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# Public Works

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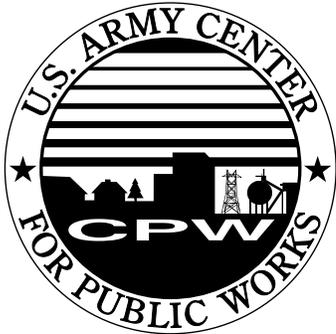
*In This Issue...*

## **Lessons Learned from public and private sectors**



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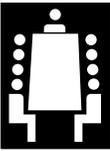
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## Former Belvoir commander runs public works in public sector

by Alexandra K. Stakhiv

At the February meeting of the Fort Belvoir chapter of the Society of Military Engineers (SAME), the guest speaker was retired Major General Sam Kem, the commanding general of Fort Belvoir from 1984-87 and Deputy Chief of Engineers from 1989-90. His topic was a comparison of how the Army and the public sector do public works.

"Military installations are just like cities and counties," began Kem. "They're both bound by federal, state and local regulatory statutes as well as a host of human health and safety laws."

"As an installation commander, I had to coordinate all of our daily activities in such a way as to meet all these constraints. However, I also had to minimize any adverse consequences of those activities that were an inherent part of the mission of the Army, i.e., to maintain military readiness."

Currently the Director of Public Works for the County of Arlington, Virginia, Kem talked about public works on the local-government level in an all-urban community.

"Public works nationally are just like at Belvoir— mostly infrastructure and money for infrastructure," said Kem.

"My military engineer experience has helped me immeasurably in working with those kinds of things."

Comparing himself to an Army public works director, Kem said the biggest difference is he doesn't do any housing. Arlington has segmented its various public works activities and housing in another department.

*"Public works nationally are just like at Belvoir— mostly infrastructure and money for infrastructure."*

—MG Sam Kem

Kem's present duties include:

- Public works planning and engineering.
- Traffic engineering.
- Water and sanitary sewer construction, operations and maintenance.

- Street and storm sewer construction, inspection and maintenance.

Basically, Kem handles anything pertaining to the streets, including sewer lines, water lines, and storm sewers as well as the asphalt, concrete and sidewalk.

"I don't take care of water—we buy water from the Corps of Engineers for \$5.7 million a year," said Kem. "I also don't treat sewage—that's another department altogether."

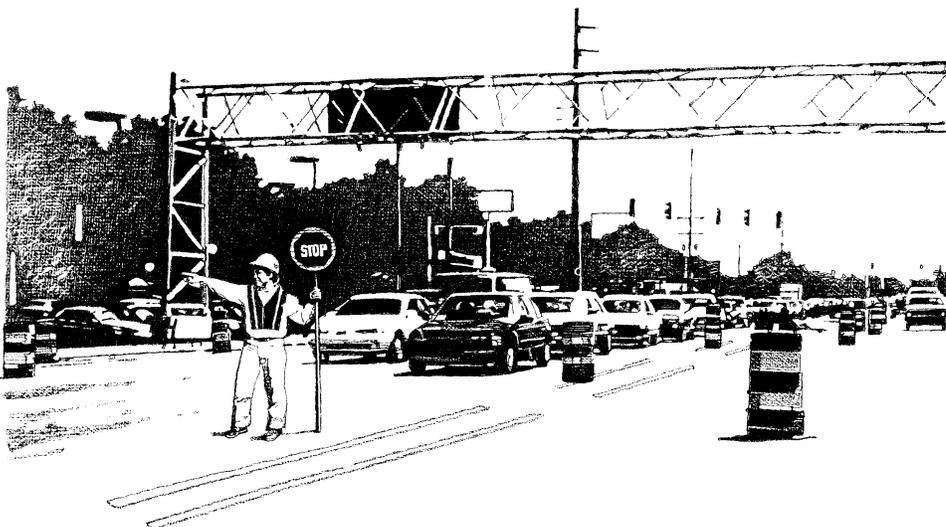
In Arlington, traffic is a major part of Kem's job. "Traffic was something I didn't have to worry about at Belvoir," added Kem. "There are many different facets to traffic that we don't normally think about and I have to balance them all. For example, taking care of the streets means taking care of the asphalt, concrete, and sidewalks— as well as the traffic. This includes the 14,000 street lights and 221 traffic signals run by computers to change the sequences as well as the 3,300 parking meters."

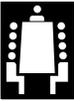
"Privatization is just as hot in the private sector as it is for the military today," said Kem. "Arlington is moving towards privatization in my area, too. Our most recent effort was to privatize painting our crosswalks and centerlines."

"We gave up five FTE crew members from pavement marking. For concrete maintenance, our crews will just be working on the priorities and the contractor will work in the zones."

Kem also gets involved in planning issues such as ensuring developers pay their fair share for utilities and requiring them to put in the right number of parking spaces.

"Politics often plays a big factor in my line of work. Certainly that's a big difference between Army public works and local government. On Army installations, all you need to do is convince the post commander."





“The ‘Board’ in Arlington is in on most things. If a developer wants to come in, he has to meet with our planners and public works developers. They try to pinpoint things like who will pay for the sidewalk, the water line... Our planners analyze many other things and present them to the board. They must also deal with all the competing priorities.”

“We have five board members. All the board members are **at large**, so they don’t have districts and they don’t have to vie with one another. That’s a big plus. While they are party members, they’re also very pragmatic and austere when it comes to the budget. ‘They won’t give away the farm.’ This puts the pressure on me and the other departments to come out and talk to them each year.”

“In our type of government, the board members contact the county manager, not me. The county manager tells me to address the issue, I tell him what I think should be done, and he takes it back to the board. That insulation day by day gives us time to work out a solution that is acceptable to most.”

From his experience with other directors of public works, Kem has learned that some have more political “help” and some have less—but they all have some.

“Because Arlington is in a regional area, we have a lot of interaction with our other jurisdictions—mostly friendly but some is very competitive,” said Kem. “We have the Council of Governments where we participate in community activities—also the Northern Virginia Transportation Commission. It has to be competitive because the state gives us so much money for various projects. We all talk about how we’re going to cooperate regionally, but sometimes it becomes ‘what’s mine is mine and what’s yours is negotiable.’ That’s a factor in many of the things we do, especially in transportation.”

“We also have a lot of citizen input. We call it ‘the Arlington way.’ We have 18 commissions with considerable staff and citizen interaction.”

A large portion of Arlington’s 185,000 residents are single and live in

high rises within the 26 square miles that comprise Arlington, said Kem. About 40 percent of them work downtown for government agencies and, having a lot of expertise, they often become very involved citizens.

“This is a highly-educated group and a potentially activist electorate,” said Kem. “Our citizen participation doesn’t always have them as the lead, but we **always** know they’re back there.”

“You didn’t hear much about Arlington residents complaining about being snowed in during the blizzard of ‘96. That’s because we changed our operations. After 3/4 inch of snow had fallen, we started plowing, salting and sanding—priority to the blue/red main routes first and then the residential streets. Our maintenance crews worked

in 12-hour shifts, and then they rested.”

“In the past, our crews worked 18-hour shifts and went home to rest—often not coming back. That’s because many of them live as far away as West Virginia and Stafford County. The new policy enabled us to keep our crews working our 35 road miles for the duration of the blizzard.”

Kem feels that what they’re trying to emphasize countywide are the principles of good government service, including teamwork and empowerment. Working at a lot of different levels, Arlington is trying to improve itself and its organization by empowering its staff and its citizens. **PWD**

*Alexandra K. Stakhiv is the editor of the Public Works Digest.*

## SARDA increases upper limit on JOC delivery orders

The Office of the Assistant Secretary of the Army for Research, Development and Acquisition (SARDA) has formally approved ACSIM’s request to increase the upper limits on JOC delivery orders. But implementing instructions will be issued by SARDA in an acquisition letter.

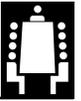
The change will apply only to contracts awarded after the date of the acquisition letter, not to existing JOC contracts, according to Lu Lillie, HQDA JOC Program Manager at ACSIM.

“With this increased capability comes increased responsibility and discipline,” said Ms. Lillie. “Simply because the limit has been increased does not mean JOC is suitable for every project.”

According to Ms. Lillie, a more flexible, functional description of JOC use parameters is an appropriate area for acquisition reform and an opportunity for effective empowerment. The SARDA decision increases the maximum dollar limitation placed on JOC delivery orders to bring it into line with the installation commander’s approval authority for execution of real property repair and maintenance (RPMA) projects. Approval authority is tied to the major command delegation of RPMA approval authority, and can be redelegated to the garrison commander.

“As the proposed language states, you must document your decision to use JOC through some cost and benefits analysis prior to execution of projects greater than \$300,000,” Ms. Lillie said. “The DPW must approve the justification, and the installation commander must approve the use of JOC. The expanded cost limit for application of the JOC process will provide garrisons with greater opportunities for savings in engineering design and procurement lead time.”

 POC is Lu Lillie, DAIM-FDF-M, (703) 428-7616, DSN 328. **PWD**



# Privatized wastewater treatment succeeds at Redstone Arsenal

by *Elbert C. Ray*

Almost four years after the Army's first fully privatized wastewater treatment plant began operations at Redstone Arsenal, Alabama, the success of the project continues to shine through. No special rate increases have been needed, and the cost of treatment remains below industry standards.

Wastewater treatment has been excellent. Peak flows have reached design maximum, and no negative impact from high flow has occurred.

At Redstone, the Army recognized and applied the true advantages of privatization:

- Make the contractor responsible for the long-term integrity of the system. This avoids poor quality of design and construction while eliminating unneeded facilities.
- Allow the contractor to use his power of negotiation to obtain low capital cost. A private company can negotiate better prices than public bids can produce.
- Allow the contractor to use his power to reduce cost through efficient use of personnel. Cross training and multiple tasking of operations employees are efficient, effective, and attractive to employees.

The Redstone Arsenal is home to the Army's Missile Command, as well as the Marshall Space Flight Center (birthplace of the U.S. space program.) These and other facilities are spread throughout the 38,000 square-acre Arsenal, which is 54 years old. During those years the Arsenal grew, and so did its physical plant. Not long ago, it had four widely dispersed wastewater treatment plants.

In 1987, three independent studies by three different firms were made to determine the desirability of centralizing wastewater treatment at the Arsenal. All three studies presented a variety of options, but all three also concluded that a central facility would be cost-effective, operationally efficient, and environmentally desirable. Subsequently, one of the firms suggested privatization as the best means of obtaining a centralized treatment system.

Army decision makers determined that privatization could hold distinct

advantages over conventional methods of procuring a wastewater treatment plant:

- Privatization offers "off balance sheet" financing — it requires no up-front funds from the government and thus does not add to the national debt.
- Much of the responsibility for wastewater treatment — such as meeting Pollution Discharge Elimination System (NPDES) stream discharge permit requirements — would be transferred to or shared by the contractor.
- The entire effort could be contracted to proven wastewater treatment experts and assure state-of-the-art solutions to increasing demands by regulators.

The US Army Corps of Engineers awarded the privatization contract to Proctor/Davis/Ray Engineers, Inc. (PDR) in Lexington, KY, and asked for "fast track" design and construction.

Construction began in January 1992 and the plant went into operation the following September. In fact, the nine-month construction period was one of the cost-saving factors that led to privatization of wastewater treatment at Redstone — normally the design and construction of such a project would take twice as long.

At the core of the project was a contract that required PDR to:

- Build the new facilities on land leased from the Army.
- Provide complete wastewater treatment services to Redstone for a period of 30 years.
- Obtain an industrial NPDES discharge permit from the Alabama Department of Environmental Management to treat the wastewater and meet the effluent requirements set out in the permit.

All capital investment was provided by PDR Properties Inc., an affiliate of PDR — the government was not required to provide "up-front" money.

However, the government does pay:

- Monthly charges for the treatment services.
- A constant "debt service charge" for 12 years, which is the life of PDR's mortgage loan on the facility.
- A set "capacity charge" to offset fixed costs.
- A "flow charge" based on a rate per thousand gallons of wastewater treated.

Both the capacity and the flow charges increase each year in proportion to the Department of Labor's Producer Price Index.

The total cost of wastewater treatment has averaged about \$1.24 per thousand gallons treated at a design flow of 2.71 million gallons per day. This cost is well below the national average for all treatment facilities, and is far below the cost of treatment in conventionally constructed facilities.

