Public Works Digest

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CPW's Engineering Directorate To the Rescue!

Public Works Digest

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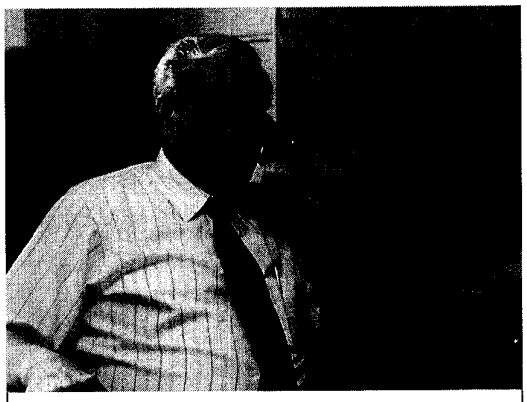
CPW's Engineering Directorate— still your best bet for assistance

by Alexandra K. Stakhiv
(Photos by Richard Brown)

Army installations are currently under tremendous pressure to reduce personnel, not only those who have traditionally taken care of the Army's property, such as the mechanics and carpenters, but also the supervisors and managers. Government workers who once planned careers working at Army installations now have to look elsewhere for jobs.

"Unfortunately, as installations lose people, they also lose their expertise and special skills," says Frank Schmid, CPW's Director of Engineering. "This is where CPW comes in. Our Directorate of Engineering has the ability and personnel to respond quickly to installation calls for help. We provide technical advice, assistance and the promise that if we don't have the answer, we'll find out who does. Typically, we offer three days of consulting assistance free of charge. You can't beat that."

By now, most installations know that if they have a problem, they should call CPW. "Since the days of FESA, the Facilities Engineering Support Agency, when DPWs were DEHs, installations have looked to us as a central point of contact for technical engineering services," says Schmid.



Frank Schmid, CPW's Director of Engineering.

Today, the Engineering Directorate uses contracts combined with in-house experts to act as a force multiplier for DPWs. They also draw on Corps of Engineers laboratories such as WES, CERL and CRREL.

"Last fiscal year," says Schmid proudly, "our directorate issued 140 delivery orders on 34 contracts and supported 65 installations with engineering services."

"We're organized like a typical DPW on an installation," says Schmid. "This makes it easy to find a counterpart who readily understands your problem. We work very hard at keeping current. Each of our divisions is responsible for maintaining and updating the technical manuals in its area of expertise. In addition, if there is some new information that needs to get out to the field quickly, we'll put out a technical bulletin."

While it has not been immune to personnel cuts itself, the Directorate of Engineering, says Schmid, continues to offer a wide range of technical services and other capabilities not available elsewhere. This month, ***Public Works Digest*** highlights the services provided by the six divisions within the Engineering Directorate that can save you time and money and enhance your installation operations.

Sanitary and Chemical Division's (L to R) Malcolm McLeod, Laura Seabeneck, Bob Fenlason, Jane Anderson, Greg Jones, and Jennifer Conrad (seated).

The **Sanitary and Chemical Division** can assist DPWs with:

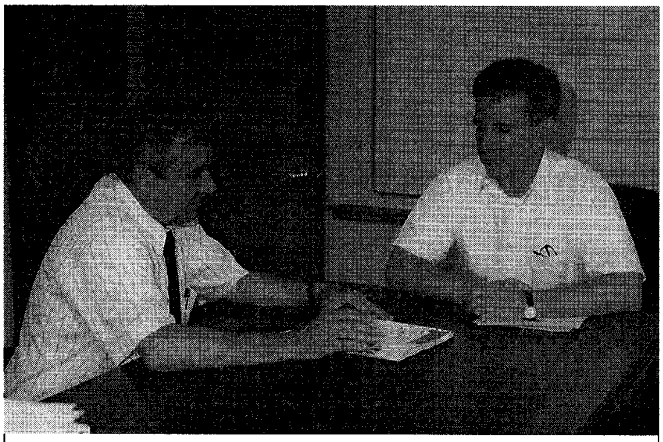
- Water treatment services for boilers, chillers, and cooling towers.
- Potable water treatment and distribution.
- Water conservation.
- Wastewater collection and treatment, including stormwater.
- Solid waste management, including recycling and composting.
- Pollution prevention and spill prevention.
- Corrosion control and cathodic protection of underground storage tanks, pipelines and other facilities.
- Hazardous material management and hazardous waste minimization.

The division's in-house staff provides consulting and contract management service and leverages its in-house services with flexible, responsive A-E

contracts. For major jobs, they turn to contractors, who have extensive experience working with Army installations.

Division chief Malcolm McLeod says, "We have excellent in-house capability backed up by experienced contractors. We even have a library of scopes of work to help DPWs who want to contract on their own."

☎ You may reach the Sanitary and Chemical Division at (703) 806-5196 DSN 656; e-mail: malcolm.e.mcleod@cpw01.usace.army.mil



Frank Schmid with Ed Irish of the Projects Office.

"My privatization team can help with the economic analysis of a proposal, process required approvals, and prepare the legal documents."

This office is also the Army's **single** point of contact for maintenance and repair projects that will cost more than $2 million in maintenance or repair.

