, generally reflects the process required for any privatization project. As described in the recently published (Sep 96), Air Force *Draft Housing Privatization Policy and Guidance*, the process consists of five major steps: project identification, project definition, project acquisition, project management and project close-out.

The Process

- *Project Identification*
- *Project Definition*
- *Project Acquisition*
- *Project Management*
- *Project Close-Out*

Project identification involves defining the need and programming privatization project requirements to meet it. Project definition involves conducting analyses and evaluating the opportunities for using the various legislative authorities and developing a plan of action to use the authorities. Project acquisition involves Congressional notification of the intent to use the authorities, competitive solicitation and approval to enter into contracts/agreements. The project management and project close-out steps include all actions necessary over the operating life of the housing developments.

The process to deliver a privatization project just to the point that it "opens" or begins operation takes a lot of time, energy and resources. And, in most cases, it requires military action officers to learn to think like entrepreneurs in order to conceptualize business arrangements which meet the government's needs and provide profit potential for the private sector.

What are the ingredients for success in a privatization venture?

A 1989 Air War College Defense Analytical Study, entitled *Criteria for Developing a Successful Privatization Project*, analyzed seven successful projects to determine common factors which contributed to project success. The common factors which emerged in the study seem equally relevant today.

Formula for Success

- *Use Project Management Team*
- *Project is beneficial to the government*
- *Project is acceptable to the government*
- *Project is attractive to industry*

The first factor was use of a project management team approach by the government to develop the project. This approach should include a multi-disciplined working group, key leadership involvement and up-front commitment of required resources to fully develop the project concept.

The second factor was that the project must be beneficial to the government. It should provide a savings over the status quo approach; it should have life-cycle costs equal to or lower than the MILCON alternative for providing the service; and it should provide greater value than the MILCON alternative by providing benefits that the MILCON alternative would not normally provide.

The third factor was that the project must be acceptable to the government. To be acceptable to the government, the project should be structured to achieve legal and environmental sufficiency, as well as support by the local community, MAJCOM, Air Staff, DoD, and state and federal agencies outside DoD. The project must also be supported by appropriate Congressional sub-committees and local members of Congress.

The fourth common factor for a successful project was that the project must be structured so as to be attractive to industry by providing a low perception of investment and other risk and adequate profit.

If a project contains all four of these factors as it's developed and worked through the process described above, the probability of success is pretty high. How does your privatization project stack up? [E]

(Rick Baker, Suzanne Santos and Tom McSwain contributed to this report.)

The challenge of facilities management

by Capt Dan Derby

AFIT, Wright-Patterson AFB, Ohio

Facilities managers ensure an array of furniture and construction materials create a beautiful and easy to maintain building. Typically, a facility management plan is created detailing products and finishes that look good together and reduce long term maintenance costs. These plans often prove difficult to implement. Once in place, more time is spent approving minor purchases and educating customers on the process, than is spent focusing on maintaining a quality product. The customer, on the other hand, sees the facility management plan as a confusing, time consuming bureaucracy. Since the process keeps customers from getting what they need easily, they try to get around the process. At Falcon Air Force Base, Colo., we believe we have found an answer to these old paradigms.

Much of the difficulty in managing a large facility results from the very nature of facility management plans. A traditional plan resides in a series of thick binders located on someone's desk. Whether a customer wants to purchase something, from a chair to a largescale remodeling project, they are forced to either call or visit. Typically, the customer lacks all the information needed to set an initial course. Time will be spent training the customer on what is required. Worse still, in a large organization customer approval is merely the first step in a very complex process.. To be effective, there is no choice but to spend a lot of time approving and training, and the customer is often frustrated by the bureaucracy.

Beyond taking time away from the real job and angering customers, the plan is expensive to develop and maintain. In a very large complex, the plan may cost over \$100,000 to develop and publish. Because of its high cost, the plan cannot be allowed to become outdated. It seems every year the manufacturers phase out several materials or the new boss hates one of the color schemes. Even after selecting the new materials, it takes hours to date the binders by cutting and pasting samples never designed to be attached to paper. This process is so cumbersome, it is rare to maintain more than one or two sets of binders. This limited num-

ber of binders again forces the project officer to become the focal point of questions and approvals. This again focuses everyone's frustrations with the 'process' right on the project officer.

The New Paradigm

At Falcon, we were tasked with creating a new facility management plan. The first step was to create and adhere to the following set of criteria:

Use low cost, non-proprietary, commercially available tools to develop a 100% paper-free product to include forms, training, and transmission.

Automate entire process using the concepts defined by the Total Quality Management movement

Design a consistent interface which allows customers to handle the majority of the process with little or no training

Use the "one document, one location, one owner" concept to eliminate duplicated information and single points of failure.

Develop a living document with live links to individual documents, so when one document is updated, all links are updated.

Integrate other mediums, like telephone calls and surveys, to improve customer service and personal interaction between user and owner

Build internal teamwork by encouraging links between documents owned by multiple organizations and individuals

By setting these goals, the staff at Falcon quickly identified the World Wide Web Internet as a means to meet most of these goals. Falcon staff also realized it wanted to do many things which are not appropriate for public dissemination. A mini-Internet, or Intranet, was created. Creation of the Intranet was a simple, inexpensive task for the communications squadron. This Intranet concept allowed Falcon to serve its plans strictly inside the air base, and prevented unwanted outside access. By limiting access strictly to internal customers, users had easy access to services ranging from remodeling offices to ordering audio-visual support.

The best way to describe Falcon's product is to walk through one of the processes. If a customer needs to remodel an office area, the customer would simply link to a list of all services available on base. Then they would

click on the bullet for office remodeling. This hyper-link would take the customer to a short checklist and questionnaire. The engineering squadron is notified of work that needs doing, eliminating the need for paper forms filled out in triplicate. And based on the particular checklist selected and the responses given, service can be tailored to the customer's specific needs.

In the next link, a page shows every building on base. The customer select's the appropriate building, and moves down the listing for the specific building's roofing, landscape, general, and facility plans. This allows the customer to browse through portions of the plans that deal directly with the building. For example, by selecting the interior standards for the floor, the customer picks from the standard's general office areas, hallways, restrooms, etc.

Under the general office areas, each person affected by the project could review basic office cubicle layouts based on their job title or position, as well as the base and accent color selections, design criteria, guidelines for working with a design firm, and even specifications for construction and finishes.

By the time everyone has finished reviewing the facility standards for the area, the engineering squadron has probably assessed the completed questionnaire. Insights tailored to the customers specific needs can be attended to with a simple customer service phone call, providing insights tailored to the customer's specific needs. In effect, the product empowers users to run their own projects, while reducing the time engineering spends training customers and facility managers on the process. As the customer continues to process the checklist, Falcon's staff provides additional insights detailing important aspects of the project which are outside the scope of engineering's responsibilities.

For example, the project's communications requirements are a necessary part of the overall project, but are outside the scope of engineering. At the proper place, the checklist provides a link to another checklist for ordering communications work. Now the customer is on a checklist owned by the communications squadron. This feature of-

See Management, page 25

We build it and they will come

by Sue Alexander
Editor, The CE

A few months ago, there was nothing but miles of hard-packed sand in all directions, scorpions and unrelenting heat stirred by the eternal sighing wind. Nothing, until 209 members of the 823rd RED HORSE Squadron arrived at King Sultan Air Base, Al Kharj, Saudi Arabia, and began to beddown.

"We were sent here to support force beddown for the relocation of personnel from Riyadh and Dhahran. Our tasking was to build a bare base operational Air Force installation," said Colonel Susanne M. Waylett, then Commander, 823rd RED HORSE Squadron, Hurlburt Field, Fla. Waylett is now at Langley AFB, Va., where she serves as Assistant to The Civil Engineer at Headquarters, Air Combat Command.

The relocation of personnel is a safety measure in direct response to the June 25 terrorist bombing of Khobar Towers, which resulted in the deaths of 19 people.

The 823rd RHS was tasked with constructing four housekeeping sets that support 4400 people, one industrial set that provides the facilities for logistics, transportation, supply and the civil engineer complex, and erecting flightline facilities to support the host unit, the 4404th Composite Wing.

After arriving, additional taskings included building roads to enhance force protection and guard towers to facilitate the security police squadron's air base ground defense.

Deploying to the kingdom is nothing new to this RED HORSE squadron. It was one of the units to deploy to Saudi Arabia at the start of operations Desert Shield and Storm. In 1990-91, the 823rd RHS completed construction on two air bases, a runway, arresting barriers and numerous other projects.

"We arrived there August 7-8. As of today (September 12, 1996), our construction other than three aircraft hangars is complete. We would have completed the entire tasking in 35 days if the assets were here. That's got to be a record," said Waylett.

Originally, 208 RHS personnel deployed and were teamed with 49 personnel from the 49th Materiel Management Group for Har-

vest Bare. Harvest Falcon assets are designed specifically to support an operation of force protection. The long-term solution will be a modular city to replace the tents.

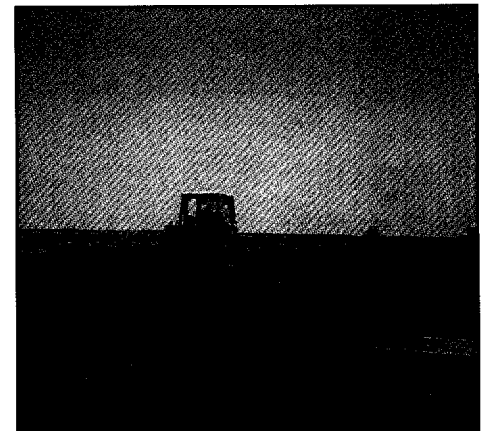
"Costs for all real assets are already spent. The aircraft hangars and other facilities we set up are part of the wartime reserve that were already here in theater. We spent a significant amount of money on gravel for roads and other materials that we required. We had to rent some equipment because flying or shipping the equipment in here would have taken longer than we had," said Waylett.

Scorpions and sandstorms not withstanding, the 823rd also had to contend with construction challenges unique to the desert environment.

See *RED HORSE*, page 26



Setting up the FSTFS required a crane and an excavator with a hook to pull the fabric into the channels



The 823rd RHS completed a bare base beddown in approximately 1 1/2 months. Most horizontal construction was completed during daylight.



The first two nights 823rd RHS personnel slept under the stars. After setting up living quarters, they built this tent city.



I was there when the bomb went off...

by Lt. Col. Robbin Schellhous
USAF Academy

The morning of June 25th, 1996 dawned bright and clear in Dhahran, Saudi Arabia. For the 2,500 Army, Air Force, British, and French troops living in the Khobar Towers housing complex, the day started as another typical summer day in the Area of Responsibility (AOR): The morning prayer call echoing from loudspeakers on the numerous mosques scattered throughout the bordering cities of Khobar and Thuqbah; cloudless skies; daily high temperatures in the 110-120 degree range; and oppressive, clothes-drenching humidity.

It also started as a typical day for the 160 members of the 4404th Civil Engineering Squadron, power plant workers' shift change at 6 a.m.; fire department shift change at 8 a.m.; and a 7:30 a.m. start to the duty day for the remaining craftsmen, engineers, inspectors, environmentalists, and readiness and EOD troops.



(Top) Outside Khobar Towers, the extent of the destruction is visible. (Bottom) The blast crater as seen from the destroyed civil engineer dormitory building. All photos by Lt. Col. Robbin Schellhous.