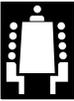
The success of this privatization effort can be traced to actions that officials at Redstone and the Corps took, including:

- They planned well. The physical planning was sound. The financial arrangements were sound, and the contracting arrangements were "win/win" conceived and implemented.
- They placed high importance on qualifications, both technical and financial. They short listed only firms which had both engineering and operations qualifications, and used procurement methods which assured competent construction, operation, and financial performance.

Four years into the contract, things are working well for Redstone, and they should get better. In eight more years, the "debt service" portion of the monthly fee ends, leaving only operating charges to be paid. This will reduce the unit cost of treatment even further below industry standards.

POC is Dr. David S. Branham, Redstone Arsenal DPW, (205) 876-2423 DSN 746. **PWD**

*Elbert C. Ray is Chairman and President of PDR Inc., (800) 726-8001.*



# University DPW shares management tips

by Penelope Schmitt

Jim Tucker knows the public works business from the ground up. In 1976, he took a job as a parking attendant at the University of Cincinnati. Today he is the University's Vice President for Information, Services and Facilities Management. He is also a Vice President of the International Facilities Management Association.

A featured speaker at last December's annual DPW Training Workshop, Tucker shared some tips and perspectives on the public works business.

His "ivory tower" environment is surprisingly familiar to Army DPWs. The University of Cincinnati has a profile similar to a good-sized Army installation. It serves 34 to 36 thousand students and 13 thousand employees on an urban campus with three suburban branches. Facilities total about nine million square feet. The operations budget is about \$18 million a year, exclusive of utilities, which cost another \$40 million to operate.

Tucker also tells a facilities condition and budget story that sounds familiar to Army DPWs. Some of his buildings are up to 175 years old. Mechanical and utility systems average about 45 years old. Over the past six years, his budget has fallen by 44 percent, with corresponding personnel losses, accomplished mostly through attrition. At the same time, the University has acquired about a million square feet in new facilities. As a modern research facility, the university is constantly challenged to support new technologies and their demands in aging buildings.

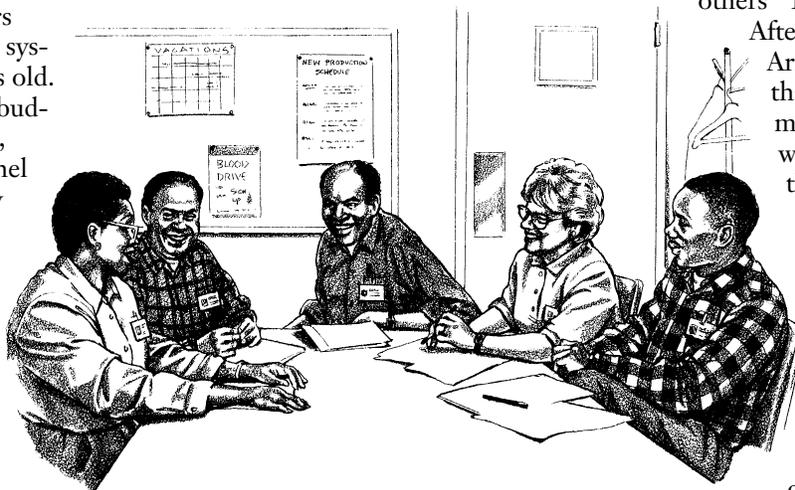
He figures that his costs run at about \$1.87 per square foot of facilities space, and that each employee is "responsible for" about 17 to 18 thousand square feet.

Here are some of the secrets of success Tucker shared with the Army's DPWs:

## Management perspectives

"Look outside yourself and your operation," Tucker said. He also urged Army DPWs to do this often and to take their imaginations along when they travel. "If you are going to change for the better, you have to get out of the box. Ask 'why' more often. As in 'Why are we doing this? . . . Why are we doing it this way? . . . and most of all, Why NOT?'"

To keep from being rule- and regulation bound, Tucker said, he just doesn't study the fine print too much. "We have three unions at the university," he explained. "We have thick contracts. Of course I have people on my staff who can advise me and know all about them. But before I read the fine print that tells me all the minutiae, I go talk with union representatives about something I want to do. Often, we can find a way without violating the contract. If I had consulted the contract first, I might get bogged down in details that would have stopped me from even asking—can we do this?"



Similarly, he advises that willingness to adapt is vital to making good use of other peoples' good ideas. "We are not just like a private sector corporation, the same way you are not just like us. But when I see another organization with a good idea, I bring it home and try to find out how to make it work with

our conditions and situations. I take what works and drop what doesn't fit."

"Recognize that your employees can find solutions. Sometimes the people you perceive as lazy may be the best at figuring out an easier, quicker way to get things done. I make a practice of sending people back to come up with an alternative every time they say 'we can't do it this way.'"

A focus on mission and vision is important, Tucker said. "We are dedicated to continuous quality improvement, focused on customer needs and future expectations." That last phrase is especially significant, he added. Plan to be able to support coming needs and requirements—or fall behind.

The core values his work force observes are simple:

- Do what's right.
- Do the best you can.
- Be sensitive and considerate of the needs of others.

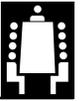
## Customer focus

Customers are naturally the first "others" Tucker's organization serves.

After a morning listening to Army DPW speakers, he noted that "Your business is pretty much the same as ours—but we talk more about customers than you do." He advised that customer communication and involvement are crucial to mission success.

"Each of our managers walks through at least one college building a month with the dean or associate dean of that college," he said. "We track quality improvement graphically. When something starts to slip, we have a clear picture, and we find out what we need to do to turn the situation around." Tucker proved his point by showing graphs that illustrated rising and falling condition indicators for every building on campus.





"We constantly survey our customers," he said. A survey accompanies every bill that's submitted, ensuring that the organization gets continuous feedback on the timeliness, cost, and customer satisfaction with each service.

"One of the biggest complaints we got was that bills came back higher than our original estimate. We rapidly learned that customers were better satisfied when we either stayed in budget, or consulted with them and got a signed agreement before raising the cost."

Tucker measures both expectations and satisfaction with services. "We have identified 17 services we do," he said. "We ask our customers to rate their importance to them from highest to lowest. We asked them to tell us what our perceived response time to their work orders was—how long they think we take to do a job. We also asked them their expected response time—how fast they think we ought to do the job. And of course we ask them to rate quality on a one-to-five scale."

This survey yields information Tucker uses to ensure continuous improvement. "We try to get our response time and quality the best in the areas where service is most important to the customer," he explained. "We will reallocate people and resources to push the numbers into the right quadrant on our scale."

## High tech systems aid management

As a modern, research oriented organization, the University of Cincinnati is willing to try some cutting edge methods to make facilities management more effective.

The most exciting idea Tucker presented in his talk was an "Intelligent Building Project" being tested at the university. "We have at least one computer terminal in every mechanical room," he said. The system has Auto-CADD as-builts of every building system. Specs, guidelines, and operating parameters for every system are fed into the system. Preventive maintenance schedules are fed in. The computer reads all the systems continuously and gives building managers feedback. The result is real-time data on operating systems.

"If we have scheduled preventive maintenance on four machines in sequence, and suddenly we start to get bad numbers on machine number three, that piece of equipment automatically gets pushed forward on the maintenance schedule," Tucker said. "We save a lot that way."

The system also includes communications to let facility managers know when there is a breakdown or emergency. "Our building managers carry pagers that will give them an alarm when a building system shows distress," Tucker said.

## Human Resources remain top priority

While Tucker admitted that Army personnel management rules place tighter restrictions on personnel management, he shared some tips that could help make DPW staffs more productive.

"When you outsource, think about building incentives into the contract," he said. As an example, he cited a Proctor and Gamble contract for outsourced housekeeping services. "They wrote it into the contract to have a third party inspector do an appearance assessment. If the facility is rated below satisfactory on a predetermined scale, the contractor refunds money to the company. If the facility rates above a certain point on the scale, the company pays an incentive premium—which is then given to contractor employees as an incentive. Quality improves."

"Never neglect training," Tucker said. "We link accomplishment of basic training goals to our incentive and award programs."

Career development is also an important part of the picture in Tucker's organization. "People know I started at the bottom. They see me as an example that gives them a lot of hope for advancement." But also, the University of Cincinnati plans for career advance-



ment. "We do what we call succession planning" Tucker said. Clearly, in a federal environment, specific jobs in specific organizations can't be targeted, yet career field development and planning certainly can.

Incentives and distribution of privileges, together with frequent celebrations and recognition for good performance, have helped the University's work force go from using an average of 15 sick days a year to only six—a record most Army DPWs would envy.

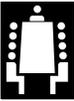
Above all, employee confidence in the organization they work for has kept morale high through downsizing and budget cuts. "I feel good that I've been able to say to my employees—if you do a good job, you'll have a job."

## A world of resources

Finally, Tucker urged Army facilities engineers and installation managers to tap the vast reservoir of expertise that waits for them in the private sector. "Look into the benchmarking guides offered by BOMA, the Building Operations Managers Association. Find out what my professional organization, the International Facilities Managers, has to offer you. You can learn about everything from the right price to pay for a particular kind of job in your local area to management processes that will work for you." As the Army moves to work more like a business, this is advice worth its weight in cost avoidance.

POC is James Tucker (513) 556-4731, E-mail TuckerJR@UC.BDU. **PWD**

*Penelope Schmitt is Chief of the DPW Liaison Office at CPW.*



# DPWs move to private-sector style Supply Operations

by Penelope Schmitt

Paint, nails, railroad ties, compressors, sheet rock, PVC pipe, ceiling tiles, light fixtures . . .

the list of items a Directorate of Public Works needs goes on indefinitely. Traditional supply operations have ordered and warehoused ample stocks of these and thousands of other items. Modern business practices, though, are moving toward "just-in-time" supply operations. They aim to cut warehousing to the bone and move essential supplies to the work force as speedily as possible.

The goal of these changes is to cut down on unproductive overhead costs. Warehouse stocks represent a huge, idle investment of scarce resources. The warehouses and personnel required to run them are also a big consumer of resources. In lean times, the Army just can't afford to tie up dollars in large quantities of materials.

DPWs around the Army are moving ahead to make their supply operations as efficient as those in the private sector. The Army's Assistant Chief of Staff for Installation Management applauds these innovative efforts and encourages other DPWs to join in. According to a June 1996 memo from the ACSIM's Director of Facilities and Housing, COL Pete Sowa, the ACSIM wants to help DPWs smooth the way.

"ACSIM staff is available to assist with removing unnecessary administrative barriers to innovative supply operations," Sowa said. "Innovative actions are the key to making major improvements to supply operations."

Karl Thompson, of the US Army Center for Public Works, affirmed this view. "DPWs are doing a great job of finding ways to make existing systems work well for them. They got a tremendous incentive from General Reimer's directive to increase the number of IMPAC (credit card) purchases. They've taken that and every other opportunity to build better operations. The best thing we can do is share their successes with other DPWs and encourage them to follow suit."

**Public Works Digest** interviewed staff from several of the Army's most successful supply operations. The common feature? An uncommonly varied set of approaches to cutting supply costs and overhead. In the supply business, one size definitely does not fit all. Here's what three supply chiefs say about their routes to success:

## Fort Bragg — Consolidation with the DOL

According to Danny Duren, the Chief of Supply in Fort Bragg's Directorate of Logistics (DOL), "We set up a process action team in January of 1995 to study consolidation of supply with the DPW."

The study revealed a DPW supply system that was a drag on installation resources. "A total of \$2.2 million worth of stock was in the warehouses. Much had not been used for six months or longer. A significant amount of the stock was sitting idle. Either items were no longer being used by the engineers, or the warehouse was holding excessive inventory of active supplies. Order/ship times were about 35 days."

In other words, the supply picture showed just about all the down sides a resource-poor operation could imagine.

Close cooperation with the DPW to ensure their needs were being met, together with an aggressive shift toward IMPAC purchases, has cut stocks drastically and speeded delivery of parts and materials all over the installation.

"We continue to maintain some commonly used items in the warehouses over the long haul," Duren said. "This would include things like telephone poles, railroad track and ties, and the like."

Most other purchases are done by "expeditors" who work for the DOL, but spend their workdays with the DPW shops they serve. "We started out with six expeditors, but our system works so well we found we only need four," Duren said. "They work side by

side with the shop staff, identifying the right product and ensuring it is promptly delivered. We also have two supply clerks,

who complete the orders, using the IFS-M Supply interface." To smooth that process, Duren advises that small purchases be loaded in IFS-M Supply as "fringe" instead of as "demand supported" or "stockage."