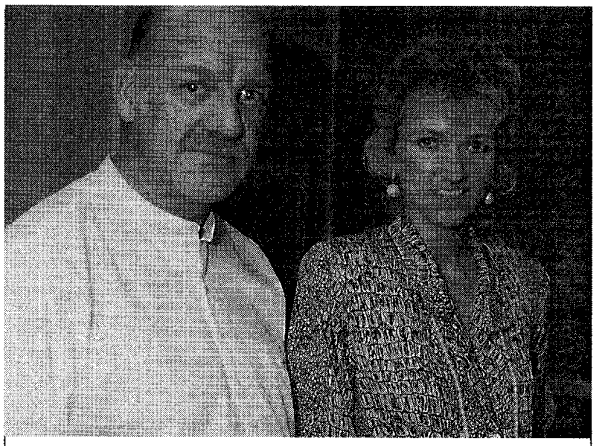
☎ You may reach the Projects Office at (703) 806-6003 DSN 656; e-mail: ed.w.irish@cpw01. usace.army.mil

The **Mechanical and Energy Division** provides DPWs with support in:

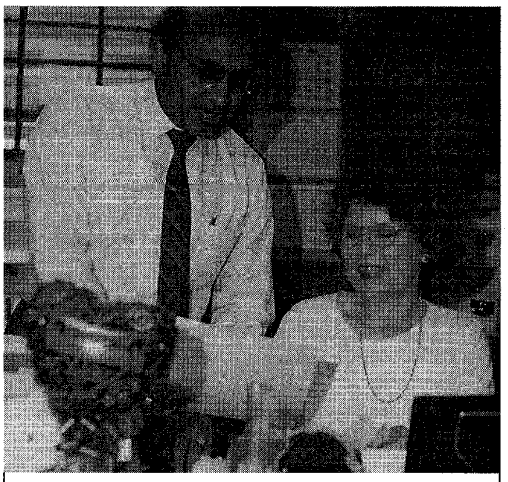
- Mechanical engineering.
- Utilities operation and maintenance.
- Boiler operator training.
- High-pressure boiler inspection.
- Army Energy Program.
- Energy Conservation Investment Program.
- Energy Audit and Retrofit Program.
- Energy managers training.
- Energy savings performance contracting/Demand Side Management
- Renewable energy.
- Defense Utility and Energy Reporting System.
- Natural gas operator training.
- Natural gas system surveys.

The Mechanical and Energy Division acts as a clearing house for information about the Army Energy Program. Harry Goradia, chief of the division, says, "We try to stay current on all the laws and regulations pertaining to HVAC systems, including indoor air quality. Installation energy managers can call on us to provide timely assistance on energy emergencies for all mechanical systems."

☎ You may reach the Mechanical and Energy Division at (703) 806-6111 DSN 656; e-mail: harry. goradia@cpw01.usace.army.mil



Mike Dean and Stephanie Porcaro of the Pavements and Railroads Division.



Harry Goradia and Michelle Suss of the Mechanical and Energy Division.

The **Projects Office**, headed by Ed Irish, provides guidance on:

- Privatization of Army assets.
- Work classification and M&R project approval.

Dual-hatted as CPW's privatization coordinator, Irish works with the installation and the supporting district engineer to help implement the privatization process. "We try to emphasize installation initiative in contacting potential suppliers and alternate utility sources and obtaining privatization proposals," says Irish.

The **Pavements and Railroads Division** offers DPWs these services:

- Railroad track inspector training and certification.
- PAVER training, implementation and inspection.
- RAILER training, implementation and inspection.
- Army installation dam safety assistance.
- Airfield evaluation.
- Army bridge training, inventory and inspection.
- Army dam maintenance inspection training

"Our division recently started doing multi-year work plans for pavements on installations using the MicroPAVER program," says division chief Mike Dean. These reports pinpoint where

funds should be spent and recommend maintenance and repair to preserve the pavement network before it deteriorates beyond repair.

"By monitoring the condition of your pavement," says Dean, "you can plan and program ahead for those sections needing repair and get a head start on projecting the money you will need in the upcoming years."

☎ You may contact the Pavements and Railroads Division at (703) 806-6050 DSN 656; e-mail: mike.dean@cpw01.usace.army.mil

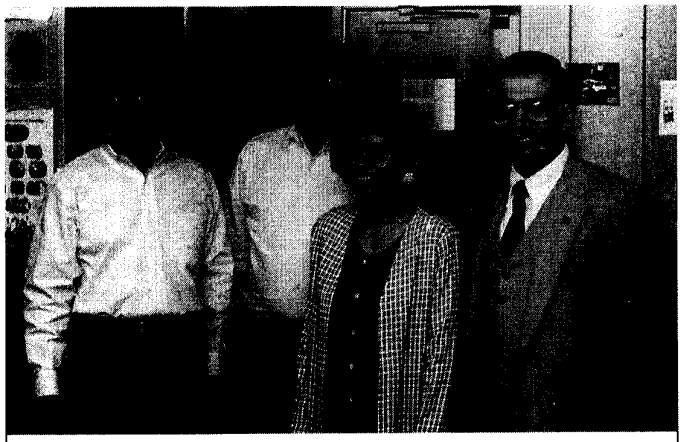
The **Buildings and Structures Division** provides assistance with:

- Roofing systems.
- Lead-based paint hazard management.
- Fire protection/prevention.
- Community family support/child care facility inspections.
- Structural inspections.
- Self-help.
- Americans With Disabilities Act applications.

"My people travel a lot," says division chief Fidel Rodriguez, " so I've organized them into teams, rather than individuals with specialties. This way, there's always someone in the office who can take care of an installation's problems."

Rodriguez encourages installations to call on his division to demonstrate and evaluate new technologies for them as part of the Facilities Engineering Applications Program (FEAP).

☎ You may reach the Buildings and Structures Division at (703) 806-5979 DSN 656; e-mail: fidel.j.rodriguez@ cpw01.usace.army.mil



Electrical Division's (L to R) Hai Ngo, Peter Cascio, Anh Vo, and Angie Stoyas.

The **Electrical Division**, headed by Angie Stoyas, is responsible for electrical expertise in five basic areas:

- Technical guidance.
- Power system analyses.
- Electrical system testing and troubleshooting.
- Technical support to CPW's Prime Power Battalion.
- Technical support to the ACSIM.

"The near daily innovations in the electronics field bombarding installation managers today have really intensified the need for our services," says Stoyas. He predicts that the DPW's need for electrical engineering assistance will continue to increase as the Army downsizes.