The Southwest Asia Operation SOUTHERN WATCH mission is to enforce United Nations' sanctions imposed on Iraq following the Gulf War, including patrolling the "no fly zone" south of the 32nd parallel. The 4404th Wing (Provisional) accomplishes this tasking by flying daily missions with more than eight different types of aircraft supported from 12 sites in 7 southwest Asian countries. Civil engineers and/or fire fighters are assigned to eight of the sites, and

Khobar Towers is actually a 300-building complex constructed by the Saudi government in the early 1980s as a public housing project. Initially, apartment living was not a popular concept among the Saudis, so the buildings sat unoccupied until the Gulf War when they became home to thousands of US and allied troops. Army and Air Force troops now occupy 30 Khobar Towers buildings.

The 4-, 6-, and 8-story buildings are con-

to complete an end-to-end string of jersey barriers and concertina wire around the entire 2-mile Khobar perimeter. SPs and other units filled tens of thousands of sandbags for defensive fighting positions, SCUD bunkers, and to better fortify high-value assets and facilities. Threatcon BRAVO further dictated 100 percent ID checks, 75-foot-from-any-building, parking restrictions, and random vehicle searches.

At 3 p.m., CE and Services held a rib-



The force of the bomb punched through a six-inch concrete wall and caused the destruction.

support the others as needed from Dhahran.

Other than the CE Commander's slot, (one of nine year-long billets in the AOR,) all CE troops serve 90-day tours. Arrival dates for each rotation are spread out for continuity, so troops arrive and depart on the DC-10 "rotator bird" from Philadelphia every week.

The CE mission at Dhahran is to "keep the planes flying" by providing prime power, air conditioning, and other utilities to flightline operations; constructing, maintaining, and repairing flightline and support facilities; providing crash, rescue, and fire protection capabilities; and providing environmental, readiness, and EOD support as needed. A substantial amount of CE time and effort goes into maintaining the 2000 dormitory rooms in Khobar Towers.

constructed of precast tilt-up concrete panels. Each floor contains two or three suites, each suite having five bedrooms, three baths, a kitchen, and a living room. Air conditioning is provided by window units. Floors are marble, and each building has one or two elevators. Recent dormitory improvements include new paint, new drapes, and plumbing and air conditioning upgrades. A Khobar Maintenance and Repair Team (KMART) visits every room in every building once a rotation to perform routine maintenance and repair.

Security in Khobar Towers, located about a half mile from the entrance to King Abdul Aziz Air Base, was pretty tight. Following the 1995 bombing of the Saudi Air National Guard building in Riyadh, CE and security police (SP) forces worked together

bon-cutting ceremony at the newly-renovated Fitness Center. The three-month contract project included new paint, new cabinets, upgraded electrical service, and new mirrors in the converted underground parking garage.

At 5 p.m., CE engineers, roads and grounds troops, contractors, and Saudi maintenance workers met on the active runway to test a new rubber-removing chemical compound. The test went well and appeared more effective and less costly than the previously-used shot blast method.

At 7 p.m., we thought we had seen the end of another typical day in the AOR. How mistaken we were.

At 9:55 p.m., I was finishing up a workout in the new Fitness Center. The Center
See Dhahran, page 32

Pavement Team

Provides commanders solid ground for mission

by Tech. Sgt. Eddie C. Riley
HQ AFCESA Public Affairs

EDWARDS AIR FORCE BASE, Calif. — Whether in the deserts of Southern California or the Middle East, commanders can't take anything for granted that may jeopardize the mission, not even their launching grounds: They call on the AFCESA Airfield Pavement Evaluation Team.

This team is a crew of 13 traditional hardhatters that have developed the niche of looking beyond the obvious like: soil is soil, asphalt is asphalt and concrete is concrete. They come from conventional civil engineering career fields, but they use contemporary equipment to test flightline pavement conditions and inform commanders on the capability of the airfield. This doesn't happen overnight, however; it's more like over a fortnight.

For two weeks, the team visually inspects thousands of square feet of runways, taxiways and parking aprons; pounds the pavement a 1,000 or so times with a machine that simulates an aircraft tire load; and drills about 200 12 to 24-inch deep core samples of the pavement and soil. Then, they head home for another six months of study in their

laboratory at Headquarters Air Force Civil Engineer Support Agency, Tyndall AFB, Fla. This effort results in an official airfield pavement evaluation commanders may use as a tool for planning flying missions at the base.

A recent pavement evaluation took place at Edwards October 23-November 8. The team left Tyndall October 21 for Nellis AFB, Nev., to pick up their vehicles and equipment for the convoy to the desert. They arrived at Edwards the next night around 7:30 p.m. The mission began at 6:30 a.m. the next day.

"We work sun up to sun down," said Master Sgt. John C. Hoffman Jr., team superintendent. "We attempt to operate around the mission, and busy times for the mission are usually 10 o'clock to 4 o'clock. We get out there in the morning and get a lot of work done without a lot of aircraft traffic. The rest of the day, we just have to coordinate real closely to work around the traffic."

This coordination was done with the airfield operations flight, which was the first stop for the four-man team before splitting up for their part of the three data collection tools: the coring drill trailer, which includes the dynamic cone penetrometer (DCP); the heavy weight deflectometer; and pavement

condition index (PCI) survey—all nondestructive to the pavements.

"We've come a long way with state of the art equipment," said Capt. John I. Duval, the team chief. "In the old days, we use to cut up a 4 foot-by-4 section of pavement in the middle of the runway, which hampered airfield operations. Now we can pull samples all day without disrupting the mission."

Staff Sgt. Simon A. Cox and Senior Airman Timothy P. Leno took off in one direction in the six-pack towing the drill and the DCP. Hoffman headed off in the other direction in the specially equipped van towing the deflectometer. Duval went in all directions freelancing the pavements for the PCI input.

Cox and Leno, joined by a patch crew from the civil engineer squadron to fill the core holes, began to drill the 200 or so pavement cores and collect soil samples. This number is determined by the number of airfield features, which are portions of the airfield distinguished by their thickness, composition, trafficking and other characteristics. The coring is repetitious, except when it is necessary to get more detailed information on the soil through the core hole using the DCP, which is capable of measuring soil strengths at depths up to 48 inches.

Hoffman started "thumping" the pavement with the deflectometer. The weight package and plate can apply up to a 56,000-pound load, simulating an aircraft wheel load, he said. The deflections were recorded by sensors and stored in the computer on board the van. The tests were performed at least five times per the 60-70 features on the main base and every 100 feet along the landing gear wheel path on the 16,000-foot runway.

Duval drove and walked around the flightline surveying the pavements. This is an integral part of the evaluation because it allows the pavement engineer to detect joint damage, stress fractures and broken concrete, which may loosen and become hazardous debris to the aircraft.

Here is an example of how these data collection tools work together. Duval discov-



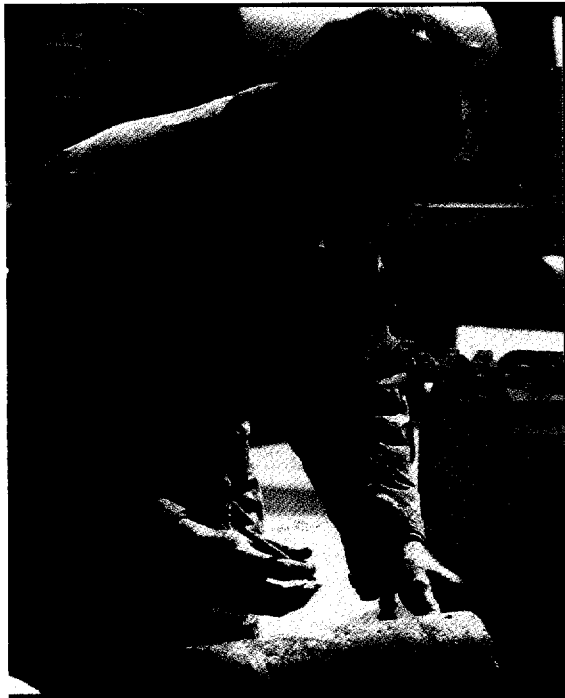
An "excellent" concrete joint. Photos by Tech. Sgt. Eddie C. Riley



A corner spall, which can create FOD and lead to aircraft damage.

Staff S

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t. Simon Cox marks a freshly cut core sample.

structural, the engineer would have to subtract 25 percent from the maximum capacity load for the runway. Example: If the runway was classified to handle C-141s at 340,000 pounds, the maximum capability would have been reduced to about 255,000 pounds.

“Think about it. There could have been an unwarranted limitation placed on Edwards’ flightline, limiting the aircraft and loads coming into the base,” Duval said. “The pavements evaluation is important because results are filed in the flight information publications worldwide that pilots and base operations use to coordinate missions.”

A direct impact on the Air Force mission: This is the reason these civil engineers don’t mind the long hours and the approximate 100 days a year they spend on the road worldwide for scheduled evaluations and for emergency evaluations like in Rwanda and Bosnia. They were with the initial group of military members deployed to these areas to prepare the locations for the rest of the troops’ entry into these hostile territories. The team has done evaluations at 24 foreign locations in the past five years.

“I really enjoy the job, the traveling and the team,” said Leno, as he reminisced about his most memorable trip.

“My best trip was the Panama/Colombia trip. We did Howard Air Force Base and Fort Sherman in Panama and Puerto Leguizamo in Colombia. It was a little different. For instance, our usual tow vehicle is a six-pack truck. In Colombia, we had an old beat-up farm tractor to tow the drill. The

pavement was homemade asphalt. It was melting. With the heat in Colombia, you could actually see horse shoe prints in the asphalt because it got so hot and it wasn’t a very good mix.

“Our billeting was on a Colombian navy ship. They had all four of us in this little room, and they said this was the best billeting on the post because it was air conditioned. The showers on the ship used water pumped out of the river, so I didn’t shower,” Leno said.

Not only do the team members like what they do and have fun doing it, they do it better than anyone else could do it, according to Duval.

“Our primary competition is the private contractor because within the Air Force, we are the only team capable of doing structural and friction characteristic evaluations of airfield pavements,” Duval said. Also, there is a Navy team and Army team capable of doing nondestructive evaluation, but there are so many pavements in the Department of Defense to be evaluated that the teams stay busy within their branches, he said.

“If we were to lose our internal capability, I think our only alternative would be to go to the private contractor,” Duval said. But the Air Force team beats out the contractor in cost and scope of evaluations.

“The average for one of these evaluations done by a contractor at a typical base would cost the Air Force \$60,000 to \$80,000.

See Team, page 22



Master Sgt. John Hoffman advises NASA employees during a requested consultation visit.



Master Sgt. John Hoffman lubricates the deflectorometer before a full day of “thumping” the pavement.

EOD flights to get new chemical suits



A team of EOD professionals in full ITAP suits.

by Senior Master Sgt. Marshall Dutton
HQ AFCEA

Starting this winter, Explosive Ordnance Disposal (EOD) Flights will receive the long awaited replacement for their 40-year-old M3 Toxicological Agent Protective (TAP) suits; the *Improved* Toxicological Agent Protective (ITAP) suit. The ITAP is currently undergoing final testing by Natick Labs, Mass. The ITAP is a joint service Research, Development and Acquisition (RD&A) program managed by the US Army's PM-Soldier program office. The M3 TAP suit no longer meets today's Immediate Danger to Life or Health (IDLH) requirements mandated by the Occupational Safety and Health Administration (OSHA). The Army Surgeon General has directed that anyone with the possibility of exposure to liquid contamination be dressed in IDLH Protection Level A.