Parts and supplies that come in under the IMPAC \$2500 limit are purchased by DOL when they receive an approved order from the expeditors at the shop. "We make 80 percent of such purchases from local vendors," Duren said. "We get same-day delivery on these items. What's more, the great majority of items are delivered by vendors themselves. On occasion, the DPW staffer on the work site will need a part right away, call in to his expeditor, and have the item delivered to him while he's still at the site."

Both DPW staff and installation customers benefit from the fast service. Other products arrive at the installation within five to fifteen days. "Troop units which are buying small amounts of materials for training purposes can just go downtown and get them using the credit card," Duren said. "They get DPW approval for their project and the materials are charged to the unit's real property funds."

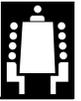
Larger items (over \$2,500 to \$25,000) still go the DOL buyer, who has a warrant from the DOC to make purchases over the \$2,500 micro purchase limit.

"We have surveyed our customers," Duren said. "They are very satisfied with the way this system is working for them. We get them the right supplies at the right time with the minimum of storage and maintenance costs."

## US Military Academy — Use every tool!

George Alvord could be called the thinking person's DPW Supply Chief. His philosophy? "We have not gone down an entirely new trail to do supply.





Instead, we are using all the tools we have, training our folks to do a good job.”

“We make sure we provide value added to keep costs low. We are responsive, we get the material or the part at the right time, but we also make sure we get the most bang for the buck.”

The US Military Academy (USMA) uses a combination of credit card purchases, acquisitions through the Depot and GSA systems, DOC purchases, and even the Internet to find and buy the best material at the best price and the right delivery time.

“We do 6 percent of our purchases through DOC requirements contracts, and about 62 percent with credit card transactions done in the DPW Supply Division. The remaining 32 percent of

our purchases are still from Defense Supply Depots and GSA,” Alvord said. “We stay up to date with the six-disc FedLog catalogue of items with national stock numbers. Depot system items cost about half the price of those locally purchased. We ask our customers ‘do you need it *today?*’ If they do, we will make the purchase to meet the deadline. But we do ask them to consider the level of need.”

“As for express shipments, sure, I can get it here from California by tomorrow morning—but are they *really* willing to pay more for the air freight than for the item?”

Alvord reports a 10-day wait for supplies averaged over buys from all sources, but believes he can assure best price and best value with his system. His “buy smart” attitude has built a successful operation that users like.

“We did not put any credit cards in the shops. They all went to clerks in property book and stock control. We asked the shop staff, but when they saw what the controls would have to be, they told us ‘we’d rather be fixing than buying.’” As a result, the Supply Division clerks are known as the engineer’s smart shoppers.

“Research is a key part of our business,” Alvord explained. “It is an important service to our customers that we maintain the FedLog system, commercial catalogues on CDROM, and a wide variety of other catalogues. We also use the Internet to scan for the best supply sources and prices. We identify better, less expensive products that way, though we don’t order items through the net. Our clerks can also spot errors in orders and get the right product because they are familiar with the system.”

“We take every advantage of automation. The Academy is LAN-linked. Our shops have read-only access to our catalogues, so they can browse for product information and let us know what they need. We use spreadsheets to keep our call logs and document registers and to track receiving.”

Warehousing is also efficient at USMA. “We have a single materials coordinator for shop stocks,” Alvord

said. “We are able to minimize the stashes that always seem to develop in the field, and to get rid of the excess coming back from jobs. We carefully screen the items that we keep on hand. We only stock ‘movers,’ the items that we need day after day to keep the operation going.”

## Fort Huachuca — Taking control, playing hardball

“How do we do supply at Fort Huachuca? With tender loving care!” Joan Plourde said. As Accountable Officer and Quality Assurance evaluator in the DPW, Plourde means tender loving care of every dollar that is spent.

When an AAA Audit Team found out that Huachuca’s supply operation, included in its RPMA Contract, was costing in excess of \$1.2 million, the installation DPW took the acquisition and payments to vendors back under its own control and came up a winner.

Now an accounting clerk follows every transaction. Plourde uses IFS-M Supply, the Depot System and smart credit card purchases to get the best deals from her vendors. “IFS-M Supply may not be absolute utopia, but it’s the best supply system I’ve ever seen,” she said. “It shows my costing to all jobs. It gives us a way to see what we are spending and a basis for working for better deals with our vendors.”

Plourde believes in hard-nosed negotiations. “Now that I am able to do 80 percent of my transactions by credit card, I have an advantage,” she said. “My vendors know that they will have money in the bank tomorrow. They won’t have to wrestle with the Government to get paid. So I’m not afraid to bargain with them.”

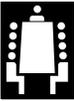
Here’s what she tells her big volume vendors. “I tell them we deserve to be treated as their most favored customer. I ask them to discount to us by eliminating all the shipping and handling costs and freight taxes. If they can’t do that, they just aren’t willing to do business with us. I’m getting bargain pricing.”

POC is Karl Thompson, CECPW-FM, (703) 428-6301, DSN 328. **PWD**

The ACSIM has gathered up some of the innovative ideas for improving supply operations that have been adopted at other installations. These include:

- Use contract tools like JOC to reduce in-house supply needs.
- Use local vendors for “just-in-time” delivery of supplies to the job site.
- Increase use of credit card purchases.
- Consolidate DPW and DOL supply activities and property books.
- Partner with Defense Logistics Agency, GSA and other federal agencies.
- Use expeditors to speed the acquisition process.
- Authorize your customers to buy supplies directly from vendors.
- Expand procurement warrants up to \$25,000 for non-procurement personnel.
- Increase the use of requirements contracts to purchase supplies.
- Eliminate or minimize the practice of furnishing supplies to contractors.

☎ For ACSIM assistance, contact Larry Black, (703) 428-6173, DSN 328; FAX (703) 428-6197; E-mail [blackl@pentagon-acsim3.army.mil](mailto:blackl@pentagon-acsim3.army.mil).



The following article is based on an interview for the Fort Ritchie **Castle Dispatch**, which follows Patricia Chilton's trailblazing career in engineering.

## DPW has first female director

by Marcus J. Wilson

Patricia Chilton, Director of the Directorate of Public Works, is not only the first woman to hold the position at Fort Ritchie, but also the first to hold such a position at an Army installation in the continental United States.

Chilton has been a civil engineer since 1979, starting as a temporary employee with the federal government in 1980 at Fort McClellan, Alabama. "I liked the variety of work and within nine months was promoted to Chief of Design. I was given the opportunity to go to Europe and I stayed nine years before returning to Fort Bliss, Texas.

Chilton, who speaks fluent German, says one of her most interesting projects was in Warzburg, Germany. "There I was, on a team to negotiate a support agreement for Giebelstadt Army Airfield with the German Ministry of Defense in Bonn, Germany. I was the spokesperson for the American Army community, plus with my language skills — well, negotiating at that level was really challenging and interesting."

She explained that being a woman and working for the government, especially in a foreign country, presented special challenges.

"The Germans are not as enlightened as Americans when it comes to equal opportunity and women. The German construction agency in Dusseldorf had no women working in the building — even the secretaries were men. There was actually one guy who refused to talk to me. He would talk real property to my male real property clerk but not to me. Finally, I just got up, put on my coat and headed out the door saying, 'If you are not going to talk to me, there is no point in going on.' His boss spoke with him and explained the 'new' rules to him. After that we had a pretty good meeting."

Chilton added that eventually she had all male German engineers working for her and after a little adjustment period, the problem went away—"Those things take care of themselves."



Patricia W. Chilton

She stated that in the United States the problem of discrimination against women is becoming less and less prevalent. "I would say that in any historically male dominated organization, when one hears there is a woman coming on board, there are the usual cracks about women, but in terms of how I am treated when I get there, I really haven't had a problem in several years. When I first got into this kind of work, yes, I was young and inexperienced and it was over 20 years ago. That was a different age. These days, no, those kinds of things are not there."

The biggest obstacle of her career was coming to the realization that engineering was a viable alternative when it was not something that a woman should do.

"I grew up in the inner city, sub-poverty-level poor. I didn't know any professional people. Actually, when I started out in college, I started in music. Later I tried a lot of different things and found I had a lot of abilities in different areas, but I just happened into some engineering work as an assistant

and really loved it. Still, it took a while to realize that I could become an engineer too. I didn't think in professional terms and I didn't think

of engineering as a career. Once I made up my mind I plunged right in.

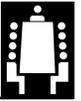
"Today, opportunities for women in this field are a lot, lot better than when I started," said Chilton. "In 20 years I've seen incredible changes in the attitudes of how people treat you and how women are viewed. While I was in engineering school, I was a GS-3 construction inspector for the Corps of Engineers in 1974-1975. The attitude toward women then was: shove them forward, play the equal opportunity game, the token female game. There were only two or three women in the whole program who graduated. I got job offers from a lot of firms who were not interested in me or my capabilities, but who just wanted a token female. Today, there is a higher percentage of women in the field and they are not playing the token game as much and I think that is a real improvement."

Chilton says that if she would give advice to women considering the engineer field, she would tell them that you do not have to be a genius to get the degree. "There are a lot of men who struggle through, but the women always question whether they really have what it takes."

"First you have to admit it is a wonderful possibility. In terms of career opportunities, it is a technical society. Anyone who can get an engineering degree can move into one of a hundred or one of several hundred different fields. It opens the doors that other degrees just do not and it is a saleable skill. I did not know this when I went into engineering, but the degree is an incredible asset in terms of building a career.

"All of the things you need you can learn. I wasn't particularly good in dealing with people, especially when I was a teenager. I was a bit of a misfit and didn't think I could get along with people, but by working at developing my skills in dealing with people, I'm probably





stronger in that arena today than technically because I put a lot of emphasis into building those skills. Once you have the technical knocked down, you worry about the people part of it and the communications part of it.”

“You can’t succeed if you cannot write or speak and you can’t succeed if you alienate other people. There are lots of engineers who are very left brain and can do the technical things but don’t put the effort into learning to communicate and dealing with people, but if you’ve got the technical balanced with people skills, the sky is the limit.”

Prior to coming to Fort Ritchie, Chilton was the Chief of Engineering

Plans and Services, Directorate of Public Works at Fort Bliss. “I was on the career program roster for this geographical area and was called; I interviewed for the position and was offered the job.”

Chilton arrived at Fort Ritchie the weekend of November 1995’s snow-storm. “I came from the desert in Texas and the first weekend I was here it snowed. I’m in charge of snow removal and it is something I haven’t had to deal with before, even in Germany. I didn’t have the responsibility and the 48 inches we got in the blizzard was something different,” she said.

Also, coming to Fort Ritchie had another surprise for Chilton. “This is the

first time I’ve been in charge of a fire department. I’m learning a lot; this is a new undertaking for me.”

In being the first woman “post engineer” for a military installation, Chilton hopes she is a role model for other women. She says the most important thing for women and others to remember is that the only limits out there are the ones you place on yourself. You figure out what you want out of life and you go do it.

 You may reach Patricia Chilton at (301) 878-5661. **PWD**

*Marcus J. Wilson works for Fort Ritchie’s newspaper, the **Castle Dispatch**.*

## CPW PROFILE *by Alexandra K. Stakhiv*

**B**orn in Memphis, Tennessee, O.W. Evans holds a Bachelor of Science in electrical engineering from Christian Brothers College and a Master of Science in industrial engineering from Texas A&M. He began his federal career at the Red River Army Depot and later worked at the Lexington Bluegrass Army Depot. In 1978, he moved to Washington, D.C., to work at the Pentagon for the Navy and two years later transferred to the US Army Engineer Studies Center.

O.W. has been with the US Army Center for Public Works for the last five years. Initially, he was hired as a general engineer in the Analysis Branch, where he spent most of his time working in the areas of real property, technical data and automation support.

“Installations would often call to ask about category codes or the latest policy changes on a certain type of construction,” he recalls. “There were never enough people in the office to answer the phone, so I spent a lot of time helping installations find the answers to questions about real property or look for DA counterparts to solve their problems through policy analysis.”

In the automated support area, O.W. was involved in the deployment and training of the installation management tool called Real Property Planning and Analysis System (RPLANS).

After CPW reorganized, O.W. transferred to the Planning & Real Property Division. Today, he splits his time between the Master Planning PROSPECT course and the Installation Status Report (ISR).