"We get the most calls from installations for power system analyses, primarily the short circuit and protection coordination study," says Stoyas. "We do about four to five of these a year on a reimbursable basis. We also have the highly sophisticated equipment needed to handle electrical infrastructure studies."

☎ You may reach the **Electrical Division** at (703) 806-6113 DSN 656; e-mail: angie.p.stoyas@cpw01.usace.army.mil

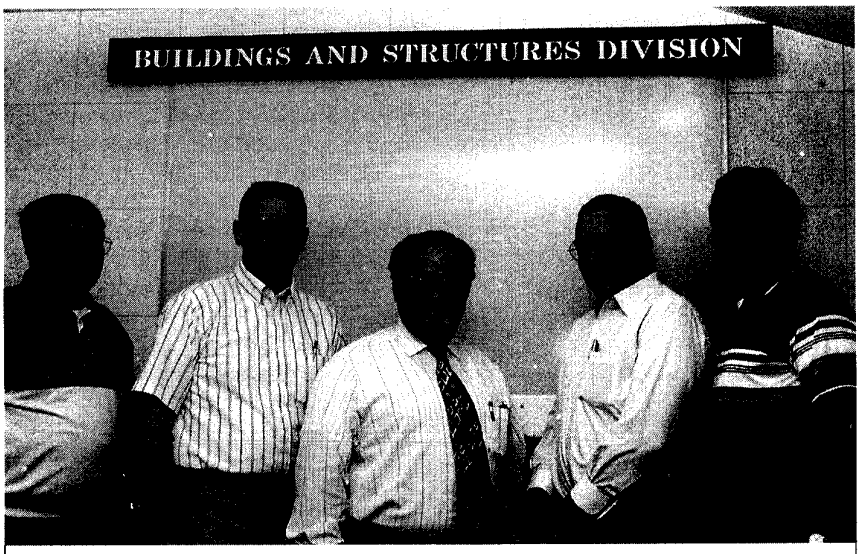
✦✦✦

"The installations," concludes Schmid, "know best what their problems are and what they need to solve them. Our job is to try to find engineering answers for their technical questions to fit that bill. The Engineering Directorate stands ready to answer their calls for assistance."

☎ The Engineering Directorate welcomes your comments and suggestions on how to improve their services. You may contact Schmid directly at (703) 806-6023 DSN 656; e-mail: frank.j.schmid@cpw01.usace.army.mil

PWD

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



Buildings and Structures Division (L to R): Al Knehans, Jerry Spence, Fidel Rodriguez, Chuck Racine, and Jim Ledford.

NACE clarifies criteria for cathodic protection

by Malcolm McLeod

Cathodic protection (CP) consists of applying an electrical current to a buried or submerged structure in order to make the structure's voltage potential more negative. This eliminates corrosion by preventing current flow from the structure to the electrolyte.

For many years, the effectiveness of a cathodic protection system has been determined by measuring structure-to-electrolyte potentials. These are the potentials existing across the interface between the structure being protected and the electrolyte (usually soil or water) in which it is located.

For example, in the case of a buried steel structure, a structure-to-soil potential of at least -0.85 V measured against a copper/copper sulfate ($Cu/CuSO_4$) reference electrode has been the most commonly used criterion for determining if corrosion protection is adequate.

In 1992, NACE, the National Association of Corrosion Engineers, in its Recommended Practice for Control of External Corrosion on Underground or Submerged Metallic Piping Systems (RP 0169-92), clarified this criterion to emphasize that the -0.85 V value refers to a polarized potential. "Polarized potential" means that the cathodic protection current is momentarily interrupted, so that no current is flowing to the structure at the instant the potential measurement is recorded.

If a polarized potential cannot be obtained (i.e., the CP current cannot be interrupted), the voltage drop which occurs in the electrolyte between the structure and the reference electrode must be considered when applying the -0.85 V criterion. Methods for estimating or eliminating this "IR drop" are outlined in CPW's Public Works Technical Bulletin (PWTB) 420-49-3.

RP 0169-92 lists an additional criterion for testing the adequacy of cathodic protection: "A minimum of 100 Mv of cathodic polarization between the structure surface and a stable reference electrode contacting the electrolyte." This is the difference between the structure's "natural" potential (that which exists before any protective current is applied), and the "instant-off" potential (that which exists immediately after protective current is interrupted).

Another previously used criterion, a 300 Mv shift between the structure's natural potential and the potential which exists with the protective current applied, has been removed from the list of acceptable criteria in NACE's 1992 version of the Recommended Practice.

☎ If you would like a copy of PWTB 420-49-3, or need assistance in corrosion control, please contact Malcolm McLeod or Jane Anderson, (703) 806-5196/5214 DSN 656 or e-mail: jane.l.anderson@cpw01.usace.army.mil. PWD

Malcolm McLeod is the chief of the Sanitary and Chemical Division in CPW's Engineering Directorate.

Procuring water treatment chemicals

It is important that installations specify that vendors of water treatment chemicals price their proposals for boiler and cooling water treatment chemicals based on the volume of water to be treated. Installations should ask for the cost per a specific number of gallons of make-up water treated.

If this is not a requirement in the installation's contract, a sales representative will price his product on a per drum or per gallon basis. Thus, a vendor with the most diluted product may win the contract.

Requiring bids to be based on cost per amount of water treated allows all vendor bids to be compared on the same basis.

The frequency of services provided by vendors also varies, depending on the volume of chemicals purchased and policies of the individual contractors. Installations should specify what services they require from a vendor and at what frequency.

Periodic service visits from the vendor are only spot checks of the water treatment program. Such visits are not frequent enough for the proper operation of boilers and cooling towers. Dependence on unspecified vendor visits for water quality testing without in-house operation control invites trouble. Even with a good contracted water treatment program, installation personnel should perform some in-house testing for operation control and participate in the CPW Industrial Water Quality Assurance Program.