Level A protection requires a Self-Contained Breathing Apparatus (SCBA) and full encapsulation. The current ground crew ensemble, for instance, only provides protection somewhere between IDLH Levels C and D. Full encapsulation does not provide EOD the flexibility of being able to change out air bottles or cooling suit ice packs, thus limiting EOD's time to perform required tasks. EOD personnel would have to make numerous trips in and out of a contaminated environment, tote a bulky carry-along pack (as astronauts do) or be tethered by hose to a large system that provides air and cooling capability. This does not permit EOD forces to safely perform their chemical ordnance "render safe and disposal" mission. Once PM-Soldier had the EOD chemical mission requirement, they made the decision to provide SCBA and body cooling with encapsulation of the head, upper torso and the SCBA. This allows EOD to satisfac-

torily perform missions.

The ITAP consists of several different components and can be worn in two configurations. The major components are the coveralls, external hood and vest, Personal Ice Cooling System (PICS), Interspiro SCBA unit and personal protective mask blower system. The two different configurations allow the wearer to use either bottled air with the SCBA, or filtered air through the use of MCU-2P hooked to the blower system. The two configurations provide the users the flexibility of having "on-site workers" in SCBA and "decontamination personnel" in filtered air as they are not exposed to liquid contamination.

The ITAP coveralls are made of seven alternating layers of Teflon and Nomex with the hood consisting of five layers. The suit is white to cut down on heat absorption. Booties are an integral part of the suit. Chemical overboots, somewhat like fireman's boots are worn over the booties to provide protection to the wearer. Gloves are the same as the ones worn with the M-3. An air tight zipper runs diagonally across the chest and abdomen allowing donning and doffing. Two sealed adapters (pass-through) on each side of the chest allowed the introduction of pressurized air and PICS cooling liquid into the suit without violating the integrity of the air tight seal. Two one-way pressure valves allowed air to escape the suit at a specified internal pressure to preclude it from inflating. Over-pressure in the suit provides additional protection against contamination should the suit lose its integrity in a contaminated atmosphere. Lastly, the suit incorporates a non-detachable hood made of the

same material. The face opening is surrounded by a two-inch rubber gasket that seals in the face. The protective mask (MCU-2P or SCBA) seals to the gasket, not the face.

External overhood and vest Both of these are made of a thin impermeable material and are intended to be discarded after each use. The rest of the ITAP can be decontaminated and repaired up to five times before it must be disposed. The hood fits over the head, SCBA mask, and shoulders to protect them from gross contamination. The vest covers the chest/abdomen and the entire back including the SCBA bottle. The vest protects these areas from gross contamination.

Personal Ice Cooling System This system consists of a shirt with rubber tubing sewn into the inside. The shirt is worn against the skin under the ITAP suit. A battery powered pump connects to an ice and water filled bottle worn on the belt, outside of the ITAP suit. Two tubes running from the pump to the shirt via the adapters (pass-through) built into the ITAP suit create a closed loop. Ice water is pumped from the ice bottle through the shirt and back to the ice bottle.

Interspiro SCBA This is the same system used by Air Force firemen. The system consists of a 60-minute bottle of compressed air, a protective mask with chemical warfare mask and a regulator with an extra hose that provides over-pressure in the suit. The protective mask is attached to a C-2 filter canister via an 18-inch rubber hose that secures the canister to a clip at the back of the head. This configuration allows the wearer to manually switch from bottled air to filtered air with a simple flip of a switch.

Gas Mask Blower System This system has a battery powered blower, two C-2 canisters, and two rubber hoses. The blower allows ambient air to pass through the canisters and forces it through the two hoses. One hose is connected to the ITAP. This air creates over-pressure inside the suit. The other hose is connected to the MCU-2P inlet valve. The air passing through this hose supplies forced air to the wearer and at the same time, creates over-pressure in the mask.

Maintenance Kit There are two separate components; the patch kit and the pressure test kit. The patch kits are used to patch any nicks or abrasions. An electric 600 degrees Fahrenheit iron is used to



Training exercises simulate potential real-world situations.

apply patches to the suit. The pressure test kit ensures the suit is airtight. Unit level maintenance and testing is all that is required for the suit with the exception of the SCBA.

The ITAP will be issued to all EOD Flights tasked with Unit Type Code 4F9X3 deployment packages. Current requirements call for 315 suits and 370 ITAP training suits. ITAP training suits will provide the same characteristics and feel, but will be much less expensive. Current projected cost of the complete ITAP suit less the SCBA, (EOD flights have these already) is \$3000.00. A small price to pay to bring EOD chemical protection out of the 1950s and up to today's standards.

Prior to fielding, the ITAP program office will provide centrally located Train-the-Trainer classes, training materials, and training suits in sufficient quantities to allow each of the MAJCOMs to train all EOD personnel at home stations. This is expected to take place sometime around the February-March '97 timeframe.

Questions regarding the ITAP program should be directed to the author, HQ AFCESA/CEX, at DSN 523-6120, commercially 904-283-6120 or via e-mail at duttonm@afcesa.af.mil. [E]

Curtin: building the CE foundation

Continued from page 11

He said, "What do you mean?"

I said, "We already have two of these units in country."

"How did you do that?"

I said, "We just arranged for the ships and equipment and sent them over. We asked for landing space from the Army, but it wasn't available, so we had to bring the units in over the beaches."

He said, "If you already have two of them over there, I won't bring it up at the joint chiefs."

It was really a thrill to go over in country and see what they had accomplished with so few people. They were a flexible unit. They could do almost anything. We just bought standard earthmoving equipment and we hired a firm to do the maintenance. They were in Thailand and would send teams over to Vietnam to do our heavy maintenance.

Hartzer: In looking back at all of the jobs you had in your career, I noticed that you never really had a job that was the equivalent of a base civil engineer.

Curtin: No. That is one thing I always regretted. I believed that one of the most important ingredients of a key person on my staff was that he had been at the base level. I felt a little inadequate at times, not having experienced that. They had my sympathy, I will tell you that.

Hartzer: Based on your years in the Air Force, what words of advice would you give to an Air Force civil engineer today?

Curtin: I would emphasize "base maintenance." Bring up the people in some scheduled way so they had, to some degree, that type of background and experience. Get the best people for the job and let them do it! [E]

Air Force long range planning: CSAF announces new Air Force core competencies

Lt Col William R. Saunders
Directorate of Programs, Pentagon

Senior Air Force leaders met at the CO-RONA conference in October to develop a strategic vision for the first quarter of the 21st century. They addressed a wide range of issues from alternative futures, to emerging threats, national security objectives to Joint Vision 2010, and air and space capabilities to officer, enlisted and civilian career paths. They developed the product, *Global Engagement: A Vision for the 21st Century Air Force*. It establishes the basic guidelines and principles for preparing the Air Force for the first quarter of the 21st century. General Fogleman will publicly released this document in mid-Nov 96 replacing the publication, *Global Reach-Global Power*. Copies are available for every Air Force member.

One of the key strategic directions is an adjustment to Air Force core competencies. General Fogleman announced the following adjustments at the Air Force Association Symposium in Los Angeles, Calif., in October.

"In keeping with our nature and focus as a global force capable of employment at the strategic, operational, and tactical levels of war and in view of the combined integration of capabilities in space, we've combined *Air and Space Superiority* into one core competency. This change reflects the transition to an air and space force and the need to control the entire vertical dimension; the

domain of air and space power."

An added core competency is called *Global Attack*. There are two aspects to this core competency. The primary aspect of *Global Attack* is the ability of the Air Force to find and attack targets anywhere on the globe using the synergy generated by air and space assets to operate at the strategic level of war. The other aspect of *Global Attack* is the expeditionary nature of our forces. This capability is demonstrated through CONUS-based Air Expeditionary Force (AEF). As the United States continues to reduce fixed, overseas bases, the Air Force will use expeditionary forces to support the nation's priorities.

Because the Air Force will need to move quickly and lightly, *Rapid Global Mobility* was reaffirmed as a core competency that will remain critical.


The ability to apply selective force against specific targets to achieve decisive effects is called *Precision Engagement*. This Air Force capability is at the heart of the operational concept of precision engagement spelled out in Joint Vision 2010 and has long been a legacy of airmen.

To achieve success in the 21st century, the ability to use and protect information technology will be relied upon more and more. The core competency of *Information Superiority* is not the sole domain of the Air Force. Indeed, all of the Services must develop their own capabilities in this area. But as a service, the Air Force has moved out to

build impressive offensive and defensive information capabilities.

Air and space power also rely on a myriad of combat support activities that occur on the ground. This vital part of what the Air Force provides the nation is highlighted by a core competency called *Agile Combat Support*. The concept of focused logistics in Joint Vision 2010 was derived from the pioneering work done in the Air Force with Lean Logistics. Agile Combat Support reaches outside of pure logistics to include functions like security police, engineering and other combat support functions.

These core competencies provide one construct for thinking about air and space power. But they are not written in stone. They will change over time to reflect advances in technological capabilities, expertise and varying political realities. For more information, contact the author at HQ USAF/CEPP, DSN: 227-2434.

What must be understood and what must endure is the vision of air and space power as the decisive force for the 21st century. The United States Air Force is focused on providing the nation the ability to exploit and control the air and space environment. We will continue to field the force that can operate in air and space with the demonstrated capability to dominate operations in all mediums—land, sea, air and space. This vision will serve the nation well as we enter the 21st century and search for new ways to deter, fight, and win our nations wars." 

Team: pavement evaluators proud of mission impact

Continued from page 19

At Edwards, it would be more like \$100,000 (because of the separate pavements at main base, south base, north base and in the NASA complex)," Duval said. "We could do this base for around the order of \$10,000 to \$15,000 for our shipping, travel, per diem and manpower."

The Air Force team could also offer more in-depth information to commanders because they could collect more data to analyze.

"We have the luxury of doing a more

detailed evaluation than a private contractor would probably do because we own our equipment and we have a four-man team here for two weeks. We can get an awful lot of data," the captain said.

The team is good and has built a reputation to uphold. The team members know this and take it as a challenge for the good of Air Force operations.

"Coming from a RED HORSE and contingency related background, I really enjoy being close to the mission ... having an impact on the Air Force operational mission,"

Hoffman said. "I'm not trying to deglamourize base civil engineering jobs or anything, but I don't think you can get any higher in the engineering technician career field and be as close to mission as I am now."

There it is: the Airfield Pavement Evaluation Team. It has the expertise, equipment, efficiency and flexibility to obtain, compile and report pavement strength, condition and performance data on all airfields with present or potential Air Force missions—whether it be at Andrews AFB, Md., home of Air Force One, or a remote landing strip in Timbuktu.

Robbins: what's important today

Continued from page 7

excellence of its facilities, of its bases, of its systems and that's paid off in terms of mission readiness, operational capability and Quality of Life, and I would hope that we don't reduce any of those. It remains to be seen if we'll have to or not.

CE: Since you were Director of Environmental Programs, at then-Tactical Air Command, what initiatives have come about that you see as most beneficial to the environment?

Robbins: First of all, Mr. Gary Vest, who used to be the Deputy Assistant Secretary of the Air Force for Environment, Occupational Health and Safety, deserves an awful lot of credit for building the Air Force Environmental Program to the level it is today. Mr. Vest invested many years, at times he was like a voice in the wilderness, in building the program up and getting it the visibility and the funding support that it needed. He succeeded. We can almost declare victory. Among the things that are great across the Air Force and in particular in Air Combat Command, I think the Environmental Compliance and Management Program (ECAMP) is a real success story. The payback is in terms of our ability to go out and assist a wing commander in assessing the environmental vulnerability of his or her base and then proposing ways to fix things which require attention. ECAMP has been a huge success across the Air Force and in particular Air Combat Command, and our program is used as a benchmark even by industry. That's a real tribute.