### O. W. Evans Planning and Real Property Division



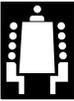
*(Photo by Richard Brown.)*

On the first, he works with the Directorate of Training Management at the Engineering Support Center in Huntsville, Alabama, on the annual instructors’ meeting where curriculum changes are made. He decides the number of courses to be taught and selects instructors from the MACOMs, installations, and the Corps. The PROSPECT classes are designed for master planners and real property specialists from the installations or districts and on occasion, garrison staffs. They’re conducted by region on a biannual basis.

For ISR, O.W. is the POC for the 62 Part I-Infrastructure standards booklets. These booklets are used by installation personnel when inspecting the physical condition of their facilities.

“Once a year, installations send reports to the MACOMs and DA along with a commander’s memo, identifying any problems that they have with the standards,” says O.W. “Last year, 99 installations reported and this year I expect over 300 to report. To change the process, the software or the booklets, I work with the after-action review committee, which includes representatives from the DA staff, MACOMs, and ACSIM, ISR points of contact, and a host of contractors.”

An amateur genealogist, O.W. has become a familiar fixture at the National Archives in Washington, D.C., where he is searching for his “roots.” So far, he can trace his ancestors back to 1812 right here in Virginia. **PWD**



## Fort Eustis DPW wins APWA Award

Each year since 1960, the American Public Works Association has singled out ten individuals who best represent the finest in the Public Works profession.

This year, COL Brain J. Ohlinger, who is director of Public Works at Fort Eustis, Virginia, has been chosen as one of the country's top ten Public Works Professionals.

He is honored in distinguished company. Other awardees include the Chief Engineer of Hawaii's Division of Water and Land Development, the Director of Public Works for Contra Costa County, California, and the Directors of Public Works for the cities of Milwaukee, Wisconsin, and Boulder, Colorado.

The honor highlights Ohlinger's distinguished 25-year military career and singles out Fort Eustis' operations as among the Army's best.

COL Ohlinger's achievement is all the more outstanding since his funding



Left to right: Mr. Ken Hoag, President, American Public Works Association, COL Brian J. Ohlinger, and his wife, Inge.

### Submit your articles and photographs to the *Public Works Digest*

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was reduced by \$4 million (18 percent) and his work force by 35 employees (15 percent.)

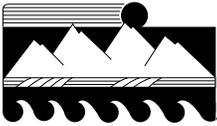
He spearheaded development of the Tidewater DPW Regional Plan, a public works operation that serves Fort Eustis, Fort Monroe, Fort Lee and Fort Story, Virginia. The regionalized DPW enables each installation to benefit from economies of scale in purchases and services. The installations also established a dedicated and collocated DPW contracting cell, standard methods of reimbursement and performance measures, and cooperated to combine talents and manpower for maximum effectiveness.

Due to COL Ohlinger's efforts, the regional network of installations have cut costs and shared expenses in some of the following ways:

- Letting a regional roofing requirements contract that achieves cost avoidance of more than \$800,000.

- Making spot market natural gas purchases that save the region more than \$250,000.
- Awarding an A/E contract that covers the needs of all four installations.
- Sharing expertise in forestry and entomology, and sharing engineer equipment among all four installations.
- Developing a regional JOC contract.

COL Ohlinger earned high praise from the American Public Works Association for his outstanding achievements as both an engineer and a leader. Creativity in a time of shrinking funds and personnel losses calls for more than technical know-how. His command and colleagues have said that "His emphasis on teamwork and customer care has enabled him to reduce operating costs while improving customer satisfaction." High praise—and richly deserved. **PWD**



## Going for the green:

### **Aviation maintenance company wins new environmental compliance award**

by Leslie Ozawa

Color them green: environmental green, that is. Soldiers of the 25th Infantry Division (Light) Aviation Brigade's Company C were recently honored as winners of the first unit award for Environmental Compliance Excellence, sponsored by U.S. Army Garrison Hawaii.

"This is a classic example of what can happen when you have a positive attitude," said Fran Nix, Chief Inspector for the Environmental Compliance Branch at Directorate of Public Works at Schofield Barracks. "What they did absolutely amazed me," said Nix. "They were told it would take two years and cost approximately \$40,000 to build a chemical storage shed they wanted for their company."

"Instead of submitting the proposal as a routine construction project, we thought it was important enough to build it ourselves, as a self-help project," said CW3 Douglas Staples, the Environmental Compliance Officer for Company C, 25th Division (Light) Aviation Brigade. What his company did was to build a central storage area for hazardous chemicals used to maintain the Aviation Brigade's 93 helicopters.

After purchasing the required materials for about \$4,000, CW3 Staples and four other soldiers rolled up their sleeves to build their Consumable Chemical Management Area (CCMA). "We did everything, from pouring the cement to building the roof and putting up a chain link fence," said Staples.

The structure itself uses a lot of recycled materials. "We got the steel I-beams from the old horse stables and salvaged some metal roofing when the hangars got new roofs," said Staples.

The CCMA consists of a 40-foot long, 20-foot wide concrete pad enclosed with an 8-foot-high chain link fence. It has a slanted roof supported by the I-beams planted in the four corners of the concrete pad. The structure

took only three weeks to build, but delays in the arrival of the special acid-proof and fire-proof lockers held up opening the CMAA until last March.

"What the CMAA did was eliminate all redundant stockage points," said Staples. "We went from eight stockage points to one. Consolidating supplies into one area is now saving us about \$130,000 annually."

Staples explained that, previously, the engine shop, the prop and rotor shop and the direct support platoon might use the same type of grease. Each shop would stock its own 15-day supply of the grease. Now, instead of maintaining a 45-day supply of the grease, the company stocks only a single 15-day

supply in one location. The inventory duplication was eliminated for dozens of other hazardous materials.

The CMAA is run like a pharmacy, explained Staples. A soldier assigned to the CCMA acts like a pharmacist. Any shop requiring a chemical for a specific operation brings a "prescription" to be filled at the CCMA.

"By the close of business the same day, they're required to turn in to the CCMA either an empty container or the unused portion in the container," said Staples. "We can then recycle the chemical or properly dispose of the empty container."

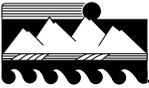
The CCMA and the hazardous materials "pharmacy" was part of an overall plan Staples devised when he was appointed Company C's Environmental Compliance Officer in April 1995. "We assessed the overall environmental impact of the unit. We looked at how we could comply with the CG's directive to reduce all kinds of hazardous materials, and to reduce hazardous materials and chemicals on hand."

Training is a key element to the success of the company's environmental program, said Staples. In addition to division's mandatory quarterly training, Company C's 187 soldiers also receive monthly environmental training as part of the 2-hour safety class on payday.

Training has definitely impacted the soldiers' awareness and skills, said Staples. "The changes in soldiers' attitudes are big time," said Staples. "We had soldiers who didn't know what an MSDS was. By law, handlers of a hazardous chemical must be given its MSDS, or Material Safety Data Sheet. The MSDS summarizes safety information about the chemical. Now, when they break open a product they ask for the MSDS."

Company C's strong environmental program shows up in other ways. For the past year, it has been scoring 98





percent or better on the unannounced, quarterly environmental inspections conducted by DPW's Environmental Compliance Inspection Team on about 80 Army units in Hawaii.

"The scores on the inspections were very close, said Fran Nix, who helped set up the annual award program. "Company C was chosen because of their extraordinary accomplishments."

Besides a strong training program, Staples credits the company's success to a good working relationship with DPW's environmental staff. Besides himself, SSG Osvaldo Martell and several other enlisted soldiers of the company work closely with members of the inspection team and other environmental experts at DPW. "The key that makes our program successful is that we don't hide anything," said Staples. "If I have a problem I can't resolve, I take it to them immediately. We ask them to come in and show us where we're wrong."

Nix agrees that Staples' approach is the right one. "It boils down to attitudes," said Nix. "In the year I've been here, there's been a tremendous change in attitudes. The units want to do what's right. They're asking for help and want to know more — 95 percent of the attitude now is that they want to do it right the first time."

Training combined with the right attitude recently paid off at Company C. While doing repairs on a UH-1, a soldier accidentally activated the helicopter's fuel pump. This caused about ten gallons of fuel to spill on the hangar floor. "The soldiers ran to the spill response kit and applied the spill contingency plan like experts, like they did this routinely," said Staples. "I felt so proud to see the soldiers' reaction."

POCs are CW2 Douglas Staples, Company C, (808) 656-2641; and Fran Nix or Gary Akasaki, Environmental Compliance Center, (808) 656 1111.

**PWD**

*Leslie Ozawa is a public affairs specialist in the USARPAC Public Affairs Office at Fort Shafter, Hawaii.*

## Fort Hood receives membership from State of Texas

At the Governor's Awards for Environmental Excellence banquet, held at the Hyatt Regency Hotel in Austin, Texas, last April, Fort Hood was proclaimed a member of the "Clean Cities 2000."

COL Albert G. Bungard, Director of Public Works, Fort Hood, accepted the membership certificate and city limits sign on behalf of Fort Hood. Also in attendance representing Fort Hood were David C. Wrbas, the Deputy Director for Environmental Programs and Jaycee W. Turnquist, the Business Manager for the Recycle Program.

Membership into "Clean Cities 2000" gives Fort Hood the honor of being the first military installation in the State of Texas to receive such a distinction.

To be selected for this award, Fort Hood had to commit to the "Clean Cities 2000" goals that recognize local governments that implement innovative pollution prevention efforts aimed at:

- Reducing solid waste disposal in Texas landfills by 50 percent by the year 2000.

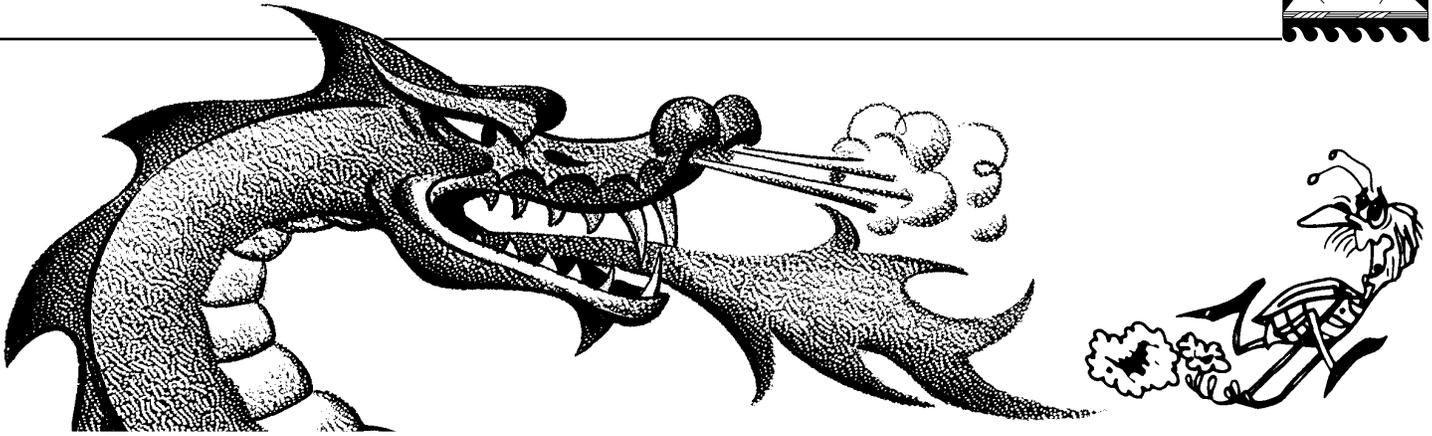
- Implementing comprehensive environmental programs to protect local air, land, and water quality.

Fort Hood submitted an action plan incorporating the following strategies:

- Residential recycle and source reduction.
- Comprehensive yard trimmings management.
- Workplace recycling and source reduction.
- Used tire, motor oil, and oil filter recycling.
- Public education for buying recycled materials.

As a member of "Clean Cities 2000," Fort Hood will enjoy special consideration in the allocation of grant funding for recycling and composting projects, and access to public education materials. Fort Hood will also benefit from increased public support for local programs and become a recycling partner with the State of Texas. There is also a significant potential for cooperative efforts with industry. **PWD**





## Fort Knox combats roaches with heat

by Susan Phelps

Cockroaches have always been a menace to food facilities.

In the past, Fort Knox used pesticides to defeat its antagonist. These cockroaches, however, counter-attacked by developing “super roach” qualities. Not only did they become immune to the pesticides, but they “learned” to avoid pesticide-sprayed areas. To overthrow the rising numbers of roaches, the installation has employed an ancient Egyptian tactic—heat.