CPW's Sanitary and Chemical Division (CECPW-ES) is preparing a model scope of work for contracts for chemical treatment of various utility systems, such as steam boilers and chillers. It will be available early in FY 97.

We are also finalizing a consolidated handbook (Industrial Water Treatment) for chemical treatment of all utility systems. It will cover proper procedures and technology for water treatment programs for steam boilers, condensate, hot water boilers, cooling towers, chillers and closed loop systems. The handbook will be published as a CPW Public Works Technical Bulletin at the end of FY 96.

☎ For further assistance in procuring water treatment services or questions on chemical treatment programs, please contact Malcolm McLeod or Nelson Labbe, CECPW-ES, (703) 806-5196/5202 DSN 656. PWD

Engineered management systems—tools for planning

Do you know the best way to maintain your installation's facilities? Can you establish work plans and budgets to reach or maintain predetermined facility condition levels? An engineered management system (EMS) can answer these questions for you.

An EMS is not a computer program. It is a system of inspection, cost analysis, condition analysis and engineering management that is tied together and facilitated with a software program.

The EMS process includes an:

- Inventory.
- Standardized inspection procedure.
- Standard of deficiencies and an acceptable compliance criteria level to compare against.
- Condition index.
- Maintenance and repair requirement identification.
- Condition prediction.
- Life-cycle analysis.
- Conflict analysis.
- Annual- and long-range work planning.
- Automated (grid pad) inspection.
- Geographic Information System (GIS) interface.
- Budget and programming interface.
- Installation Status Report (ISR) interface.

Using an EMS, you can prepare annual- and long-range maintenance plans with a high degree of confidence and then validate them. EMS can support programming actions and optimize available maintenance funds using EMS analysis and condition prediction. EMS can also help engineer managers determine where critical maintenance problems exist in their facility, the cost to fix these problems and which areas should be fixed first.

EMS is a family of systems that include PAVER, RAILER, ROOFER and several others that are under development. The EMS is now in WINDOWS format and uses hand-held computers for field inspections. Costs for implementations and inspections have been cut and the systems can run reports faster now.

☎ For more information on PAVER, please contact Ali Achmar, CECPW-ER, (703) 806-6058, DSN (656); for RAILER, Mike Dean, CECPW-ER, (703) 806-6050, DSN (656); and for ROOFER, Al Knehans, CECPW-ER, (703) 806-5990, DSN (656). PWD

A little maintenance can go a long way

by Ron Mundt

You're sitting at home one evening reading your newspaper, and the lights go off. An electrical power line has short circuited because a squirrel crossed a bushing on the electrical power pole... A back-hoe digger cuts through an electrical power cable and your entire street loses electricity... These are everyday occurrences that irritate us, but the systems are actually doing what they're supposed to do.

When a short circuit occurs on a distribution system, the closest protective device (circuit breaker or fuse) should operate (trip) to isolate the faulted component with the least amount of disruption to the system.

But distribution circuit breakers can only operate (trip) if their servicing battery bank supplies enough DC control power. Just as your car will not start if your battery is low or dead, a distribution circuit breaker will not trip (open) during an electrical fault if your substation batteries are not maintained.

A current transformer senses the faulted current and sends a signal to the relay that establishes the "set point" at which the circuit breaker will operate. The battery supplies the control circuit that causes the circuit breaker to open. If any one of these is not functioning correctly, the circuit breaker will not operate.

Recently, an electrical fault occurred at an Army installation that resulted in massive electrical damage and electrical shutdown to most of the post. It involved 5 Kv switchgear, 5 Kv circuit breakers, two 4MVA oil-filled power transformers, 26.4 Kv oil filled circuit breakers, and bushings.

The damages, which may exceed $1,000,000, occurred at three locations—the power transformer area, main substation switchgear area, and at a switching station located remotely from the main substation. In all three areas, the circuit breakers did not operate because the batteries were not maintained and had very low voltage. The lack of maintenance of the relays and circuit breakers may also have contributed to the electrical failure.

This was not an isolated incident. In this era of massive maintenance budget cuts and downsizing, it is very difficult to keep up with preventive maintenance. Nevertheless, substation batteries need to be checked monthly as outlined in TM 5-684, Facilities Engineering Electrical Exterior Facilities. Installations must make every effort to ascertain the proper operation of substation batteries to avoid incidents like these.

☎ POC is Ron Mundt, CECPW-EE, (703) 806-5181, DSN 656-5181; email:ron.k.mundt@cpw01.usace.army.mil PWD

Ron Mundt works as an electrical engineer in CPW's Directorate of Engineering.

New standard contract lowers lead-based paint costs

The cost of abating lead-based paint has dropped to $3.30 per square foot, thanks to advances in technology and a new standard contract developed by CPW in partnership with Fort Worth District, Construction Engineering and Research Laboratories (CERL), Huntsville Division, and the Office of Housing and Urban Development (HUD).

The indefinite delivery contract is similar to a Job Order Contract (JOC) and allows similar flexibility, according to Chuck Racine, a civil engineer with the CPW Buildings and Structures Division.

In the Spring of 1994, the estimated cost of abating lead-based paint was $14 per square foot, Racine said. This cost was so prohibitively high that installations would have found it cheaper to tear down or board up existing housing and build new family housing.

The CONUS-wide contract makes abatement of lead-based paint doable by providing installations with a tool to tackle the problem at a reasonable price, according to Racine. But at $3.30 per square foot, all lead-based paint abatement can't be done at once.

Prior to this contract, lead-based paint abatement was a piecemeal, hit-or-miss process— each installation was on its own. With the CONUS-wide standard contract, the Army has consistency in implementation, ensuring that new technology gets to all installations at the same time.