Our commanders' environmental awareness is certainly a key development of the last ten years. The commanders' environmental leadership course was started in the late 80's, hosted by MAJCOM commanders and attended by general officers, senior staffs, and wing commanders. The course has done a tremendous amount of good in terms of getting senior leadership behind the environmental program and making it their program as opposed to the civil engineers'. That's a tremendous enhancement. If you can get it out of a functional stovepipe and into the commanders' in-basket, then you've achieved something, because things will happen that otherwise might take too long. Another big change is the willingness on the part of the Air Force to open and maintain a dialogue with the regulators. Likewise on the part of the regulators, so we are not two armed camps standing off against one another. More and more there's a willingness for the two sides to sit down and come up with a rational approach, and hopefully an economical approach, to solving continuing environmental problems. I think that's a great change

in the way we handle environmental programs and I think it will continue.

CE: What, in your view, is the single-most important characteristic you'd like to imbue your troops with?

Robbins: At every level of professional military education there's at least a few days spent on this kind of question. I remember even back in Squadron Officer School we spent the better part of an entire day discussing how to define the characteristics of yourself as a leader and of the people who work with you and for you. You almost always come around to the term "integrity." You want the people who work with you, for you and around you to have integrity. But I think that one of the great things our Chief of Staff, General (Ronald R.) Fogleman has done is to codify our Air Force's core values.

If you ask me to define the characteristic I would like other people to have, I wouldn't just limit it to one thing, I wouldn't just say integrity. I think that the core values that Gen. Fogleman laid out—integrity first, service before self and excellence in all that we do—say it all about what I as a command engineer, a military officer or as a human being would like to see in the people we work with or in our own families and friends. If you've got all three of those, you've pretty well got it nailed to the wall. Finally, if you ask Earnie Robbins what is the fourth thing that he wants to see in the people around him, it would probably be a sense of humor. You can't survive in this Air Force and operate under the kinds of pressures that we do, day in and day out, if you don't have a sense of humor. A sense of humor is very, very important to success whether you're an airman, a staff sergeant, a colonel or a GS-12, or even the editor of a magazine. I hope we never lose our ability to laugh, even if it's only at ourselves.

Brig. Gen. (S.) Robbins is The Civil Engineer, Air Combat Command, Langley Air Force Base, Va. He is responsible for all civil engineering activities for more than 15,000 civil engineering personnel operating and maintaining Air Combat Command's \$41 billion physical plant at 21 major installations and numerous smaller installations in the continental United States and overseas. Principal responsibilities included planning, programming, design, construction, operations and maintenance for all facilities and supporting utility systems; environmental programs; family housing; and fire protection, disaster preparedness and explosive ordnance disposal. [E]

Arctic: building international trust

Continued from page 9

stewardship considerations into the military so that needed operations and training to support readiness are conducted effectively and in environmentally conscientious ways.

"That's where AMEC comes in... sharing those experiences and expertise," says Major James Byron, HQ USAF Environmental Quality Program Manager, who is developing and leading the AMEC program imple-

mentation plan for the Department of Defense. "AMEC is not a substitute for the investments each country has to make in managing their waste streams. What we hope to do through cooperation is ensure we are getting the best management practices and the best technologies in place quickly. AMEC helps provide focus and visibility so that the issues addressed through the AMEC process become high on the agenda of all

three countries."

AMEC supports Secretary of Defense William J. Perry's strategy of preventive defense because militaries have an important role in building international trust and understanding. The AMEC program combines environmental stewardship and sound business practices on a global scale as well as promotes international security and cooperation. [E]

RED HORSE squadron slated for Malmstrom

by 1st Lt. David W. Honchul
341st Missile Wing Public Affairs

Malmstrom AFB will receive a new mission within the next two years as the Air Force creates its sixth civil engineering RED HORSE squadron, basing the highly mobile response unit in Montana.

The unit will consist of 404 people comprising the first associate unit of its kind — 282 active duty military members and 122 Guardsmen from the Montana Air National Guard. The other five units are all homogeneous — two active duty units, two National Guard units and one Air Force Reserve unit. The mixture of Guard and active duty forces will allow each to get a clearer view of both service components.

"We look forward to a true partnership with the Air Force and a melding of our engineering units," said Lt. Col. Gary Schick, commander of the 120th Civil Engineer Squadron which is part of the Montana Air National Guard's 120th Fighter Wing based at Gore Hill in Great Falls. The 122 Guardsmen who will be part of the new RED HORSE squadron will come from Schick's squadron.

Not only will having the new squadron

provide further capabilities for the Air Force, the unit will be a valuable asset to Malmstrom, according to Col. Timothy McMahon, commander of the 341st Missile Wing.

"They will be able to help us aggressively attack our long-term improvement plans," McMahon said. "They will do some road repair and utility work around Malmstrom as part of their training to make them fully qualified to do such work overseas under austere conditions."

The unit will not be part of Malmstrom's 341st Missile Wing, officials announced. Instead, the squadron will be a tenant unit to the base, assigned to 8th Air Force which is headquartered at Barksdale AFB, La. Like the two active duty units, it will be under the operational control of Air Combat Command at Langley AFB, Va.

The arrival of RED HORSE will in part off-set losses at Malmstrom from the actions taken under the 1995 Defense Base Closure and Realignment Commission recommendations which were approved by President Bill Clinton and Congress. Those actions called for the realignment of the 43rd Air Refueling Group to MacDill Air Force Base, Fla., and

the closure of Malmstrom's runway. Plans currently call for the runway to close Dec. 31. Because the runway closure is directed by federal law, it would take an act of Congress to reverse that decision.

In addition to normal training the RED HORSE unit will do to prepare for its deployable mission, Air Force officials say the Malmstrom unit will be able to develop a "cold weather training area" which can be utilized by all six RED HORSE squadrons. There isn't such a facility currently available to RED HORSE.

An advance planning team of about five people will arrive at Malmstrom within a few weeks to begin preparations for equipment delivery, facility occupation and personnel arrival, McMahon said. That equipment includes about 120 vehicles and assorted construction equipment. With the departure of the 43rd, no new facilities will have to be built to house the squadron.

The RED HORSE unit will obtain limited operational capability by October 1997, when it is expected that about 65 personnel will be at Malmstrom, McMahon said. The full contingent of people and full mission capability is expected by October 1998. [E]

Mail Box

Dear Editor,

Many thanks for the latest copy of the Civil Engineer Magazine; it makes excellent reading and is proving a popular read here in the HQ Royal Engineers Air Support Group.

I was particularly pleased to see the interview with Brigadier General Philip Stowell (Spring, 1996, Vol. 4 No. 1) and found his guidance on improvements needed in contingency situations most useful. Given the inevitability of deployed air operations in an uncertain world, we wholeheartedly support the need to beddown aircraft and personnel quickly as a first priority in such operations. It's an area to which we are paying close attention now that the UK's Joint Rapid Deployment force has been declared operational. I was also interested to see the General's emphasis on the use of IT to assist beddown planning and damage assessment. Within the Royal Engineers Air support Group we are party-way towards producing a beddown works timetable based on Microsoft Project, but have yet to harness IT for airfield damage assessment. It's probably time we spoke to HQ AMC to see how far behind the power curve we are!

Finally, although the Air Support Group is still a relatively young organization at just over a year old, we have already made firm contacts with your HQ, the Air Force Civil Engineer HQ in the Pentagon, the Air National Guard Civil Engineers and the US Navy Seabees. We have much to learn from you and I hope, you from us. We would therefore welcome visits from our American Civil Engineer colleagues to Waterbeach in order to discuss our respective

doctrines and training methods. May I therefore use your magazine to issue an invitation to your readers?

Yours Sincerely, Chris

Editor's Note: Col. Guthkelch is commander, Engineer Branch, Headquarters Land Command in Cambridge. Interested parties may contact Col. Guthkelch at the following address:

Engineer Branch (RE Air Support)
Headquarters Land Command
Waterbeach Barracks Waterbeach Cambridge CB5 9PA
Or telephone:
Army Network Waterbeach Military (765)
Direct Dialing (01223) 20+ Ext: 4580

Dear Readers,

Feedback from the civil engineer field continues to increase. I'm very pleased to hear from anyone interested in writing an article or taking pictures for publication.

In this issue, we've looked at some of the most critical issues affecting civil engineering today; outsourcing and privatization, and CE long-range plans. We're also fortunate to have a first-hand account of June's terrorist bombing in Dhahran and how the survivors banded together to control the damage. There's a story on the 823rd RED HORSE base beddown at Al Kharj and an interview with Brig. Gen. (S.) "Earnie" Robbins, ACC/CE. Other topics of interest include a review of the officer assignment process, the new RED HORSE squadron at Malmstrom and an Improved Toxicological Agent Protective (ITAP) suit.

The Editor

Management: meeting the challenge

Continued from page 14

fers several benefits. First, the accuracy of the checklist is better because the experts in that field created it. Second, Falcon's facilities management plan became smaller when the responsibility for maintaining even a small portion of another agency's responsibility was relinquished. Neither the customer nor the communications squadron can hold the facilities manager accountable for out-of-date information. The communications squadron is responsible for its document. Again, 'one document, one owner, one location'. Third, since the document is linked, our plan remains current the moment the communications squadron updates the checklist. And finally, the biggest advantage is improved customer service. The user now has everything needed to complete the project, without having to make numerous phone calls or spend countless hours digging up paper checklists and out of date guide books.

Beyond customer service, there are many other advantages to this new paradigm. One of the greatest lies with the modular nature of small linked documents. For instance, a document was built for the three basic color schemes, each containing six accent color schemes. Each building or floor links to the base color scheme selected, locking the customer into a base color scheme, thus limiting the diversity of our inventory.

But the user's ability to select from the six accent colors lets them personalize their space within pre-defined limits. It's also easier to maintain the plan because small linked documents lend themselves to incremental updating. If, for example, a particular carpeting is discontinued, simply replace its graphic file, specifications, and use requirements in one document and every linked building is instantly updated. The more this medium was explored, the more and more creative ways were discovered to better service the Air Force, our customers, and ourselves. These advantages are:

- Better customer service. Empowering customers to accomplish more of the project themselves
- Limiting the diversity of inventory. Allowing customers the ability to personalize their space
- Develop teamwork with other agencies. Everyone gains by having new resources to link
- Very low learning curve to both create and use the documents
- Better oversight. The job is easier by following Falcon's plan
- Instantly updates information. Linked documents cross organizational boundaries
- Incremental changes. Modularized format allows changes without invalidating the entire plan
- Non-proprietary standard. Maintain

and add on to the product in-house or choose from a variety of contractors

The future of this Web technology is very bright. Several major trends are occurring which demonstrates the Web will continue to grow in importance. First, in just over three years the Web has gone from inception to the de facto communications standard for schools, business, and governments. Everyday a company somewhere in the world is offering a new or upgraded product which makes the Web easier to use or more powerful. Secondly, by radically improving our nation's telecommunications infrastructure, interactive video and voice features will soon be possible in real-time on the Web. These capabilities allow for even more interactivity and user friendliness. Finally, most Web technology is based on a non-proprietary set of standards. This allows new, small, innovative firms to create new features, which can be easily added to the product.

At Falcon, we found by applying new technology in a new way, we could create a whole new approach to facilities management. We believe we've reached a common sense balance between the risk of using impersonal computer technology and improved communication with the customer. We also believe, based on the current trends in telecommunications, the system we've developed will still be valid a decade from now.



Congratulations to all the Air Force Civil Engineer Chief Master Sergeant Selectees!