Food facilities have a particularly hard time fighting cockroaches. They can only apply pesticides in certain areas, which leaves plenty of untreated surfaces where roaches can escape to during spraying. Any survivors of the spraying develop an immunity to the pesticide, which they pass on to offspring.

Brian Zeichner, entomologist at the U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM), has been studying strategies to defeat pesticide-resistant roaches. He found that a number of industries were using heat to get rid of pesky insects. Lumber companies heat logs to kill termites, and some food processing plants use heat to exterminate bugs in fruit or buildings.

Zeichner began experimenting with the heat method on cockroaches at CHPPM’s labs. When he came across Fort Knox’s struggle, he decided that it was time to take the methods out of the lab and into the field.

In June 1993, Zeichner contacted Al Freeland, chief of Fort Knox’s Environ-

mental Management Division (EMD) and proposed the use of heat to combat the roaches. The proposal was initially met with surprise and skepticism.

“My first response was, you’re going to do what?” said Freeland. “But, after I saw the results, I became a believer.”

The basic idea behind the heat method is to turn the roach-infested building into a giant oven. Because insects have no way of perspiring, heat quickly and effectively cooks the cockroaches.

With funding through the U.S. Army Environmental Center (USAEC), CHPPM and Fort Knox staff got started. Once the drains and windows were covered, and any holes sealed with caulking, heat was pumped into the building. The plan involved heating the interior of the building for four to six hours to bring the temperature up to 120 degrees.

Since Fort Knox was the first installation to try the new tactic, there was some trial and error. Zeichner initially used a kerosene heater, but the building heated unevenly, causing floor tiles to buckle and crack and a few refrigerator seals to warp.

The second method, a diesel heater, was employed with much greater success, less damage, but an overabundance of fumes. Although these attempts were only partially successful, there was enough evidence to show that heat worked.

Zeichner then tried using propane heaters and found them to be safer, cleaner, and the most effective.

One factor that Zeichner had to contend with was that buildings do not heat evenly and that cockroaches are very good at finding cool spots. One of the most common refuge areas was the corners of the room where the floor and wall meet. According to Zeichner, the roaches literally lined up to escape the heat.

At first, Zeichner and his staff tried to find ways to heat these cool spots. After many unsuccessful attempts, however, they resorted to such simple solutions as double-sided tape or vacuuming during and after the heating treatment.

Once the heating and vacuuming were done, the installation applied a pesticide to kill any remaining roaches. Although these roaches may have been resistant to the pesticide before, the stress of the heating process decreased their resistance.

Building after building, the process became faster and more effective. Installation and CHPPM personnel were amazed by the results. Success was measured by roach traps to determine the number of roaches per trap per night.

Before the heating treatment, the traps collected an average of 44 roaches per night in some buildings. After the propane heat/pesticide treatment, roach traps have had less than one roach per trap per night.



According to Zeichner, "One building has had zero cockroaches per trap per night for the past four months, which is unprecedented. Another building seems to be following that same pattern of success."

One reason for such complete success is that the heat penetrates into areas where insecticides cannot reach, such as machinery, leaving fewer roaches behind to establish a pesticide-resistant strain. The heating method also wipes out an entire generation of roaches, including the adults, nymphs, and eggs.

Because the pesticide-resistant strain is gone, Fort Knox can use conventional control methods again. The installation, however, will be able to reduce the amount and frequency of pesticide use.

"In the 14 months since the heat treatment," stated Zeichner, "we saved 15 gallons of residual insecticide, 1.5 pounds of pesticide dust, and 23 hours of labor in one of the treated facilities."

So far, 14 buildings have gone through the heat treatment, including facilities on Fort Bragg, North Carolina, and Fort Belvoir, Virginia. Zeichner is planning additional trials to fine tune the process.

His co-worker, Dan Wild, has almost completed a technical guide to help others use the heat method. USAEC is interested in exploring the use of heat to control other pests, such as fleas. "In those facilities with chronic infestations, this method provides an unprecedented long-term relief," said Zeichner.

Freeland, in the meantime, gets a lot of teasing about his "crispy critters." But, the teasing soon turns into inquiries. "People realize that cooking cockroaches is more than something to laugh at. It's serious business," said Freeland. "And, the big key is that we have cleaner facilities for our soldiers to eat in."

POCs are Al Freeland, (502) 624-3629; and Brian Zeichner, (410) 671-3613. **PWD**

## U.S. Army National Guard environmental success stories

by Susan Phelps

The U.S. Army National Guard is joining the ranks of the other Army components to tell stories of environmental success at its facilities.

Dr. Marc Imlay, natural resources program manager at the Army National Guard Environmental Program Directorate (ARNGEPD), attributes much of this success to the Natural Resources Management Program (NRMP).

ARNGEPD developed the program in 1989 to provide Guard facilities with guidelines on how to conduct their environmental programs.

So far, about half the Guard facilities have employed elements of the NRMP and according to Imlay, "From installation to installation, I've seen the shift toward successful environmental programs."

The ARNGEPD NRMP is composed of four components:

- Inventory and monitoring
- Matching the mission with the carrying capacity of the land.
- Land restoration.
- Environmental awareness.

The overall goal of the program is ecosystem management whereby the land is managed to support entire systems versus one particular species.

NRMP is a derivation of the Army's Integrated Training Area Management Program (ITAM). According to Imlay, both programs are composed of similar components that are designed to manage the military's training lands while maintaining the area's natural and cultural resources. The NRMP program, however, is more integrated and focused on managing the area's entire ecosystem and not just the training lands.

The Guard manages over one million acres of land and trains soldiers for every type of mission. Although each installation develops its own recipe for success, NRMP gives Guard facilities a framework from which to build their plans.

Time and time again, the Guard's success stories are based on the invaluable information gained from inventories and monitoring. The Army Guard has surveyed about 80 percent of its land. These inventories help the training and environmental staffs get an overall picture of their facility and decide how to conserve the land as a part of implementing the training mission.

The management solutions often consist of a few simple changes. One example is Camp Robinson, Arkansas. After conducting an environmental assessment, this Guard facility relocated an M16 firing range to two existing ranges to preserve 11 acres of prime bottomland hardwood forest in Kellogg Creek.

At the Guard's Las Vegas training site, biological assessments showed that there were numerous desert tortoises within the Nevada Guard's training area. Since the desert tortoise is an endangered species, the Guard moved their tank and firing exercises to Indian Springs Air Force base 40 miles away, thus ensuring the continuation of the training mission while protecting the desert tortoise.

According to Imlay, knowing the carrying capacity of the land is the most important part of NRMP, because it is where the military can make decisions about its training that will avoid environmental problems. Land managers know that some areas are able to recover from training exercises faster than others.

"The best places for tracked vehicle training are areas with stable populations of native prairie plants that have five foot root systems," said Imlay.

With this philosophy in mind, the Iowa Guard recently cultivated native prairie grasses on their land to support tracked vehicle training. Since soldiers need to train on a variety of types of terrain, the trainers and environmental staff who manage less productive land



must plan ahead to make sure that the land can recover for future training maneuvers.

Artemus Training Site, Kentucky, found that 90 percent of its soil erosion occurred when tracked vehicles were used during heavy rainstorms. To prevent erosion, the staff minimizes their tracked vehicle training during such storms.

Within the land restoration component, environmental staff restore the land after training exercises using native species that grow back faster, maintain the integrity of the ecosystem, need less care, and can withstand more of the impacts of training.

Camp Guernsey, Wyoming, has been successfully reseeding after tracked vehicle maneuvers with a mixture of seven species of native plants. Within a few weeks, maneuver areas are restored and track vehicles can return to train.

The Guard has found that environmental awareness is a key to preventing unnecessary damage in the field and fostering environmental stewardship. Camp Grayling National Guard Training Site, Michigan, has established an extensive environmental awareness program for its soldiers. An environmental officer gives briefings to all visiting units before they go out in the field.

Once the unit is out in the field, an environmental team accompanies to provide environmental training and technical advice, assure that the training lands are being used wisely, operate spill control and response trailers, and give field clearance.

Camp Ripley, Minnesota, has taken its environmental awareness program one step further by sponsoring an "Environmental Shadow Program" with several of the local schools and other interested groups. Since 1991, this program has enabled over 8,000 students interested in environmental careers to work side-by-side with Camp Ripley's environmental managers.

Another important component of NRMP is the partnerships that have been established. According to Imlay, the most successful Guard facilities have been those that have established

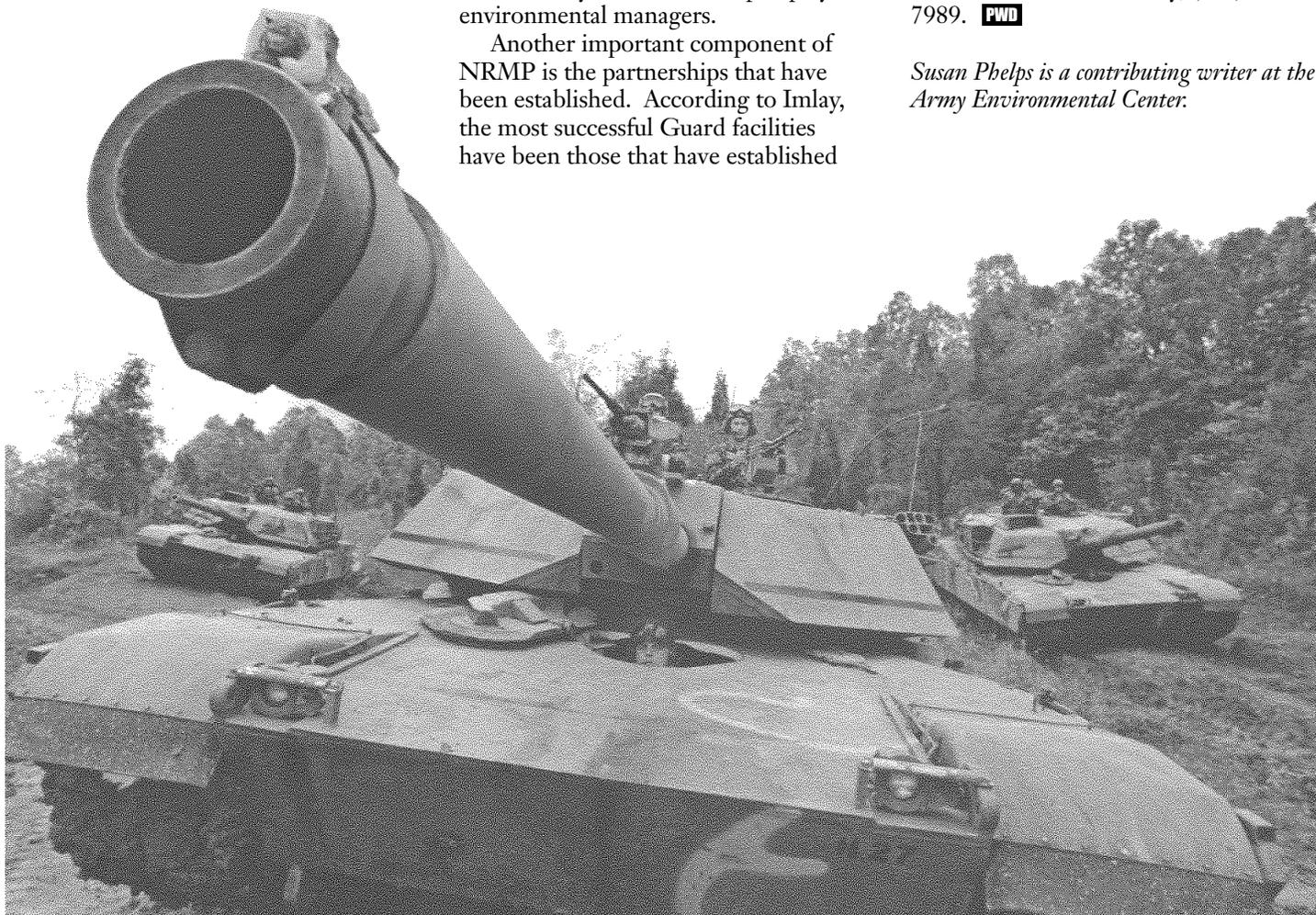
good working relationships among environmental staff and trainers, environmental organizations, and the surrounding public. These partnerships have brought in other ideas and expertise that enhanced the Guard's environmental initiatives. They also have helped the facilities establish relationships of lasting communication and trust with their neighbors.