Racine says this contract is modeled on a Corps of Engineers Fort Worth District contract and incorporates the work of various federal agencies, including:

- Specifications for removal and abatement, as well as containment drawings developed by the Corps of Engineers, Huntsville Division.
- Draft bid schedules developed by Fort Worth District.
- Specifications for encapsulates, clearance, cleaning and laboratory accreditation adapted from the December 1993 and February 1994 HUD Guidelines.
- The independent government estimate developed from empirical data collected from the CERL and HUD demonstration projects.

The types of work performed under the standard contract are:

- Testing of paint surfaces, air monitoring, waste disposal and clearance.
- Paint removal, to include stripping and component removal.
- Abatement, to include enclosure and encapsulation.
- Waste disposal.

Initially, CPW will manage these contracts on a reimbursable basis. As of 11 April 1996, CPW has awarded ten delivery orders totaling $1.4 million worth of lead-based paint abatement or inspections under this contract. CPW has also received requests from installations for additional work in FY 96 totaling over $1.5 million in abatement work. Other Department of Defense agencies may make use of this contract, and CPW is willing to work with these agencies and their appropriate contracting offices.

It should be pointed out that under the McKinney Act, excess government buildings must be considered for possible use as housing for the homeless, so any decision to board up or tear down family housing would have to take the McKinney Act into consideration. And in the event a family housing unit is turned over to the local housing authority for use as housing for the homeless, any lead-based paint hazard would have to be abated before any homeless people could move in.

☎ POC is Chuck Racine, CECPW-EB, (703) 806-5025 DSN 656 or e-mail: charles.w.racine@cpw01. usace.army.mil

PWD

New barrier to lead paint saves time, money

Dealing with lead-based paint in Army family housing can be a time-consuming, difficult and expensive proposition. You can enclose the surface with aluminum siding, or you can remove the lead-based paint and repaint the surface, but either way, you'll be spending some money and going to considerable trouble to get the job done.

A new commercially available product may be just what the Army is looking for. Lead Barrier Compound can be brushed, rolled or sprayed on, and it seals in ("encapsulates") the lead-based paint surface.

Lead Barrier Compound actually prevents the migration of lead to the surface, thus eliminating future lead dust contamination and potential liability. Depending on the surface it is applied to, Lead Barrier Compound will be effective for anywhere from 7 to 20 years.

CPW manages an indefinite quantities contract that has cut the cost of lead-based paint abatement to $3.30 per square foot. CPW's contractor, LVI Environmental, recently suggested a switch to two commercially available products that would do a better job of sealing in lead-based paint surfaces, at no added cost to the government. These products are:

- Lead Barrier Compound, a water-based non-toxic blend of polymers and resins, blended specifically to form a barrier to lead-based paint.
- Power Block, a quick-drying, high-performance 100 percent acrylic latex coating specifically designed to prime stained or water-damaged surfaces that contain lead-based paint.

CPW is the contract project manager for all Army facilities, and has the right of first refusal for all other DoD facilities and clients. Specifications call for the contractor to:

- Wet scrape the surface to remove any deteriorated or peeling paint.
- Use a High Efficiency Particulate Air (HEPA) vacuum on the surface.
- Prime with Power Block.
- Apply Lead Barrier Compound for the final coat.

Fort Irwin, California, is the first installation to see the implementation of this contract, according to Chuck Racine, a civil engineer with CPW's Buildings and Structures Division. One of the installation's projects will encapsulate lead-based paint in 63 family housing units, and another project will do so in 152 units.

The $3.30 per square foot cost at Fort Irwin includes mobilization, disposal, protective containment, overhead, profit and hazardous waste, Racine said. This cost is $2 per square foot cheaper than removing the lead-based paint and repainting, and $2.40 per square foot cheaper than enclosing the surface with aluminum siding.

The encapsulation process always takes worker safety into consideration. Everybody in the construction area needs to be in full protective gear until results from air quality sampling tell them they can safely take off the gear, Racine said.

Surface imperfections will show through after the Lead Barrier Compound has been applied. Lead Barrier Compound can be mixed with a coloring agent to match almost any color. However, those who select the color should bear in mind that the color will not change for 7-20 years — the compound is permanent.

Lead-based paint is a serious health hazard that's especially dangerous to young children, who ingest or inhale paint chips and dust. Lead Barrier Compound also contains a bitter-tasting anti-ingestion agent called Bitrex — the bitter taste is aimed at discouraging children from eating it.

☎ POC is Chuck Racine, CECPW-EB, (703) 806-5026, DSN 656-5025. PWD

Seismic screening and evaluations

Executive Order 12941, Seismic Safety of Existing Federally Owned and Leased Buildings, requires federal agencies to assess the seismic safety of their buildings and prepare a cost estimate for mitigating unacceptable seismic risks. The US Army Corps of Engineers, in coordination with ACSIM, the North Pacific Division Seismic Center of Expertise, and CPW, has developed a management plan to comply with those requirements.

USACE and CPW took the lead in preparing, submitting, and securing the dollars to begin the process. The Seismic Center of Expertise and USACE developed the guidelines.

According to the plan, the Army will assess the seismic safety of buildings within installations in the high and moderate seismicity areas, as defined by the Federal Emergency Management Agency (FEMA). This involves conducting site specific geologic hazard surveys, structural and non-structural building screening and evaluation.

"The evaluation process will provide the installations with an overall condition of those buildings that are at high seismic risk."

Charlie Gutberlet, a structural engineer at HQUSACE, says, "This document has it all; it gives the criteria to follow, outlines the process involved, and provides the forms required with examples to follow."

The first three installations selected are Forts Lewis, Riley, and Richardson. CPW will be coordinating the work with the installations. In-process review meetings will take place prior to and during the screening and evaluations.

The initial step is an inventory reduction plan developed from the IFS-M real property inventory by Steve Sweeney, structural engineer from CERL.