Ambelang, David A.	786 CES Ramstein AB, Germany	Grau, Brian G.	18 CES Kadena AB, Japan
Brannum, Donald L.	HQ AMC/CE Scott AFB, Ill.	Guidry, James M.	92 CES Fairchild AFB, Wash.
Brautigam, Donald R.	HQ AFSPC/CE Peterson AFB, Colo.	Heath, Dennis R.	796 CES Eglin AFB, Fla.
Buckmaster, Roy C. J.	HQ PACAF/CE Hickam AFB, Hawaii	Hodges, Carl P.	HQ AMC/CE Scott AFB, Ill.
Buckmiller, Joseph	3 CES Elemendorf AFB, Alaska	Hosbaugh, Wayne R.	45 CES Patrick AFB, Fla.
Colburn, Timothy D.	HQ PACAF/CE Hickam AFB, Hawaii	Johnke, Denise L.	52 CES Spangdahlem AB, Germany
Crenshaw, Jeffery	341 CES Malmstrom AFB, Mo.	Myers, Charles M.	436 CES Dover AFB, Del.
Culliver, Richard O.	HQ ACC/CE Langley AFB, Va.	Ori, Edward R.	78 CES Robbins AFB, Ga.
Dixon, Mary L.	820 RHCES Nellis AFB Nev.	Parks, Jesse F.	HQ PACAF/CE Hickam AFB, Hawaii
Domme, Henry W., JR	56 CES Luke AFB, Ariz.	Pitrat, Paul L.	45 CES Patrick AFB, Fla.
Dyer, Hollis	AFFC Randolph AFB, Texas	Powell, Gary W.	796 CES Eglin AFB, Fla.
Fairey, Robert C.	28 CES Ellsworth AFB, S.D.	Reinhard, Joel B.	786 CES Ramstein AB, Germany
Gelslechter, Michael	AFCESA Tyndall AFB, Fla.	Reps, Jameson D.	786 CES Ramstein AB, Germany
Gilbert, Alton J.	721 CES Cheyenne Mt., Colo.	Tedford, Patrick A.	HQ PACAF/CE Hickam AFB, Hawaii
Grant, William D.	86 CES Ramstein AB, Germany	Wallace, Joe B., Jr	35 CES Misawa AB, Japan

RED HORSE: tent city at Al Kharj

Continued from page 15

“As in any environment, you always have challenges. The greatest challenge was the ground. Although it’s just dirt, it was as hard as concrete. Putting the four foot long stakes in the ground required some innovative solutions. We tried soaping down stakes and using smaller drill bits to drill starter holes. We ended up having to excavate the channels before putting the stakes in. We also had a difficult time putting the fabric in the FSTFS (framed supported tension-fabric structures). These structures are 8,000 square foot warehouses. The fabric has a cable which runs through channels in the frame. We finally used cranes and an excavator with a hook to pull the fabric into the channels,” said Waylett.

Operating heavy equipment to build fuel berms was a real challenge for the operators. They used a newly developed tool, HESCO Bastion Concertainers, for revetments. These expandable baskets are filled with dirt or sand (or any soil) and do not require the maintenance of standard berms.

Another challenge was equipment, the 823rd vehicle maintainers worked around-the-clock to take vehicles out of the prepositioned boneyard and make them operational. The 4404th Wing had looked at those vehicles and contended that only 30 could be brought into service, the 823rd RED HORSE folks brought in 180.

Arriving in 130 degree heat and finding nothing but a K-span structure and some empty bladders, RED HORSE personnel spent the first two nights sleeping under the stars. They put up their own tents and a field shower shortly thereafter. Traveling with their own mobile kitchen trailer (MKT) enabled the 823rd to enjoy hot meals in the field. All of the non-potable water was brought in by truck by a local contractor. Potable water came in bottles from a local vendor.

“We’re used to this kind of environment. The tents are comfortable and by now we know what to bring along to make life more tolerable. A rug to put beside the cot, a CD player for entertainment and snacks to last



The hard-packed sand made it difficult to start construction. Here a team works on digging a trench.

until the care packages started arriving. These things made life here seem more like home,” said Waylett.

While music and care packages make life more comfortable, the two aspects of deploying to the field that can make or break morale are mail delivery and calls home. At first, neither of the two systems were operating. Waylett made it a priority to establish the programs and within a few days, troops were getting and sending letters and talking to friends and family back home.

The reaction of other base personnel to the rapid development of the installation was nothing short of amazement. Referencing Col. Bailey, Vice Commander, 4404th Wing Provisional Waylett said, “Every morning when he gets up to look around, he feels like the tooth fairy visited during the night. We do most of our work at night because it’s cooler, and we can accomplish a lot of vertical construction using lights. We do the horizontal construction during the day.”

Later on, other Air Force personnel arrived and began setting up their some of their own facilities. The security police set up a perimeter of concertina wire and other elements as part of the security mission. Medical personnel brought in their own clinic with a follow-on Air Transportable Hospital.

Permanent construction being done by Saudi Arabian contractors is extensive. The

823rd RED HORSE was able to use some of the paved areas and concrete areas that were built during the war. It used host nation contractors to bring in some of the base-course, plumbing and electrical supplies needed. It does not have access to any permanent facilities. The installation is being constructed for the Royal Saudi Air Force and it has missions that will use those facilities.

“The Royal Saudi Air Force has been very gracious in hosting this development and very cooperative in ensuring that we were able to relocate the wing in a timely manners,” said Waylett.

A Prime BEEF unit, primarily manned out of Nellis AFB, Nev., with lots of augmentees from ACC, came in after the 823rd RED HORSE to take over the operations and maintenance once construction was complete. It also took on preparation of the airfield to receive aircraft. That included sweeping the pavements and bringing up an airfield lighting system that hadn’t been used since the war.

“Once again, the civil engineer community can be very proud of the achievements realized here. This extends beyond the civil engineer community because RED HORSE and the 49th have logistics personnel and others that threw away their union cards and delivered what many said was impossible,” said Waylett. [E]

Bartel takes command at AFCESA, outlines initiatives

Maj. Gen. Eugene A. Lupia, Air Force Civil Engineer, officiated at the change of command ceremony appointing Col. H. Dean Bartel as Commander of the Air Force Civil Engineer Support Agency (AFCESA) at Tyndall AFB, Fla. Col. Bartel began his term as commander on September 3, 1996. He is responsible to the Air Force Civil Engineer for providing the best tools, practices and professional support to maximize Air Force civil engineer capabilities in base and contingency operations.

"It is an honor and a privilege to again be offered the opportunity to command an organization that has a reputation worldwide for excellence," Col. Bartel said.

Col. Bartel has held a variety of engineering positions since receiving his commission through the ROTC program at Oklahoma State University in Stillwater. A career civil engineer, he has worked in research, as associate professor of civil engineering at the U.S. Air Force Academy, deputy chief of staff for civil engineering at the numbered Air Force level and deputy civil engineer for Air Education and Training Command. He has commanded a civil engineering squadron and served in several engineering positions at the Air Staff level, including director of housing and director of operations. Prior



to assuming command at AFCESA, Col. Bartel was vice commander, 42nd Air Base Wing, Maxwell AFB, Ala.

Firmly outlining his initiatives for AFCESA in his command address, Col. Bartel made clear his priorities for the future. Stating, "Readiness is Job One for civil engineering," he extolled the technology and just-in-time support troops in Desert Shield and Storm received from the agency and the contributions to victory that support made pos-

sible. Secondly, though of equal importance to Col. Bartel, is the base civil engineer squadron itself. "I'm convinced that the engineer can do more for the wing commander and quality of life than any other squadron or agency on base," he said.

Another goal at the top of Col. Bartel's agenda is continuing to provide top-quality support as part of the Air Staff and major command team support network for civil engineer squadrons worldwide.

"TEAM is the perfect acronym for what we have done and will continue to do, it stands for; Together Everyone Accomplishes More. The agency will be the ultimate team player in every task we undertake" Col. Bartel said.

Col. Bartel went on to describe some of the changes sweeping through the Air Force and his intention to guide AFCESA along with those changes.

As a final priority, Bartel stated his and his wife Lila's commitment to build on the great foundation that previous commanders have laid. "We dedicate this tour, along with all of the professionals here, to all the civil engineer squadrons across the Air Force."

Col. Bartel has served in the Air Force for more than 26 years. He was promoted to his current rank in June, 1991. **EE**

CE Senior Officers and Civilians

In the Summer issue of *The Civil Engineer* magazine, a list of Civil Engineering senior officers was published. Some senior officers were omitted while others were not listed correctly. The following is a corrected list.

OMISSIONS:

Colonels

11th WING	Col.	Norris, James A.	Bolling AFB	Commander, 11th CES
HQ AETC	Col.	Osburn, Robert W.	Randolph AFB	Chief, Operations Div
ACC	Col.	Ibarra, Guillermo	Langley AFB	Commander, 1CES
HQ ACC	Col.	Willson, Raymond A.	Langley AFB	Assistant Chief, Environmental Programs Division

Civilians, GS-15

HQ ACC	GS-15	Moore, Robert M.	Langley AFB	Chief, Engineering Flight
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CORRECTIONS:

General Officers

HQ ACC	Brig. Gen. (S)	Robbins, Earnest O. II	Langley AFB	The Civil Engineer
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Colonels

HQ ACC	Col. (S)	Bradshaw, Joel C. III	Langley AFB	Deputy Chief, Programs Division
HQ ACC	Col.	Cardinale, Richard O.	Langley AFB	Chief, Environmental Programs Div.
ACC	Col.	Hutchinson, Darrell B.	Nellis AFB	Commander, 99 CES
HQ ACC	Col.	Peters, Robert L. II	Langley AFB	Chief, Outsourcing and Privatization
HQ ACC	Col.	Waylett, Susanne M.	Langley AFB	Assistant to The Civil Engineer
AFMC	Col.	Wiles, Carl L. Jr.	Eglin AFB	Commander, 33 CES

Colonels Charles W. Scott and Hunter S. Hopson, Jr. are both retired.

NEW WORLD

Air Force FY97 Dormitory RPM Plus-up Program

With the signing of the 1997 Defense Appropriation Act, Congress provided the Air Force with \$108M Real Property Maintenance (RPM) plus-up in a two-year O&M DEFENSE account. The Air Force intends to use these funds for dormitory construction, focusing on the following priorities: 1) Central latrine conversion projects; 2) Commander's Facility Assessment Level 1 dormitory projects executable by 31 Dec 96; and 3) Commander's Facility Assessment Level 1 dormitory projects executable by 31 Mar 97. Estimated program "bogeys" for each MAJCOM will be released soon and work with MAJCOM action officers to revalidate previously submitted requirements will commence.

Mechanical Techno 97

AFCESA will host a mechanical engineering workshop for all base- and command-level mechanical engineers at Tyndall AFB, Fla., February 4-6, 1997. Topics will include POL and natural gas distribution, HVAC, Indoor Air Quality, heating systems, Performance Work Statement's, design and maintenance. For more information or to suggest topics, call AFCESA Technical Support, Mechanical Division, DSN 523-6459 or commercially 904-283-6278.

Development of Air Force utilities privatization policy and guidance document

This document will consolidate all available information on privatization options, discuss roles and responsibilities, and outline procedures to use in planning, programming, designing, and executing utility privatization projects. A draft of the guide will be provided to the MAJCOMs for review in Jan 97. For more information, contact AF/CEI, Directorate of Outsourcing and Privatization, Pentagon, DSN 227-9516.

Have you checked out Ecotone?

AFMC now has a monthly Environmental Newsletter, available on the Worldwide Web. Called Ecotone, the newsletter is 18 pages long and designed to inform readers about environmental issues and efforts affecting AFMC Installations, as well as the Air Force. Ecotone articles are categorized into four pillars; Cleanup, Compliance, Conservation, and Pollution Prevention. In addition, the magazine has added an "In the Laboratory" column to cover environmental quality technology research and development. To access this magazine through the AFMC WWW Home page, enter <http://www.afmc.wpafb.af.mil>, click on Public Affairs, then on Ecotone. Stories may be reprinted, provided credit to the magazine and the author is given. The editor is Libby Van Hook, HQ AFMC/PA, DSN 787-7620.