The overall goal of NRMP is sound ecosystem management. With this system, the soldiers and their equipment are considered as much a part of the environment as the land, animals, and plants around them.

"If you manage for the natural ecosystem, you don't overdo any one thing. The installation becomes a place where all the normal things that can occur in an ecosystem do occur," said Imlay. "Since it will be hard for the military to obtain new training lands in the future, protecting the ecosystem means protecting military training."

 POC is Mark Imlay, (703) 607-7989. 

*Susan Phelps is a contributing writer at the Army Environmental Center.*





## Prime Power sustainment in Operation Joint Endeavor

by LTC John Rivenburgh

Operation Joint Endeavor challenges US Army Engineers to perform the full spectrum of Engineer Operations. Engineers participating in Task Force Eagle made headlines with—

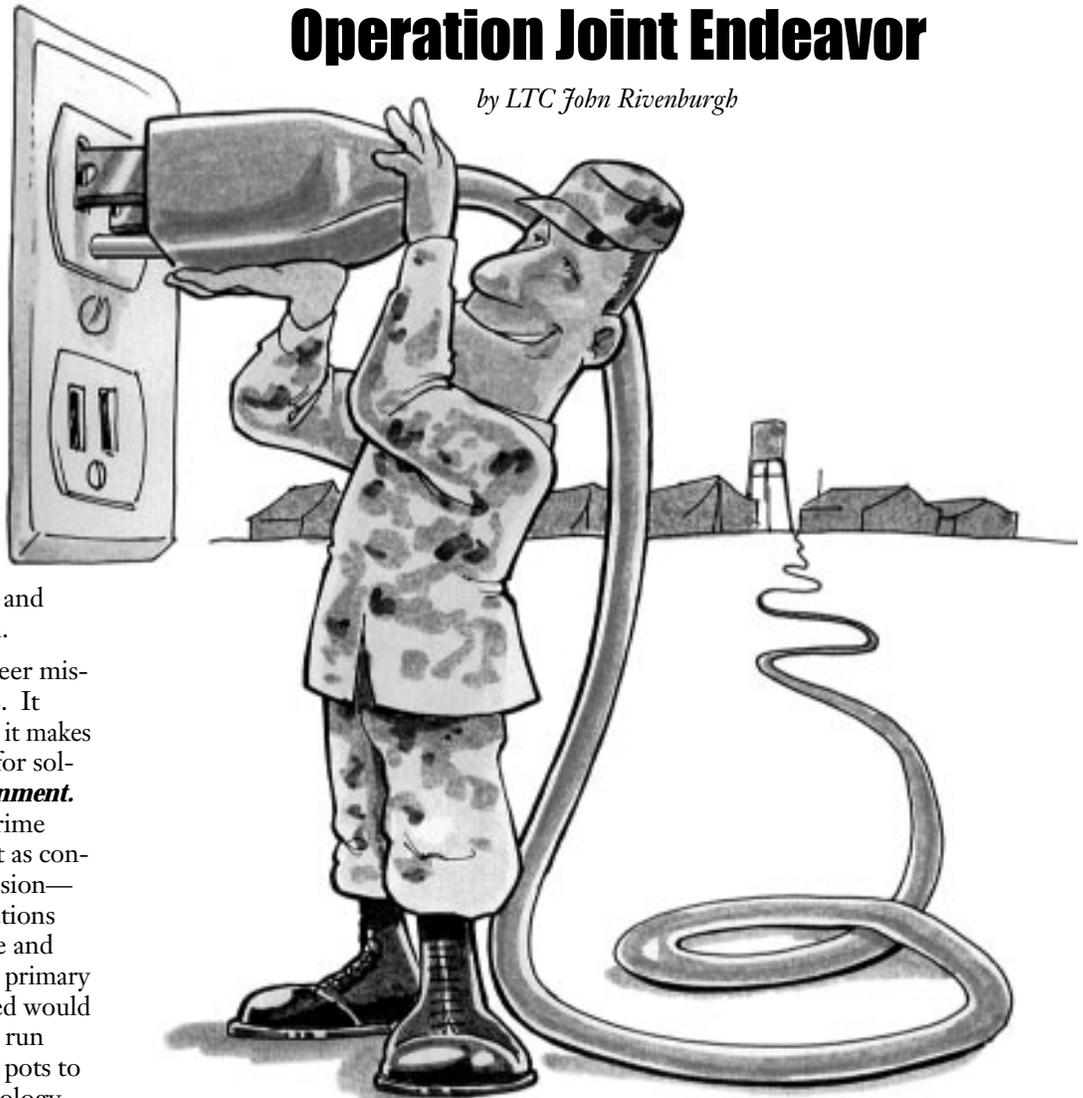
- **Mobility:** Engineers opened the Sava River Bridges, proofed minefields, and plowed snow.
- **Countermobility and Survivability:** Engineers ensured force protection at base camps.
- **Topographic terrain visualization:** Engineers created maps for the Dayton peace talks, and tracked land and weather conditions in Bosnia.

There's another major engineer mission in the theater of operations. It doesn't often make headlines, but it makes work possible and life bearable for soldiers in the field. That's **Sustainment**.

249th Engineer Battalion (Prime Power) played an important part as contributors to the sustainment mission—providing base camps and operations areas where US forces could live and work effectively. The Battalion's primary job? Ensure areas they supported would have reliable electrical power to run everything from soldiers' coffee pots to state-of-the-art computer technology.

Soldiers from the battalion are trained and ready to provide utility-quality prime power in the theater of operations, to support other military operations and exercises, to provide emergency electrical power generation capacity following natural disasters, and to provide backup power support to US military installations.

The 249th Engineer Battalion (Prime Power) is headquartered at Fort Belvoir, Virginia. The battalion's companies and platoons are extended in a worldwide net extending from Korea to Hawaii; Fort Lewis, Washington; Fort Leonard Wood, Missouri; Fort Campbell, Kentucky; Fort Benning, Georgia;



Fort Bragg, North Carolina; and Germany. Each platoon can rapidly deploy and operate equipment that will generate up to 3,000 kW of utility grade electricity—enough to power a small town. The battalion is the Army's only truly modular engineer unit. Small cadres of highly-trained soldiers can deploy, perform missions, and operate equipment in many locations around the globe.

Prime Power soldiers are highly trained in a year-long course that includes college-level electrical and mechanical engineering. They often travel alone or in small teams to provide power system assessments and troubleshooting in remote locations.

Veterans of such major operations as Desert Shield and Desert Storm, emergency support in the wake of devastating storms like Hurricanes Hugo, Andrew, and Marilyn, and dozens of other missions around the world, the battalion was ready to meet the challenges posed by Operation Joint Endeavor.

### Planning and deployment

In the critical engineer planning session of 3-5 December 1995, the battalion received a mission to power five base camps. Three were to serve 1,800 soldiers and two to serve 1,200 soldiers





in the Tuzla Valley and Ready First Combat Team (First Brigade) areas of operation. The original plan called for a time-phased deployment that would put Prime Power soldiers and their equipment on the ground in Bosnia just as base camps became ready for power. B Company's 4th Platoon, stationed in Germany, would deploy to Bosnia on Christmas Eve, and be joined by platoons from Fort Bragg, Fort Benning, and Schofield Barracks by the beginning of February.

In less than a month, the battalion staff and the Fort Belvoir Office of the Corps of Engineers Baltimore District carried out a monumental logistical effort. Using funds provided by V Corps, they contracted for \$1.1 million worth of electrical construction materials, and saw the materials through delivery and packaging for shipment in base camp sets at Fort Bragg by 29 December.

Battalion power generating equipment, which includes 750 kW generators about the size of tractor trailers, also had to be moved to meet the mission. Equipment was prepared for air shipment from Germany, CONUS and Hawaii. USTRANSCOM moved battalion assets from CONUS to Germany on C-5s and C-141s, and from Germany into Tuzla on C-17s and C-130s. This was the second time battalion assets had been moved by C-17—the first time had been for Hurricane Marilyn relief operations.

## A changing mission

The operational situation in Bosnia and the terrain caused the Task Force Eagle commander to change the base camp plans entirely. Instead of 14 large camps, the force would be housed in 33 small-to-large camps. The 249th's mission changed accordingly. Thus the five-camp full power mission became instead a mission to fully power Camp Steel Castle (1AD Division Artillery and Division Engineer Headquarters), and to install generators and distribution systems for 13 camps in the Ready First area of operations.

Camp Steel Castle was built by the 813th Red Horse Squadron (Hurlbert Field, Florida). The camp consists of two 550-soldier Force Provider modules augmented with hardback GP

medium tents and frame tents, housing a total of about 1,600 soldiers.

To power the base camp, Prime Power soldiers from B Company's 4th Platoon installed four 40,000-lb 750 kW generators, five trailer mounted substations, and pulled about 6 miles of high and low voltage cable across the muddy, snow-covered fields. They brought the power plant on line 29 January, 1996, and Camp Steel Castle was fully inhabited by 6 February. The peak power load at this writing is 920 kW.

The 13 Ready First area camps included a combination of existing facilities that had been used by United Nations forces, and new camps built by Seabees and the 94th Engineer Battalion (Combat Heavy). Each new camp held a mix of hard back tents, temper tents and existing war-damaged buildings. Prime Power unit 1/B installed twenty 100 kw and ten 60 kW generators in the brigade camps.

Each mission presented the 249th's soldiers with challenges. Material Handling Equipment was limited at all locations, so soldiers used fork lifts, cranes, HEMMT cargo cranes and M88 tracked recovery vehicles to move and place the generators.

The ground turnaround time for aircraft at Tuzla Airbase was planned for 20 minutes. A 40,000 lb K-loader was specially flown in to help unload generators from the C-17s. This piece of equipment needed an assist from a host nation contracted crane of questionable reliability to clear the airhead.

## Lessons learned

The 249th Engineer Battalion's capabilities to meet theater power needs are still not well known in the engineer community. This may be because electrical distribution and generation are not often considered in base camp planning. This is a critical problem, since electrical Class IV material is typically harder to obtain in the theater of operations than lumber, plywood and nails.

The Army needs more medium-sized (60 to 200 kw) generators to use in force beddown. Engineers and logisticians must plan for these assets early. Generators this size can power a specific organization or piece of equipment, a tactical operations center, communica-

tions and military intelligence gear, or serve in a force structure designed to operate in a mobile, unbuilt-up area. Task Force Eagle required 30 such generators in the Ready First area of operations alone. The force met this need by using CECE site 60 kW generators and excess Force Provider 100 kw generators. These equipment assets might not be available in another contingency.

The battalion also learned that there is no single electrical standard for Army base camps (380/220 V vs 208/120 V). The design standard for Task Force Eagle base camps was 380/220, 50-cycle power. This standard was implemented in the hope that all camps could be connected to commercial power sources early in the operations. Commercial power was either unavailable or inadequate and unreliable at all but a couple of the Tuzla Valley camps. Units and soldiers experienced many problems with the 220V power provided. Many units had deployed without adequate transformers to convert 120V for computer printers and personal appliances like fans, lights, microwaves, and coffee pots. As base camps in the theater of operations must accommodate modern computer equipment and electronics to carry out their missions, more advance electrical planning will clearly be needed.

POC is LTC John Rivenburgh, (703) 704-1526 DSN 654. **PWD**

*LTC John Rivenburgh is the Commander of the 249th Engineer Battalion.*

## CPW selects Acting Executive Director

Peter M. Tranchik, currently Director of Public Works at Fort Dix, New Jersey, has been selected for a six-month developmental assignment as CPW's Acting Executive Director. He was chosen from a slate of 10 candidates who responded to a request for volunteers. Mr. Tranchik will begin his new duties in mid-August 1996. **PWD**



## Off-peak air conditioning— **MOVING BACK TO THE ICE AGE**

by COL Brian Ohlinger

The air-conditioning season poses many challenges.

None is greater than managing the peak demand electrical load.

Depending on your location, the air conditioning season may vary from three to seven months. As a rule, utility companies use the peak demand to establish their electrical rates for the next eleven months.

So, it follows that if you can lower your peak

demand, you can substantially reduce your electrical bill.

Why do electrical companies use peak demand charges?

After noon, as more air conditioners are needed to maintain comfortable temperatures, the increased demand for electricity adds to that already created by lighting, operating equipment, computers and thousands of other uses. This means the utility company has to bring additional, more costly generating sources on-line to handle the increased demand.