"This inventory reduction plan reduces the number of buildings to be assessed by applying exclusion criteria established by FEMA, says Sweeney, "i.e., one-story buildings of light steel frame or wood construction with areas less than 3,000 square feet, buildings intended for incidental human occupancy, or those occupied by persons for a total of less than 2 hours a day. At Fort Lewis, we started with 4,600 plus buildings and identified 270 building groups for screening and evaluation."

Screening and evaluation will be done in three phases: geologic hazard surveys, structural and non-structural building screenings, and evaluations.

Geologic hazard surveys will determine the site soil type profile, fault rupture zones, liquefaction zones, and potential landslide zones. The screenings involve reviewing the structural drawings for each building and a visual inspection of the entire building. The screening process will also provide structural information needed for the evaluation process. A detailed structural inspection will be conducted to determine whether life-safety risks exist and, if so, what mitigation options are available.

Approximately half of the buildings screened at Fort Lewis will undergo extensive structural evaluations. These include mission essential buildings and buildings with hazardous materials.

The goal is to conduct the screening and evaluations at all high and moderate seismicity areas, provided funding is obtained. The Army must complete the work prior to 1 December 1998, when HQUSACE must submit a report to FEMA of the findings and the estimated cost for mitigating unacceptable seismic risks. The one piece missing, mitigation, is not part of the Executive Order.

The evaluation process will provide the installations with an overall condition of those buildings that are at high seismic risk. This would be the initial step in identifying thorough structural design for specific buildings or a group of buildings.

☎ POC is Fidel J. Rodriguez, Chief, Buildings and Structures Division, (703) 806-5979 DSN 656. PWD

ROOFER— the Army's roofing maintenance management system

ROOFER is an automated engineered management system (EMS) that provides a cost-effective program for managing built-up and single-ply membrane roofs. ROOFER was developed by CERL, with technical assistance provided by CRREL, the Navy, the Air Force, two civilian consultants, and the US Army Center for Public Works.

Upcoming modifications to the ROOFER program include:

- Development of a "windows" format.
- Use of a laptop computer to collect inspection data.
- Program generated ten-year budget program.
- Incorporation of Geographical Information Systems (GIS).

A ROOFER program for asphalt shingle roofs is presently under development and should be available in late 1997.

The many benefits of ROOFER include:

- Inventory of roofing assets.
- Development of detailed roof plans.
- Detection of roof defects using a visual inspection and aerial infrared roof scans.
- Development of condition indexes for flashings, insulation, and overall roof condition, network analysis reports, a ten-year budget program, project analysis evaluation, cost effectiveness analysis, and work requests.
- Training of personnel.
- Development of an installation database and summary report.

By mid-1996, 26 Army installations will have implemented ROOFER. Currently implementing the ROOFER program are Fort Benning, GA, phase II; Fort Campbell, KY; US Military Academy, NY, phase III; Tracy and Sharpe Depots, CA; and Aberdeen Proving Ground, MD, phase IV.

The chart below shows a ten-year budget program for Fort Benning. Fort Benning's budget requirements are considered typical of the funds that each installation should spend annually to bring its roofs to an acceptable level and to keep them there.

ROOFER
Ten-Year Budget Program for Built-Up & Single-Ply Membrane Roofs
(Cost = $000 in FY94 Funds)

INSTALLATION: Fort Benning, GA
INSPECTION DATES: Jan – Mar 1994

BUILDINGS: 160 Sections: 551
AREA: 2,940-765 SF

Function	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Totals	Cost/SF
Immediate repairs	$125										$125	*
Other repairs	$916						$41				$957	$0.43
Replacement Projects	$980	$42	$49	$33	$135	$131	$71	$217	$39	$88	$1785	$5.25
Semi-annual IM&R		$59	$59	$59	$59	$59	$59	$59	$59	$59	$531	$0.02/yr
IR roof moisture scan	(every fifth year)					$29					$29	$0.01
Visual re-inspection	(every fifth year)					$88					$88	$0.03
TOTALS	**$2,021**	**$101**	**$108**	**$92**	**$194**	**$307**	**$171**	**$276**	**$98**	**$147**	**$3,515**	

**included with other repairs*

CPW is responsible for managing the ROOFER program and providing assistance for its implementation, using Indefinite Delivery Type Contracts. CPW also has contract guide specifications available, where all the work, except the aerial infrared roof moisture scans, can be done by a local A&E contractor. To reduce the cost, CPW staff perform the aerial infrared roof moisture scans. CPW's aerial IR scanning systems can be mounted on an HU-1 (HUEY) or UH-60 (BLACKHAWK) helicopter. By using the aerial IR scanning system, all the installation's insulated roofs can be surveyed for wet insulation in one night.

The following provides a general cost estimate for implementing ROOFER using various resources.

- Using CPW's IDTC contract (all functions, except infrared scan). *Estimated Cost = $.05 - .08/SF.*
- Using CPW (infrared scan), in-house (develop roof plans) and local A-E (accomplish remainder of work). *Estimated Cost = $.03 - .05/SF.*
- In-house (all actions, except infrared scan by CPW). *Estimated Cost = .02 - .04/SF.*

The cost of the aerial infrared scan and photo mission is $5,000 to $9,000, which covers the shipment, maintenance, and use of the infrared equipment, development of photos, and travel per diem. The costs will vary slightly depending upon the location. For the daytime photo mission and nighttime infrared scan, the requestor must provide a helicopter and crew for one or two days and nights.

While the initial implementation of the ROOFER program at the installation appears costly; it is a very good investment for:

- Developing an overall installation roof management program.
- Providing a ten-year budget program to outline the installation's short- and long-range roofing budget requirements.
- Identifying small roof problems that can be corrected before they become costly replacement projects.
- Documenting all repair and replacement requirements by work requests.

ROOFER is solving one of the Army's biggest roof problems—the lack of a comprehensive and cost-effective program for managing its very costly built-up roofs and single-ply membrane roofs.