Bosnia EOD conference shows tools of the trade

by Tech. Sgt. Michael J. Land
4100th Group (Provisional) Public Affairs

Air Force explosive ordnance disposal specialists deployed here attended the first NATO Implementation Force EOD Conference recently in Steel Castle, Tuzla East, where they showed the tools of the trade to their counterparts from 11 other nations.

"We're all doing the same work," said Army Maj. Tim Everhard, 546th EOD Battalion, referring to the EOD specialists representing 12 nations and the U.S. Air Force, Army and Marine Corps. "Our ultimate goal is to prevent injury and to save lives."

The nations represented were the Czech Republic, Denmark, Finland, France, Holland, Hungary, Italy, Russia, Sweden, Turkey, the United Kingdom and the United States. The six U.S. airmen currently assigned to the 4100th Operations Group (Provisional) here represent four U.S. Air Forces in Europe bases: Aviano AB, Italy; RAF Lakenheath, England; and Ramstein and Spangdahlem ABs, Germany.

The Air Force contingent showed several tools of their trade at the conference. The one that gained the most interest was the real-time X-ray imaging system.

"This is the only real-time X-ray operationally deployed in the Air Force," said Chief Master Sgt. Robert Hodges, 4100th Group (P) EOD Flight. Hodges is deployed from the 52nd EOD Flight at Spangdahlem AB.

"It reduces the 'time on target' and the number of entries sometimes required while attaining a usable X-ray," he said of the system's advantages. Hodges said this reduces the hazard EOD specialists face during explosive safing operations.

The airmen assigned to the provisional group's EOD flight have been responsible for almost 350 operations and have turned up and destroyed almost 475 pieces of ordnance, among them 19 mines, since the operation began in December 1995. Other ordnance includes small arms cartridges, anti-aircraft munitions, and air-launched missiles.

Aviano's Senior Airman Chris Stallcup, who manned the Air Force equipment display, was excited about the opportunity to attend the conference.

"It's awesome," he said. "You never get a chance to see (people from) all the different countries and all the different equipment. It's neat to see how far along the countries are in EOD."

Senior Airman Chuck Campbell from Spangdahlem has been to EOD conferences before, but not one of this magnitude.

"This is the first meeting I've been to with this many countries," he said. "All the countries have pretty much the same equipment; we're all on the same wavelength." (Courtesy U.S. Air Forces Europe News Service)

THE PEOPLE

Department of Energy and the Federal Interagency Policy Committee Awards the Air Force

The award recognizes the contributions made toward the efficient use of energy in the federal sector during fiscal year 1995. The recipients were honored with a November awards ceremony in Washington D.C.

Freddie L. Beason, P.E., Mechanical Engineer, AFCESA, won a 1996 Federal Energy and Water Management Award. Beason earned it for his dedication and contributions to energy conservation for the Air Force and Department of Defense since 1976. This year, Beason acted as catalyst in providing training to over 140 Air Force Major Command and Installation energy managers; was a leader in the Energy Saving Performance Contracts (ESPC) program, (the first of two ESPCs in the Air Force) and emphasized energy savings through the judicious operation and maintenance of facilities.

Staff Sgt. Michelle F. Greensfelder, Elmendorf AFB, Alaska, was the recipient of the Individual — Energy Efficiency/Management Award for her ability to manage a \$7.5 million utility budget, success in negotiating a new natural gas contract (anticipated savings exceed \$400,000) and for aggressively conducting energy audits on base facilities that exceeded the requirement by 35 percent, among other achievements.

56th CES, Luke AFB, Ariz., won the multi-category nomination for Water Conservation and Cost-Beneficial Landscaping for a Small Group. A team from Luke's Heavy Repair Shop replaced 56,000 square feet of grass with desert granite and river rock. The xeriscaped areas will save 5 million gallons of water annually. Additionally, xeriscaped topography saves approximately 90 percent in maintenance costs annually.

61st ABG/CE, Los Angeles AFB, Calif., won the Energy Management by a Small Group category for achieving an overall energy reduction of 21.9 percent by installing automatic motion detecting light switches in the common-use corridors of seven administrative buildings. The new system will save Los Angeles AFB about \$58,000 annually, with no impact on the base's mission.

877th CES, Kirtland AFB, N.M., won the Water Conservation by a Small Group category for establishing a partnership with local, state and federal agencies and authoring Kirtland's Water Resource Management Policy and Action Plan. The 30 percent reduction goal outlined in the Policy and Action Plan will result in savings of almost half a billion gallons of water and over \$450,000 annually.

88th CEG, Wright-Patterson AFB, Ohio, won the Energy Management by an Organization category. Wright-Patterson's Energy Management Tiger Team used several innovative strategies to increase awareness and drive down costs, including creation of an energy mascot (Captain Kilowatt), energy down days, energy contests and accountability and meters. By increasing awareness, energy consumption was reduced by 4 percent, saving \$750,000 in FY95.

66th CES, Hanscom AFB, Mass., also won the Energy Management by an Organization category. The replacement of central plant chillers, cooling towers and controls and the installation of waterside economizers add up to a predicted 2.4 million kwh and \$223,000 annual savings. Also, by reducing electrical consumption, carbon dioxide, sulfur dioxide, nitrogen oxides and particulates emission is lessened.

End of an era for airfield pavements evaluation

If you've looked at an Airfield Pavements Evaluation Report written in the past 25 years, chances are **Thomas L. Larson** had a hand in it. Larson helped found the Air Force's Pavements Evaluation Laboratory in January, 1971. Larson retired from AFCESA in October after 40 years of government service. He has worked with 33 engineers and 77 technicians to publish more than 440 reports from 41 countries and 45 states. During his tenure, technician manning declined from 20 people to its current level of six. Simultaneously, published reports more than doubled; from 16 in 1980 to 33 this year. The original labor-intensive destructive testing (using 4' x 5' pits) has changed to the more-thorough, nondestructive use of the Dynatest Heavy Weight Deflectometer and the Dynamic Cone Penetrometer. "With more advanced technology currently being developed, I see evaluations being completed faster and with less inconvenience to host base activities," said Larson.

AFCESA saves Air Force money

The Innovative Development through Employee Awareness (IDEA) program is Tyndall AFB's answer to inspiring employees to improve the process and rewarding them when they do it. The IDEA program recognizes and rewards individuals whose suggestions, inventions, patents and scientific achievements, when adopted, improve the efficiency, economy and effectiveness of the Air Force, DoD and federal government. Two winners for this year are **John W. Smith** and **Tech. Sgt Garry K. Wilson**, both of AFCESA. Their combined innovations saved the Air Force \$390,797.00 the first year and each was awarded \$3,427. Smith and Wilson recommended modifying the Mobile Aircraft Arresting System (MAAS) by replacing the on-board water bladder with a portable bladder, increasing capacity and reducing the cost.

TRAINING

Community College of the Air Force - A step ahead

by Senior Master Sgt. James R. Wirshing
CCAF, Maxwell AFB, Ala.

What do 15 percent of active-duty enlisted Air Force personnel have that the majority of the force doesn't? Their Community College of the Air Force (CCAF) degree! In fact, only 11.8 percent of civil engineer's enlisted force have their CCAF degree.

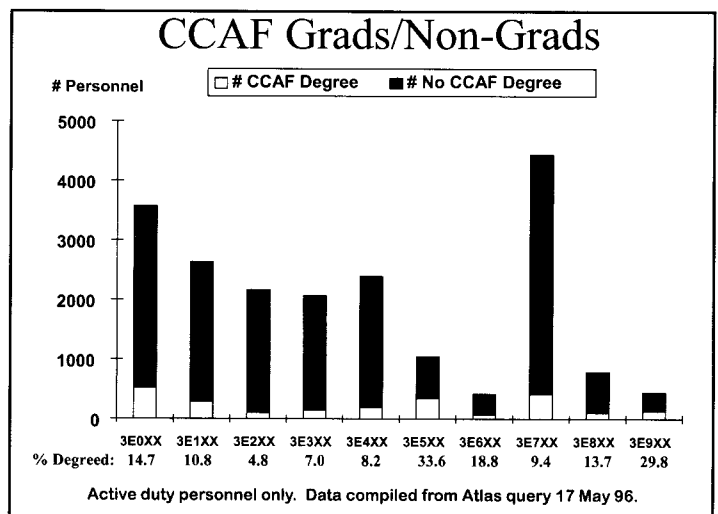
The Community College of the Air Force was established in April 1972 to provide enlisted personnel with improved educational opportunities to meet future technological and leadership challenges. CCAF is a regionally accredited, two-year college that serves the job-related educational needs of the Air Force enlisted community.

The college offers an associate in applied science degree in seven civil engineer related programs. You actually earn college credit while doing your job. The average amount of credit awarded for completion of a civil engineer 3 skill-level technical training course is currently 14 semester hours. In turn, those hours are applied directly to your CCAF degree. Additional credits can be earned through completion of skill-level upgrade training and attendance of professional military education and career field advanced technical courses.

Statistics indicate that CCAF graduates are promoted earlier in their career due to improved study habits and test taking skills. Don't get left behind! Make an appointment with your local education office. They will help you obtain a progress report showing what course work is needed to complete a CCAF degree. The education office will then advise you on what courses to take at a local

civilian college or recommend CLEP or DANTES tests. The tests are free and tuition assistance is available for the courses. It's that easy to get started! Soon, with some effort on your part, you too will have a CCAF associate degree.

Once you've earned your degree, you might even be interested in helping other enlisted achieve their educational goals by working as a CCAF program administrator for civil engineer degrees. For more information contact your local Military Personnel Flight concerning special duty assignments.



Assignment tips for company grade officers

by Capt. Jani McCreary
HQ AFPC, Randolph AFB, Texas

Officers who understand the assignment system and how to work with it have an advantage over those who don't, namely knowing where the good assignments are and what's needed to get them. While there are no guarantees, having a working knowledge of the assignment system can help company grade officers shape their careers and make the most out of every duty station and assignment.

How does the assignment system work? First, the commander projects a vacancy and sends the Air Force Personnel Center (AFPC) an advertisement. All jobs are advertised, with the following exceptions; commander jobs, general officers' staffs, school outplacement and jobs for newly-commissioned officers.

Advertisements describing the position, duty location and requirements run on the Officer Assignment Bulletin Board (accessible through the internet or local military personnel flight) for 30 days. AFPC determines which officers are eligible to move and qualified for the job. Once a selection is made, AFPC narrows the list down by prioritizing based on move status:

1. Short tour returnees
2. Long tour returnees
3. Base closures/Unit deactivations
4. CONUS controlled tour completion
5. All others

AFPC sends the lists to commanders, who then make a selection. If the commander doesn't select an officer from the

highest category on the list, he/she must justify in writing why that decision was made. A message is sent through the MAJCOM asking the losing commander if the selected officer is still able to move (i.e., hasn't been put on the weight management program, thrown into jail, etc.). If there are any changes to the requested report date, the gaining and losing commanders negotiate from there. At that point, AFPC loads the assignment, which "flows" through various computer systems down to the Outbound Assignments section of the losing Military Personnel Flight (MPF). The outbound assignments section notifies the officer and processes orders. The officer reports to his or her new duty station about 60 days later.