Commercial users whose large air conditioning loads contribute to these added generating requirements are as-



*To reduce the visual pollution, the ice tank field at the AIT barracks was partially buried. Due to the size of the building, eight tanks were required.*

essed an additional charge based on their highest on-peak demand for electricity.

An ice bank stored cooling system can lower demand charges and total energy use as well. It uses a standard packaged chiller to produce solid ice at night during off peak periods. This is when the building's electrical needs are at a minimum and the utility's generating capacity is typically underutilized.

The ice is built and stored in modular tanks to provide cooling to meet the building's air conditioning load requirement the next day.

Making ice at night and using its stored energy during the day is not a

new or experimental idea. This concept has been used for years in cooling short peak applications such as churches and theaters. However, longer peak uses were served by air-source-rooftop and chiller-type air conditioners, which were less costly to install.

Now there is renewed interest in ice making systems by both users and utilities as the best way to offset rising operating costs.

At Fort Eustis, which has an air conditioning season of almost seven months, ice bank systems are being selectively installed.

The ideal application is for training facilities or administrative areas that are normally vacant at night. However, significant savings can also be achieved at barracks and transient buildings. These buildings can use their conventional mechanical cooling system for the night load and ice to handle the peak cooling load during the day.

Ice storage also qualifies the system for a sizable cash subsidy from the local electric utility.





## O'Connor named CERL Director

Eight years ago, we installed the first system at the Fort Eustis DPW building. This 20,000-square-foot test site has proven the technology, and maintenance costs have been well below average.

We added three transient billets buildings two years ago.

We are now in the finishing stages of three much larger systems. The first two systems will cool four ATT barracks (208,000 square feet), and the third system will cool the NCO Academy (54,000 square feet). With these systems, we will have moved about 330,000 square feet, and slightly over one megawatt of peak demand, to the off peak period, saving about \$150,000 a year.

The initial capital investment is higher for the ice storage systems, but the average payback is only about four years.

More importantly, from a customer perspective, we have enhanced the quality of life as we no longer "shed" these buildings during air conditioning season.

At Fort Eustis, we have a very sophisticated Energy Monitoring and Control System. To manage the peak demand, we would typically shut down the air conditioning in these buildings at about 11 a.m. With the ice storage system, only the recirculating pumps have to run during the day, moving the water-glycol solution through the ice tanks. The electric cost is minimal.

In an era of diminishing budgets and rising utility rates, installing ice storage systems can significantly reduce operating costs. At Fort Eustis, we are doing just that.

POC is COL Brian Ohlinger, (804) 878-2806. **PWD**

*COL Brian Ohlinger is the Director of Public Works at Fort Eustis, VA.*

Secretary of the Army Togo D. West has approved the appointment of Dr. Michael J. O'Connor as permanent civilian Director of the U.S. Army Construction Engineering Research Laboratories (CERL) in Champaign, Illinois. O'Connor has served as Technical Director of CERL since that time.

In his role as Director, O'Connor will head CERL's \$80 million annual research and development program. This program creates and fields technology to ensure that military installations support a trained and ready Army in an environmentally suitable and affordable manner. CERL also supports the Civil Works and Military Engineering missions of the U.S. Army Corps of Engineers.

As CERL's top civilian, O'Connor will direct a staff of 587, consisting of 361 federal and 226 University of Illinois faculty, students, or other contract employees.



*Dr. Michael J. O'Connor*

A native of Chicago, O'Connor received his bachelor and master of science degrees in Industrial Engineering from the University of Illinois at Urbana-Champaign (UIUC) in 1969 and 1982, respectively. He received a Ph.D. in Mechanical Engineering from UIUC in 1986.

Prior to his assignment as Technical Director, O'Connor served as Chief of CERL's former Infrastructure Laboratory. He has been with CERL since 1974 and has also been a division chief, division program manager, and team leader for the former Facility Systems Division. Before joining CERL, he worked for the Air Force for 5 years.

O'Connor projects a healthy future for CERL. "As defense funding continues to decline, CERL's role in providing technology to the Army becomes more critical than ever," he said. "Military installations will face increasing pressures on budget and staff, yet they still must be sustained as home to the force and as bases from which to project military power worldwide. The key to their sustainability is in technology to help them operate effectively and affordably." **PWD**

### Public Works problem?



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## RAILER RED speeds track inspection, data entry

by Dana Finney



*Two inspectors collect inventory data and radio findings to a third person following in a vehicle.*

Installation railroad track managers have a new tool for collecting and downloading track inspection data quickly and accurately. The CERL-developed RAILER™ Remote Entry Data (RED) combines commercially available electronic clipboards with software designed to accept information used in the RAILER™ Engineered Management System.

RAILER™ helps track managers plan and prioritize maintenance and repair (M&R) projects to ensure optimal use of funds. To do analyses, the system uses inventory and inspection data, most of which must already be collected as part of track maintenance programs. But in these days of downsizing, many installations are not staffed adequately to inspect the track as often as required. Manual collection and transcription of field data are labor-intensive.

RAILER RED can improve inspection productivity by up to 100 percent and cuts data entry time from several hours to a few minutes. Inspectors use the pen-based electronic clipboard program to enter information, much of which can be chosen from “pick lists” of common attributes. The program includes error checking and electronic downloading to the RAILER™ database.

Crane Naval Surface Warfare Center in Indiana is one of the first military sites to use RAILER RED. According to Rick Hawkins, Facilities Maintenance Manager for Inspections, Planning and Estimating at Crane, over 90 percent of their track supports Army tenant activity in munitions transport. The Navy center has M&R responsibility and budgeted some \$1.6 million last year to maintain 130 miles of active track.

“The main benefit of using RAILER is in giving us an assurance that we’re putting money where it should go,” Hawkins said. “We have a lot of technical talent on staff, but as experienced people retire or leave, we’re not being allowed to backfill, and we’re seeing the institutional knowledge disappear. A manager should be able to turn RAILER over to a computer operator and get advice on where to put the dollars first.”

CERL is demonstrating the new RAILER RED technology in developing Crane’s database. “The most productive way to get inventory data and establish the location referencing system is to use teams of three, where one person following in a vehicle records input on the clipboard and the other two communicate their findings over radios,” said CERL researcher Dr. Don



Uzarski. Collecting inspection data requires only two people—one to inspect and communicate and the other to record from a vehicle. This process can increase productivity from 20 to 100 percent over inspectors working independently and entering data on paper forms. The driver picks up the other person at dead ends and drives to the next track section, which reduces walking time.

The improved efficiency means the installation can complete more track inspections as required by Army Regulation 420-72. More frequent inspections increase the chances that problems will be found and fixed, which enhances safety and mobility.

Another site using RAILER RED is McAlester Army Ammunition Plant, Oklahoma. While the database is still under development, Gary Reasnor, Chief of Operations and Maintenance predicts, "From the demonstration and hands-on experience using RAILER RED, inspection and data entry time could be cut 50 percent. I



*The driver enters field data on the clipboard. He picks up inspectors at dead ends, which cuts walking time.*

am impressed with how user-friendly the system is."

The electronic clipboard is easy to use with minimal training. At Crane,

Hawkins said even though his office had not used any computers until about 18 months ago, "My guys are feeling very comfortable with the clipboard. They have the technical background and the will to make it work."

RAILER RED is available to RAILER™ subscribers at no additional cost. An electronic clipboard costs from \$3000 to \$5000, depending on the features desired. The software supports many different commercial brands of clipboard. CPW and CERL offer support to the field in implementing RAILER™ and cosponsor annual training courses.

RAILER™ and RAILER RED are available from the EMS Support Center at the University of Illinois, 217-333-2882. For more information about RAILER™, please contact Dr. Don Uzarski at CERL, (217) 373-7617. To request assistance from CPW, please contact Mike Dean, (703) 806-5995.

**PWD**

## Vacancy at Camp Zama

The Office of the Deputy Chief of Staff, Engineer, HQ USARJ, is recruiting for a GS-0801-12, General Engineer. The position entails:

- Responsibility for staff level actions on all Buildings and Grounds issues with staff oversight on similar operations in two Area Support Groups (one headquartered at Camp Zama and the other on Okinawa).
- Serving as a member of the Technical Working Group, which is made up of representatives from all services, US Forces, Japan, and the Japan Engineer District to develop/resolve any technical issues which develop in the Japan-funded Facilities Improvement Program.

- Overseeing environmental issues within the B&G area such as pesticides and asbestos removal.

Camp Zama is a community of excellence. All support facilities such as PX, schools (through high school), and commissary are available, and most families are housed in on-post quarters.

For more information, please contact David I. Lowell at DSN 315-263-5156, FAX: 263-3058, commercial 011-81-3117-63-5156; e-mail lowelld@zama-emh2.army.mil or write to: David I. Lowell, 17th ASG CM, Unit 45013 Box 2473, APO AP 96338-5013. **PWD**



# GIS and ROOFER: A new edge in communicating roof condition

by Dana Finney

**W**hy would you link a geographic information system to a roof management program? One look at a ROOFER GIS screen is all you need to understand what a powerful tool this combination offers.

GIS maps color-coded by Roof Condition Index rating show managers at a glance the numbers and locations of roofs in various conditions across the installation.

“A picture really is worth a thousand words,” said Gary Cox, Chief of Engineering Services in the DPW at Fort Lee, Virginia. “The GIS lets us use graphical display to capture staff and budget audiences and, through color variations, inform them of our roofing condition and the need for funding to correct roof problems by repair or replacement.”

ROOFER is an engineered management system that allows DPWs to make wise decisions about allocating scarce maintenance and repair (M&R) dollars. It uses a numerical condition index, in-

spection data, and personal computer (PC) program to help managers with both short and long term planning.

A GIS module developed for ROOFER dynamically links the ROOFER data bases to corresponding spatial tables derived from digitized installation and roof section maps. The module interfaces ROOFER with ArcView 2.1, a commercial off-the-shelf product developed by Environmental Systems Research Institute as a GIS viewer. A mouse click on a specific roof brings up all the ROOFER data base information for that building and can instantly provide recommended repair methods and cost estimates.



“All the detailed reports are still there if you need them, but in briefing people not familiar with the system, terms like ‘condition index’ and ‘distress’ lose their importance. The visual display satisfies their questions,” Cox said.

Using ROOFER GIS, managers can spot trends in different sectors or among facilities with other common

## Lean, mean roof project at Fort Lee

**R**oof inspection data collected for ROOFER helped Fort Lee save over \$200,000 on a commissary roof replacement project. Infrared (IR) thermograms taken over 2 years revealed that the building had dry insulation under the existing 5-ply asphalt-and-gravel roof — a finding which meant the replacement roof design did not have to include new insulation.

“I allowed about 10 percent of the roof area for replacing insulation if it was damaged, but we only used a portion of that amount,” said Gary Cox, Chief of Engineering Services at Fort Lee’s DPW. “There were no change orders to the contract resulting from a need to replace the insulation.”

For its annual ROOFER inspections, Fort Lee had CPW do an aerial IR roof inspection scan of all buildings on the post. A videotape made from the IR scan allows inspectors to do a visual review and serves as a reference for location to test the roof and learn if “hot spots” reflect wet insulation or excessive asphalt buildup. Thermograms made from the

videotape complement the other visual inspection data.

Cox had a tough time convincing skeptics that new insulation wouldn’t be needed. But ultimately, the IR data established a wait-and-see attitude, with the final decision delayed until the old roof was removed. When the contractor tore off the 5-ply roof, true to the IR photos, the insulation was dry.

The new roof is a single-ply type applied with a propane torch. This type of roof affords much easier repair than the asphalt/gravel roof it replaces and has a white, granular surface that reflects sunlight for improved energy conservation. A recovery board attaches the insulation firmly to the metal deck using long fasteners, which will ensure the insulation’s long term performance under the new roof.

Fort Lee’s money-saving roof project is another example of Army DPWs’ innovative use of engineered management system technology. For more information, please contact Gary Cox at Fort Lee, (804) 734-4545. **PWD**



features. They can also plan M&R work more effectively by grouping similar types of work together. This also improves the contractor's productivity by avoiding frequent equipment moves.

ROOFER GIS, developed by CERL, is Windows-based and runs on an IBM-compatible PC with a minimum of 8 megabytes random access memory. ROOFER users need to purchase Arc-View 2.1 and have digitized installation maps showing the building footprints.