Presently, the Army's low-sloped roofs last ONLY 8-10 years, instead of the intended 20 years. This means that the actual cost of an average-sized roof (15,000 SF) over a 20-year period is about $197,000. With ROOFER and a continuing maintenance program, you can realize an average roof life of 20-plus years, resulting in cost savings of approximately $88,000 per building or slightly over $14,000,000 for an installation the same size as Fort Benning.

☎ POCs are: Al Knehans, David Bohl, Jim Ledford, or Fidel Rodriguez, CECPW-EB, (703)806-5990/5988/5991/5979 DSN 656, FAX: (703) 806-5592/5020, e-mail: al.h.knehans@cpw01.usace.army.mil; david.c.bohl@cpw01.usace.army.mil; jim.w.ledford@cpw01.usace.army.mil; fidel.j.rodriguez@cpw01.usace.army.mil PWD

"Lessons Learned" offer help

CPW has published a number of "Lessons Learned" in various technical areas. These short "war stories" contain summaries of experiences, good or bad, that actually occurred on Army installations or in the equivalent civilian sector. These stories indicate how even small changes or issues can have a major impact on an installation program and help us to not repeat past mistakes.

Some of the Lessons Learned prepared by the Sanitary and Chemical Division (CECPW-ES) for various technical areas include:

- Lessons Learned in Corrosion Control on Water Storage Tanks
- Lessons Learned in Corrosion Control on Underground Gas Distribution Piping
- Lessons Learned in Corrosion Control of POL Tanks and Piping
- Lessons Learned in Cooling Tower Treatment
- Lessons Learned in Condensate Corrosion and Treatment
- Lessons Learned in Boiler Water Treatment
- Lessons Learned in Wastewater Treatment Operator Assistance Program, Vol I

A number of new Lessons Learned are currently being prepared by the Sanitary and Chemical Division. These include:

- Lessons Learned in Recycling
- Lessons Learned in Oil/Water Separator Procurement
- Lessons Learned in Wastewater Treatment Operator Assistance Program, Vol II
- Lessons Learned in Water Treatment Plant Operator Assistance Program
- Lessons Learned in Plastic Plumbing Materials

If you have any questions or problems in the above areas, please contact the Sanitary and Chemical Division of CECPW's Engineering Directorate at (703) 806-5194 DSN 656 and we will put you in contact with the subject expert.

☎ POC is Malcolm McLeod, CECPW-ES, (703) 806-5196 DSN 656. PWD

Shadowing the Director of Engineering

by Nicole Lussier

Through the Center for Public Works, I am participating in a three-year internship program. Based in the Directorate of Engineering, Sanitary and Chemical Division, and using an Individual Development Plan (IDP) as a guide, I am rotating through various segments of the organization. This enables me to see and experience firsthand the many facets of the Army's Public Works activities.

As part of my internship training, I recently shadowed the Director of Engineering, Frank Schmid. For a week, I accompanied and observed him as he carried out his duties. I attended his meetings, listened in on his telephone conversations, and reviewed his in-box. I was introduced to many people, some of whom were already familiar to me, and it was nice to put the face with the name.

Listening to Frank and observing him for a week helped me to better understand how the CPW-puzzle fits together. His many responsibilities include reviewing and signing outgoing correspondence. This helps him keep current with what is going on in his six divisions and to determine how much money they need and for what programs. Frank must also approve the training necessary to keep his workers up-to-date on current methods and technology.

Frank explained his decision making process and his open-door policy. Since he is on the go so much, he really has to count on his staff to get the work done and keep him updated on their progress. He conducts weekly staff meetings to discuss problems and project status. He represents the directorate at the CPW weekly staff meeting and then reports back to his division chiefs to update them, in turn, on current information about CPW and Army programs.

While shadowing Frank, I saw how the agency looked from a different point of view and how his decisions could have far-reaching consequences impacting many people. I got to ask questions that helped me to understand our organization's mission a little better. I also got to see a part of CPW I normally wouldn't get to see.