When can I move? Knowing when an officer is "ripe" for a change of duty station can give him or her more time to consider options. Company grade officers should move with around three years on station or at the end of a controlled tour/overseas tour. Captains and above should move around two years on station and may be required to move to an overseas base. After three years on station overseas, captains and above may be required to move to a CONUS base and after completing an overseas tour length (depends on location and whether officer is accompanied or unaccompanied.) Overseas tour lengths are published in AFI 36-2110. After two years on station, lieutenants are required to move to either a CONUS or overseas duty station.

Where should I go next? Commanders and AFPC are good sources of information about what sorts of jobs an officer should go to next. In general, company grade officers can look for assignments in these main areas; base level jobs, MAJCOM and numbered Air Force staff jobs, Air Staff, Air Force Civil Engineer Support Agency (AFCESA) and Air Force Center for Environmental Excellence (AFCEE) staff jobs, career broadening jobs (ROTC, Recruiting, OTS instructor, Basic Training instructor, Air Force Institute of Technology (AFIT) instructor, Air Force Academy instructor, AFIT master's degree programs and Explosive Ordnance Disposal School.

When am I eligible for a non-volunteer assignment? It depends on how many jobs that have already been advertised for 30 days are still without volunteers, and where the officer shows up on our computer generated non-volunteer roster. AFPC

maintains a list of who is "hot," "warm," or "cold."

For example, a lieutenant or captain who's never been on a short tour and has two (or more) years on station is warm-to-hot for an overseas short or long tour. A lieutenant or captain who has 32 months on station and hasn't contacted AFPC about the next job is warm-to-hot for a CONUS assignment.

Not-so-secret AFPC assignment tips

Officers should talk to their commanders and other senior CE officers about career moves and learn from their experience. It's mandatory for officers to let the commander know before volunteering for jobs.

When looking for jobs, check all civil engineering jobs. Architects, electrical, mechanical and all other civil engineers have an Air Force Specialty Code (AFSC) of 32E. Since the advertised AFSC is tied to a position number and not necessarily the duty title, sometimes good jobs that seem "hidden" are simply advertised under a specific AFSC. Read the duty title and job description to see what's needed to qualify for a job. Example: A position for Chief of Simplified Acquisition Base Engineering Requirements (SABER) job at Hurlburt Field under the 32E3F (mechanical engineer) AFSC was advertised. Reading the duty title and job description shows the base doesn't necessarily need a mechanical engineer for that job; it just happened to be the AFSC on the position number advertised.

Report dates are somewhat flexible — 2 months before or after. AFPC will work with officers who can't meet the report date, but might still be a candidate.

There are no secret formulas or specific jobs that will guarantee a promotion...that will happen if you do the best you can in ANY job you're assigned. For more information, contact the author at DSN 487-3451 or the following addresses:

HQ AFPC/DPASB

550 C St W, Ste 33

RAFB, TX 78150-4735

E-mail: mcrearj@hq.afpc.af.mil for company grade ads

welcht@hq.afpc.af.mil for field grade ads

On the AFPC Home Page on the Internet:

<http://www.afpc.af.mil> [E]

Innovative software improves wastewater monitoring

ARNOLD AIR FORCE BASE, Tenn. (AFNS) — An Arnold innovation simplifies assembling, sharing and analyzing environmental data.

Computer specialists at Arnold Engineering Development Center have developed a software package to help fulfill the center's wastewater monitoring and reporting requirements in a faster, more efficient manner.

The system can also tell operators as they enter information when water quality approaches legal limits. This allows the operators to respond faster to potential problems.

This is essential because the center processes large amounts of technical data each day to verify wastewater compliance with state and federal environmental regulations. Data flows from 12 sites throughout the test drainage system, and includes reports

on up to 14 water properties such as total flow, acidity, oxygen content and concentrations of metals and chemicals.

Meeting the requirements of Arnold's wastewater permit quickly builds a large data base of information. This data must be collected at varying times and shared among the people who assemble a comprehensive report. The report has to be copied, archived and sent to state regulators on a strict timetable.

Cindy Reagan, an Arnold programmer and analyst, says the new computerized system streamlines this process and cuts errors.

"We've minimized manual data transfer, reducing potential errors and saving manpower resources," Reagan said. "We can also evaluate data immediately to help avoid permit violations." (Courtesy of the Air Force News Service.) [E]

Dhahran: controlling the damage

Continued from page 17

was crowded with about 120 people using the new Nautilus machines and free weights. At 9:57 p.m., as I bent down to adjust the weights on the leg press machine, a tremendous noise like a freight train rattled the building, followed instantaneously by a tremendous explosion. The new doors blew off their hinges, and the new mirrors shattered into thousands of tiny missiles, sending shards of glass flying in all directions. About 120 people scrambled for their lives out of the door openings.

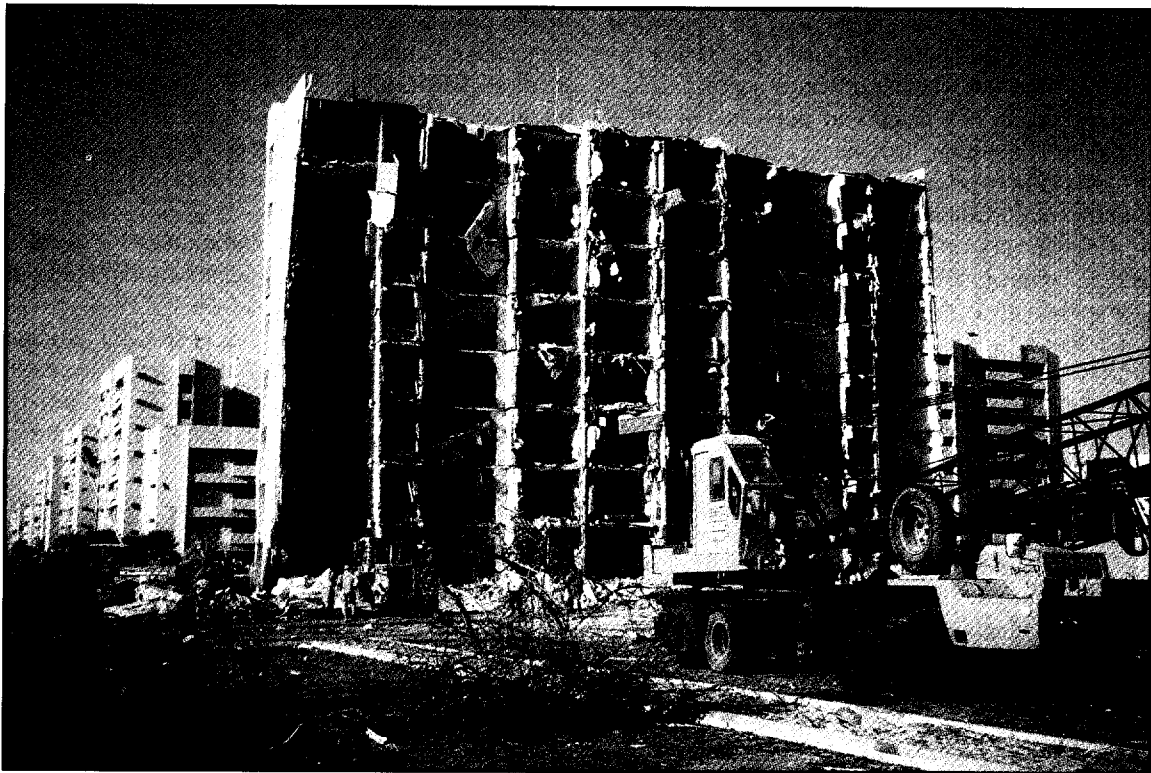
Outside, glass was still raining down from windows in every building. I initially

dow and door frames blown completely out of their openings. Power was out, cloaking the building in darkness and shutting down the two elevators, both of which had their doors blown in on every floor. The stairways were covered with broken glass. We later found pieces of glass actually embedded in concrete walls and metal door knobs. Later inspections found major structural damage, and the building was assessed as uninhabitable and probably irreparable.

Squadron members were already searching the building for victims, administering first aid, and transporting the seriously injured to the Desert Rose Dining Hall triage

accounted for all the CE troops. Of the troops, 45 received injuries serious enough to require treatment, 20 were hospitalized, 12 were later medically evacuated to Germany, and one CE troop died from his injuries. A simple yet emotional memorial service several days later overflowed the chapel. The CE squadron relocated into a billeting dormitory, squeezing from 105 rooms into 30 rooms.

The fire department was part of the initial response force and worked through the night with Saudi civilian and military emergency response forces searching for victims, recovering bodies, and helping with triage and treatment. By morning the body count



A 20-ton crane and other heavy machinery was brought in to do the tough job of cleaning up.

thought a water heater had exploded, but soon realized that this was a major explosion. Looking north from the gym towards the CE dorm, I could see flames licking the sky and a huge plume of smoke spiraling upward. I quickly made my way to the CE dorm, about 200 yards from the gym, passing people hurrying to their designated assembly areas.

The CE dorm, an 8-story building located on the north perimeter about 150 yards from the bomb crater, was in shambles. Every window was shattered, with many win-

point. Many severely-injured victims were carried down flights of glass-covered, pitch-dark stairs on makeshift wall-, locker-, and door-stretchers.

Following the initial shock, a sense of organization quickly emerged. The months and years of boring-at-the-time Prime BEEF training in self-aid buddy care, first aid, and contingency methods paid-off in big dividends. NCOs assumed leadership roles in search and rescue operations and everyone helped each other.

By midnight, the CE first sergeant had

had reached 19 people. Most of the victims, all but one person, were residents of Building 131. The bomb detonated 85 feet from the building.

CE troops spearheaded the recovery operations, which began immediately. Damage assessment teams quickly surveyed all 30 dormitories and 6 parking garages. 24 dorms were immediately uninhabitable after cleaning up broken glass and removing debris. CE plumbers, electricians, and HVAC troops checked and restored where necessary all essential utility systems.

CE engineers immediately initiated a “letter contract” through the Corps of Engineers, which allowed a contractor to begin recovery work immediately on four badly damaged but restorable dormitories. Contractors’ efforts in removing debris were hampered by initial lack of power and elevators, necessitating hundreds of trips up and down stairwells where temperatures reached 125 de-

and Air Force Chief of Staff General Ronald Fogleman all arrived in rapid succession to assess the situation first-hand. Saudi princes, ministers, and high-ranking military officials were everywhere. Common sense prevailed, and we dispensed with all the pomp and ceremony that normally accompanies visits from such high-level VIPs.

Through the succeeding weeks, CE

the heightened security requirements of Threatcon DELTA—at the same time keeping up with the normal workload required to “keep the planes flying—easily turned normal 10-hour work days into 16-hour work days. But no one complained. We just did the jobs we had been trained to do.