CERL can modify the maps as needed to:

- Show roof sections.
- Link the user's ROOFER data base to the maps.
- Provide other required assistance in adding the GIS function.

At Fort Lee, Cox recently used ROOFER GIS to brief staff members on the post hospital's roof condition. "It was easy to see the distresses and quantities of areas with problems, and it showed why we need to be fixing roofs," he said. "As we have to compete more intensely for funding, ROOFER GIS can help us enlist the support of

those with approval authority for our projects."

ROOFER GIS is also being beta tested at Fort Riley, Kansas, Sharpe Army Depot, California, and Tracy Defense Depot, California. ROOFER GIS is available from both CERL and CPW.

For more information, please contact Dr. Don Uzarski at CERL, (217) 373-6742 or (800) USA-CERL; or David Bohl or Jim Ledford at CPW, (703) 806-5988/5991, DSN 606. **PWD**

## CPW PROFILE *by Alexandra K. Stakhiv*

John Lanzarone graduated from the Polytechnic Institute of New York in 1978 with a Bachelor of Science degree. After an additional 15 months in graduate school, he got his first job at Fort Benning, Georgia, doing mechanical engineering work in the EP&S Branch. From 1980 to 1988, he did a lot of in-house design and estimating and gained invaluable knowledge in dealing with A/E contractors.

John moved to Virginia and joined the Engineering and Housing Support Center in 1988 as a member of the Mechanical Branch of the Utilities Division. He provided technical support to Army installations, ranging from quick response help to long-term studies on boiler and air-conditioning issues.

Today at the US Army Center for Public Works (CPW), John does some of the same things plus a whole lot more. A big chunk of his time is taken up by his role as the contracting officer's representative for two Army contracts— boiler inspections and boiler operator training and certification.

"The Army requires boilers to be inspected on a yearly basis," says John. "Every installation has a handful of boilers and it's much easier to use the CPW contract than to bid competitively for a contract. This way, an installation can get a much better price since the contractor is bidding on hundreds of inspections."

The scope of work for this contract is John's handiwork. With some MACOMs, he actually coordinates to do the inspections at their installations. But those MACOMs which do not pay for this contract get John's help too. He informs

### John Lanzarone Mechanical and Energy Division



(Photo by Richard Brown.)

their installations of the need for annual inspections and offers them CPW's services and contract. When requested, he also helps them with the paperwork involved in accomplishing the inspections.

"The Army requires that boiler operators be trained and certified and we have a contract to do that," says John. "However, a new regulation is due out soon that is more specific. It says that operators must be trained to meet federal, state, local or NIULPE (National Institute for the Uniform Licensing of Power Engineers) requirements. Our training prepares operators for the NIULPE exam, which is offered at the end of the class."

John coordinates the schedule for classes and issues the delivery orders. As the author of the scope of work for the new training class, he must

also review the course critiques and see to it that changes are made when necessary. The training classes are conducted on-site, as requested by installations on a reimbursable basis.

In his spare time, John acts as a clearinghouse for all mechanical issues. As the marketer of the division's special skills, he takes care of all brochures and flyers which advertise its services. In fact, John plans to visit various MACOMs to see how his division can best help their installations. Last but not least, he mentors Anna Lopez, the division's summer student intern.

When he's not busy visiting amusement parks with his wife and three children, John likes to "dabble" in astronomy and model railroads. **PWD**



# Contract does much more than boiler safety inspections

by John Lanzarone

In September 1995, the US Army Center for Public Works (CPW) awarded a contract to ABS Industrial Verification, Inc. to perform boiler safety inspections. Since many of the units in the Army inventory are over 30 years old, CPW felt it was time the Army units received more than a cursory exterior visual inspection. To address this need, we've expanded the scope of the contract to go beyond the boiler safety inspections required by Army regulation.

Today, the scope of the contract includes:

- Deaerator tank inspections (to include ultrasonic and wet fluorescent magnetic particle examinations).
- Unfired pressure vessel integrity studies.

- Ultrasonic thickness testing of unfired pressure vessels.
- Failure analysis of boilers for the Army.

These services are being offered on a reimbursable basis to installations. However, as in the past, TRADOC and FORSCOM have already paid for their installations to receive the boiler safety inspections.

Remember that AR 420-49 requires all high pressure steam boilers (above 15 psig) and all high-temperature water boilers (above 250°F) to be inspected annually. The AR requires these inspections be performed according to

the rules for Inspections, Section VII, Care of Power Boilers, American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code.

However, the AR does not address inspection requirements for other unfired pressure vessels located within the typical boiler plant. Of special concern are deaerator tanks, air receiver tanks, and cascade heaters. These tanks function with little need for maintenance, and it can be forgotten that they are ASME pressure vessels. While Army sites are not generally subject to state boiler rules and regulations, it's interesting to note that some states require recurring inspections of these unfired pressure vessels.

If you would like more information about the contract, please call John Lanzarone, the contracting officer's representative, at (703) 806-6067 DSN 656. If you would like to request an inspection, please call John or Christie Mills at (703) 806-6080 or DSN 656.

**PWD**

*John Lanzarone is a mechanical engineer with the Mechanical & Energy Division of CPW. He can be reached on the Internet at john.r.lanzarone@cpw01.usace.army.mil*

## Miniature camera for small spaces

by Robert Fenlason

There's a new, cost-saving, miniature video camera that can examine the construction details of boreholes, wells, drainlines, and wastewater pipelines. This camera can be used in areas as small as two inches in diameter and down to depths that exceed 300 feet.

Here are some examples that demonstrate the camera's ability to save money. The video camera has been used successfully to evaluate the integrity of existing monitoring and production wells. Wells that prove to be properly constructed and reusable may be kept in service, eliminating the need for and expense of installing new wells.

Another successful use of the video camera was to evaluate wells at a site where groundwater analysis was not consistent with known hydrogeologic characteristics. The camera recorded improper well construction techniques, explaining the inconsistent data.

The video camera has also located suspicious areas of a 2-inch laboratory drainline for analysis of collected soil samples obtained through small cores in the flooring. Upon careful study of the collected information, it was not necessary to remove the lab flooring, the normal course of action to evaluate the drainline integrity.

The US Army Center for Public Works (CECPW-ES) can help installations that need to know what exists in those small, hard to get at spaces. Assistance is available through an indefinite delivery contract with the Architect-Engineer (AE) firm that developed the miniature camera. For more information, please contact Robert W. Fenlason, III, CECPW-ES, (703) 806-5201 DSN 656. **PWD**

*Robert Fenlason works on water and wastewater issues at CPW.*

## New IP address for CPW

The Internet Protocol (IP) address originally used for Internet Telnet and FTP connection to the DDS changed about four months ago. Until recently, both IPs would work. The old one has now been discontinued.

The new IP address is: 160.147.90.248. The Domain Name cpwdds.belvoir.army.mil may be used as a substitute for the IP address.

POC is Jack Giefer, (703) 428-6073 DSN 328. **PWD**



# Phase out CFCs by FY 2003

by Anna Lopez

The ozone layer is located 10 to 30 miles above the earth's surface. It protects the earth from harmful ultraviolet rays, which can be harmful to human life, and cause loss of crops, reduction of marine life, and destruction of forests.

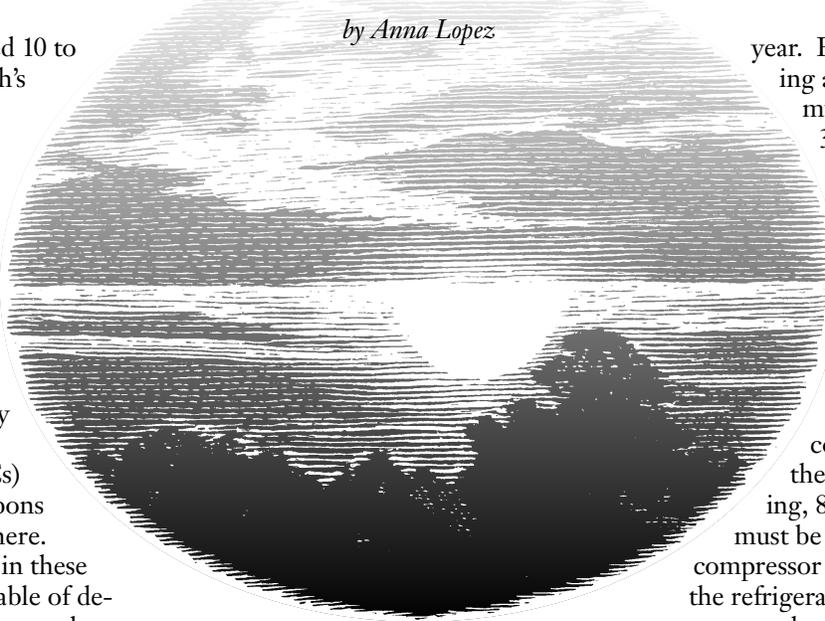
Studies from the mid 1970s show that depletion of the ozone layer is mainly caused by the release of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) into the atmosphere. Each chlorine atom found in these manmade chemicals is capable of destroying up to 100,000 ozone molecules.

To combat this problem, the United States, along with 22 other countries, agreed to the restrictions contained in the Montreal Protocol of 1987. Additional restrictions are also contained in the Clean Air Act Amendments of 1990. Both documents included regulations on the production and consumption of ozone-depleting substances.

On 1 July 1992, it became illegal to knowingly vent CFC and HCFC refrigerants during maintenance, servicing, or disposal of air conditioning and refrigeration equipment. As of 15 November 1995, the no-venting rules were also extended to hydrofluorocarbon (HFC) refrigerants.

The Department of the Army set the date for the complete phaseout of CFCs for essential and nonessential use to be the end of Fiscal Year 2003. Mission-critical situations using CFCs, generally not facilities-oriented, do not presently have a phaseout date. Regardless of the Army phaseout date, as of this past January, the production of CFCs in the U.S. is prohibited. This has led to a dramatic increase in the cost of CFCs.

Much DoD and Army guidance has been issued concerning the management of ozone-depleting refrigerants. The U.S. Army Center for Public Works (CPW) provided some guide-



lines in a memorandum titled "Refrigerant Management in Operation and Maintenance," dated 2 August 1993. CPW also issued an informational memorandum on CFCs, dated 12 June 1996.

Installations must be concerned about five major areas of compliance:

- Technician certification.
- Recycling and recovery equipment certification.
- Leak repair.
- Service record keeping.
- Refrigerant disposal.

This information must be kept readily available to ensure that EPA regulations have been followed.

Under present laws, only four types of refrigerant releases are permitted: minimal quantities released in the course of recapturing, recycling, or disposing of refrigerant; refrigerants emitted during normal operations; mixtures of nitrogen and R-22 used as holding charges or as leak test gases; and small releases of refrigerant which result from purging hoses or from connecting or disconnecting hoses.

For equipment containing 50 or more pounds of refrigerant, regulations require operation within specified leakage rates. For commercial comfort cooling, the maximum allowable leakage rate is 15 percent of the charge per

year. For industrial process cooling and refrigeration, the maximum allowable leakage rate is 35 percent of the charge per year. If the equipment exceeds these rates, the user must either repair leaks or submit a one-year replacement plan.

The requirements for repairing small appliances (such as household refrigerators, freezers, or water coolers) are as follows: when the compressor is not operating, 80 percent of the refrigerant must be recovered; and when the compressor is operating, 90 percent of the refrigerant must be recovered. The recovered refrigerant can be recycled without restrictions if used by the same person. However, if ownership of the refrigerant changes, then that refrigerant must be chemically analyzed to verify that it meets an industry standard of purity.

The EPA requires safe disposal of refrigerant. If the equipment is dismantled on-site before disposal, the refrigerant must be recovered in accordance with EPA's requirements for servicing. For equipment entering the waste stream with the charge intact (i.e., household refrigerators and freezers), the last person in the disposal chain is responsible for the refrigerant recovery.

While the laws and regulations concerning CFCs, HCFCs, and HFCs seem like an added burden to the DPW — and they are — they also help the DPW make a positive contribution to the environment. Scientists have already determined that the growth of the ozone hole is slowing, and that within the next 10 years it will begin closing.

For more information on ozone depleting substances, please contact CPW's Dennis Vevang at (703) 806-6071 or the EPA Ozone Protection Hotline at (800) 296-1996. **PWD**

*Anna Lopez is a summer intern with the Mechanical and Energy Division of CPW's Engineering Directorate.*

# Public Works

*Digest*

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