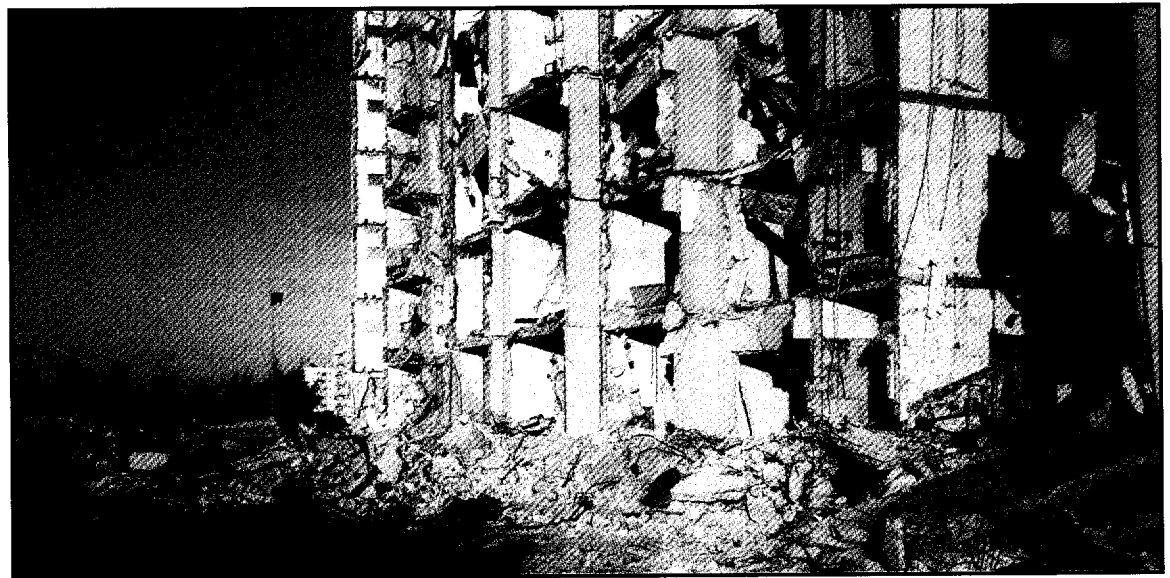
Short-range recovery plans included restoring all habitable dorms to livable conditions, blocking up or replacing windows with shatter-proof glass, expanding the jersey barrier perimeter, and generally increasing all physical security measures. Long-range plans include moving the entire Dhahran operation to Prince Sultan Air Base in Al Kharj. CE troops played a major role in both plans.

Lessons learned from this experience? Never underestimate the value of Prime BEEF training. You never know when that boring, repetitive stuff you discuss in the safety of your training rooms will mean the difference between someone else living or dying. You never know what the dawning of a seemingly typical day may bring.

What started as a typical day on June 26 1996 will be forever, indelibly, etched in our memories. [E]



(Top) A sixth-floor bedroom inside building 131. (Right) Building 131 was determined uninhabitable and irreparable after the terrorist attack.



grees. With often more than 120 contractors working in 4-6 dormitories at the same time, CE contract monitors were taxed to the max.

Immediately following the bombing, we were inundated with high level visitors. Gen. Binford H. Peay, Comander in Chief, Central Command; Secretary of State Warren Christopher; Secretary of Defense William Perry;

troops continued at the forefront of restoration efforts. Buying and installing more than 3000 concrete barricades around an expanded 400-foot perimeter, coordinating tools and equipment to support the 75 FBI agents sifting through the debris, manning the survival recovery center, coordinating debris-removal and normal service contracts during

Editor's Note: Col. Schellhous served 17 months at Dhahran as Regional Engineer for Southwest Asia. He is currently at the United States Air Force Academy in Colorado where he is Chief of Facilities and Support, Athletic Division.

IN THE LAB

Prototype Demonstration of Ammonium Perchlorate Biogradation

by James A. Hurley, Dr. William Wallace and Ed Coppola
Armstrong Laboratory Environics Directorate

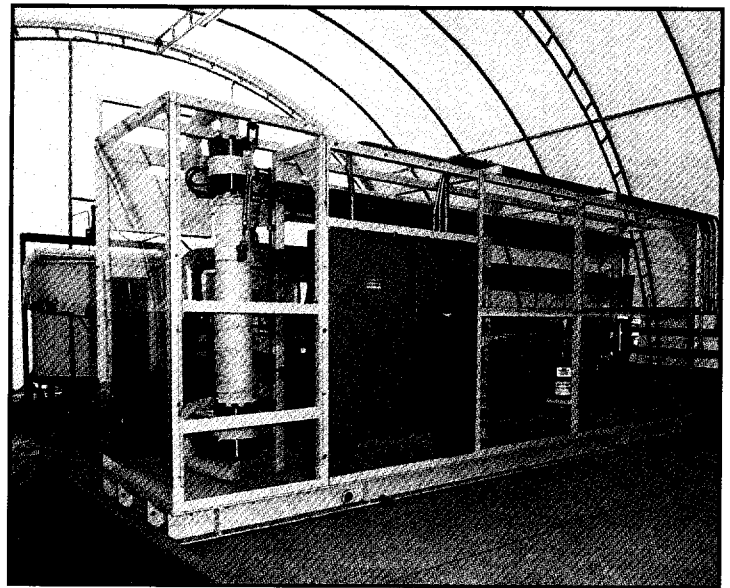
Ammonium Perchlorate treatment technology developed by Armstrong Laboratory's Environics Directorate at Tyndall AFB, Florida centers on the anaerobic organism, *Wolinella succinogenes* HAP-1, which is capable of reduction of ammonium perchlorate to a nontoxic chloride product. The biological treatment process is robust, predictable, inexpensive and an environmentally friendly method for disposal of ammonium perchlorate.

Ammonium perchlorate (AP) is the oxidizer and primary ingredient in solid propellant for most Air Force large rocket motors. The accepted method for removal and recovery of propellant from rocket motors is high-pressure water washout. This method generates large amounts of aqueous solution containing ammonium perchlorate. Ammonium perchlorate can be recovered from aqueous solutions; however it is cost-prohibitive to recover all the ammonium perchlorate. The resulting waste stream contains low concentrations of ammonium perchlorate and must be treated. The Environmental Protection Agency (EPA) has issued a provisional reference dose for ammonium perchlorate that could restrict discharge to less than 5 parts per billion (ppb) and have severe impact on defense propulsion contractors. The Minuteman III propulsion remanufacture program will remove over 35 million pounds of propellant from first- and second-stage rocket motors as part of the motor case reclamation process. This means we will be confronted with large quantities of aqueous waste containing ammonium perchlorate.

Laboratory Studies

Continuous-flow bench-scale reactors have been operated at Tyndall AFB, FL to identify parameters such as nutrient concentration, perchlorate reduction rates, and oxygen toxicity. Identification of these parameters is critical to optimization of the treatment process.

The results of the laboratory studies were used to design, fabricate and demonstrate the operability of a complete AP biodegradation prototype system. The pilot-scale system is comprised of a 1,300-liter anaerobic reactor and a 2,700-liter aerobic reactor. The automated system includes nutrient preparation, blending tanks, a nitrogen blanketing system, pH control, a clarifier, and feed and product holding tanks. Acid was required to maintain the nutrient/feed premix at a pH below 2.0 to prevent



Pilot-Scale AP Biodegradation Bioreactor in Operation. Photo by Rodney Walker, Applied Research Associates.

unwanted microbial growth. A caustic material had to be added to neutralize the nutrient stream and maintain a pH of 7 in the anaerobic reactor to counteract the acidity from the perchlorate reduction.

Pilot System

The pilot system was designed and built on skids for transportability. Actual construction was performed by Case Engineering, Lakeland, Fla. The system was delivered to Tyndall in March 1995, on two trailers, and assembled in 1 week. It occupies a 40- by 52-foot pad and is enclosed on three sides as shown in Figure 1. The system was designed to be a flexible research tool having instrumentation for pH, perchlorate levels, flow rates and intermediate storage capability beyond requirements for a commercial process.

Operation of the prototype began May 1995 with continuous operation for over 600 hours, treating 7000 gallons of effluent from the washout of Minuteman Stage 2 propellant by the Aerojet Propulsion Division. The system was operated at residence times of 36, 24, 12 and 8 hours with brewer's yeast as the nutrient source. The pH was maintained between 7.0 and 7.35 and operating temperature was within 0.55 °C of the 40 °C set point. During this test, approximately 180 pounds of perchlorate were de-

NoVOCs™ at Fairchild, in-well stripping

by 1Lt. Baron W. Burke
Fairchild AFB, Wash.

Fairchild AFB has become the Air Force leader in introducing a new prototype technology of in-well stripping. This new technology called *NoVOCs*™ is manufactured by EG&G Environmental, and is being applied to an historical release of jet fuel contamination within the ground water table. The *NoVOCs*™ technology is the most advanced design in the new generation of in-well stripping technologies for removal of volatile organic compounds (VOCs) from ground water. This simple yet brilliant technology was developed at Stanford University who wanted to design a compact system to "air strip" the VOC contaminants in the water without having to handle the large volumes of water disposal. This concept relies on air-lift pump action to circulate water through a well and simultaneously facilitate transfer of contaminants from dissolved to vapor phase. At a level above the water table but below the ground surface, the water is allowed to exit the well casing and return to the aquifer by flowing through the vadose zone. The air stream containing the stripped volatile contaminants is drawn to the surface in a vacuum line and treated by passing the air stream through a granular activated carbon system. The use of air to strip the volatiles increases the dissolved oxygen



Installing the airlift system

content of the ground water, thereby stimulating biodegradation of aerobically-degradable hydrocarbons. The goal is to clean a radius of influence of 30-40 feet and to demonstrate a cost-effective system in place of "pump-and-treat" operations.

The in-well configuration for vapor stripping offers a number of advantages over traditional pump and treat remedies. Capital costs are reduced by eliminating the above-ground treatment plant (i.e., air stripping

tower with aqueous carbon polishing) and water discharge permits and other facilities such as injection wells. Operating costs are also reduced since only VOC vapor, not VOC and water, is pumped all the way to the surface. The expected cost savings of *NoVOCs*™ compared to a traditional pump and treat system, is estimated to cost 20 percent less.

This first-time demonstration of the *NoVOCs*™ system was conducted under a free demonstration contract between EG&G Environmental and Fairchild. *NoVOCs*™ technology at Fairchild has brought about a dramatic improvement in soil and groundwater quality at this historic fuel spill site. Also, it has enhanced community relations with the "environmentally conscious" local public by demonstrating the installation's willingness to apply a proactive effort into cleaning the environment with new innovative technology. In addition to the *NoVOCs* systems ability to clean the bases groundwater contamination, Stanford University was able to gather more data for research. The final reward to the base was the overall appreciation from the local schools and community towards Fairchild's willingness to approach clean-up of groundwater for everyone's benefit.

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stroyed. Ammonium perchlorate was reduced from 3000 ppm to non-detectable levels (0.5ppm) during the entire study with the exception of two incidents. An excursion at 510 hours, residence time of 12 hours, was attributed to a significant drop in nutrient caused by a feed preparation error. Recovery from this perturbation was rapid and perchlorate concentration returned to nondetectable levels, even at residences as low as 8 hours. The bacterial population including the *W. succinogenes* HAP-1 organism maintained stable cell numbers at residence times of 36 and 24 hours, with increases in cell numbers during the shorter residence times.

The second demonstration test of the pilot system was conducted with the commercially available, water-soluble brewer's yeast extract (BYF-100) which costs \$2.00 per pound compared to brewer's yeast at \$0.40 per pound. The reason for examining reactor performance with both types of nutrients was suggested by laboratory studies which indicated the initial purchase cost of BYF-100 may be offset by increased reactor performance. The

pilot system was operated on BYF-100 nutrient, for over 900 hours, at residence times as short as 12 hours. Feed control problems were responsible for the inability to maintain perchlorate concentrations below 20 ppm consistently during long periods of operation.

The Future

The Environics Directorate is focused on transitioning this technology to the field. Bench-scale reactors are being used to evaluate perchlorate reduction in waste streams which may contain corrosion inhibitors, heavy metals, nitroglycerin, and high salts. These studies are targeting specific waste streams that exist at weapons production and remanufacturing facilities. The information obtained in these studies will lower the risk of implementation of this treatment technology at treatment sites.

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Khobar Towers

Workers clean up tons of rubble after the Sept. 11 attacks. See page 16 for an eyewitness account from a civil engineer. "A tremendous noise like a freight train rattled the building, followed instantaneously by a tremendous explosion."