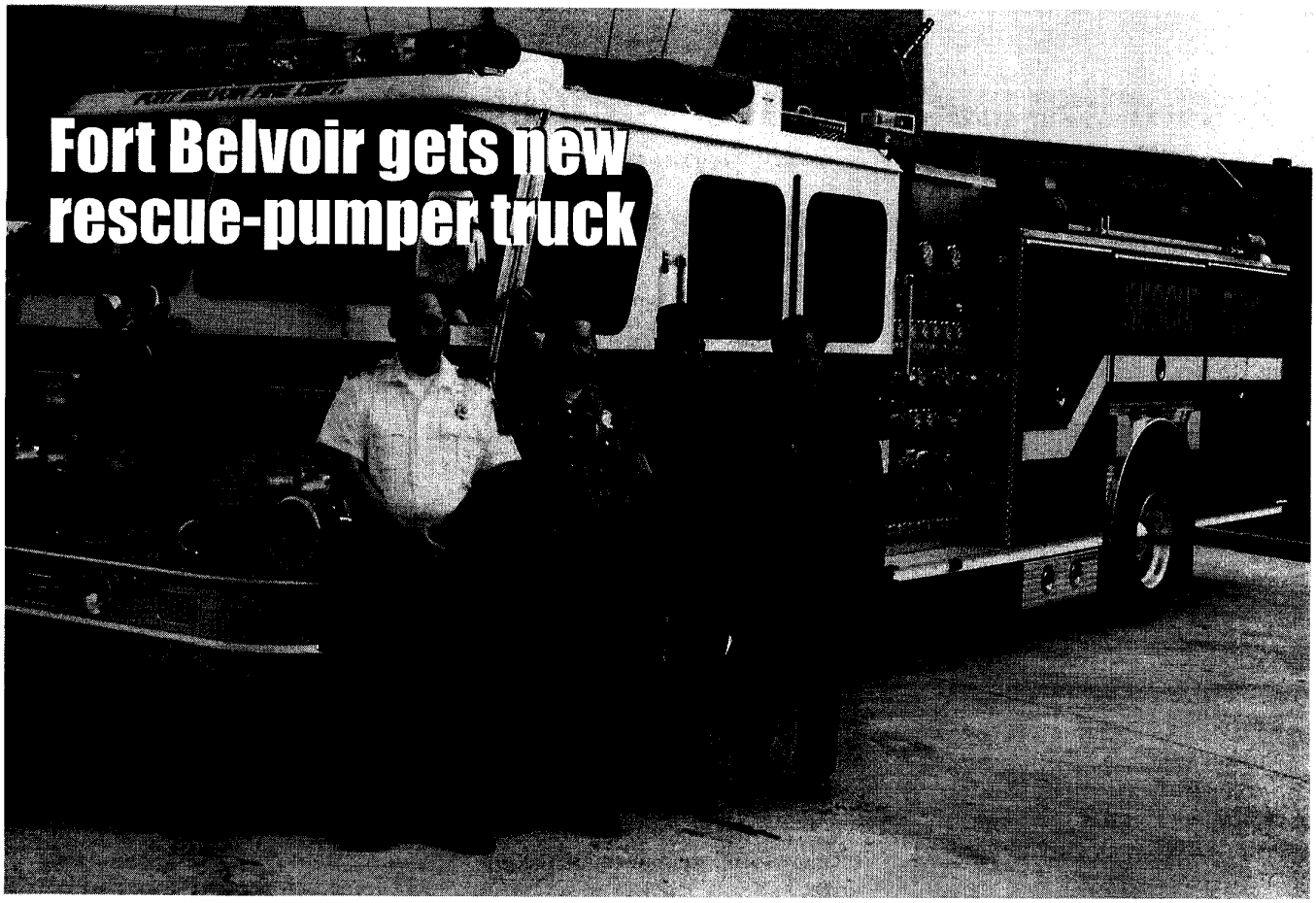
And it's not all fun and games. I couldn't help noticing that Frank was always on the go, often eating lunch in the car in between meetings. Each day, we were in a different place talking to someone new. Even when we were back in the office, he was still conducting meetings. It was never the same day twice.

During the course of our week together, Frank offered me many hints on how to succeed in my career. He stressed the importance of obtaining a professional engineering license and gaining broad experience in the Army. A mistake that interns often make, he said, is to try to attain high grades too quickly. They need to move around while they have the opportunity, gain wide experience with an agency like CPW, and then start looking up. I plan to do just that.

Now that it's over, I see my shadowing experience as very hectic and fast-paced, but exciting and informative at the same time. I miss it already. PWD

Frank Schmid counsels Nicole Lussier on the fine points of a government career in engineering.

Nicole Lussier works in the Sanitary and Chemical Division of the Engineering Directorate.



Fort Belvoir gets new rescue-pumper truck

The Fort Belvoir Fire Department's new rescue-pumper truck is the first of its kind — literally. The new truck combines the functions of a rescue vehicle and a pumper truck, and at a cost of $260,000, is more than $100,000 cheaper than the two separate vehicles would have been. Combining two vehicles into one also saved manpower spaces.

The design ideas for the truck originally came from Belvoir's Assistant Chief Michael Kerr and Captain George Parr, the department's apparatus officer. With a lot of help from CPW's Karl Wolfe, the idea went to the automotive engineers at Army Materiel Command, who fleshed it out and turned it over to the General Services Administration, which contracted the assembly line work to an Ocala, Florida, company called Emergency One.

At the time this photo was taken, the rescue-pumper truck had only been in service for three days, and had already been on several calls. The truck's A Shift crew, from the left, are Captain George Parr, Sergeant W.J. Jenkins, and Firefighters Claire Rader and Chris Larson. PWD

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

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Preventive maintenance—getting back to the basics

by Dave Davis

As DPWs downsized over the years, one of the first functions to be "cut" was the preventive maintenance of major pieces of heating and air conditioning (HVAC) equipment. In fact, a survey of 16 DPWs in TRADOC completed in 1994 indicated the following regarding recurring PM of major equipment/systems:

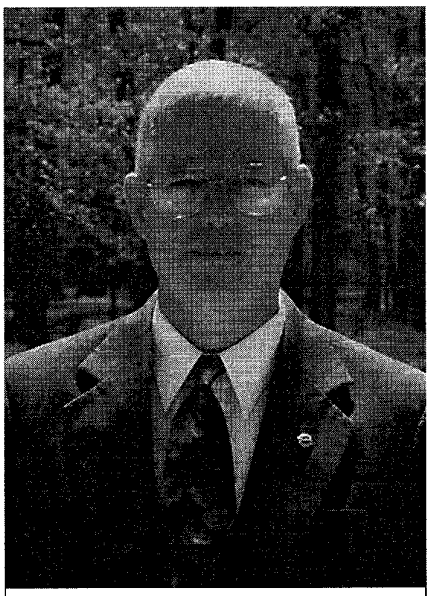
No scheduled HVAC PM accomplished	4
Scheduled PM for hospital HVAC only	2
PM accomplished only at seasonal semiannual start-up	4
Very limited PM, on a drastically reduced frequency	5*
Extensive scheduled PM accomplished	1**

** Includes 2 by DPW RPMA contractor*
*** DPW RPMA contractor*

In addition, a majority of the DPWs indicated that, due to manpower cuts, their HVAC shops could not keep up with the significant service order backlogs that occur annually during peak heating and cooling seasons due to equipment failures. In essence, they had become totally reactive in maintaining HVAC equipment.

At Fort Leavenworth, the lack of a PM program started a dangerous trend toward more frequent and costly premature failures of major pieces of HVAC equipment. When a piece of equipment failed prematurely in the hospital, we realized that it was time to get back to doing what was originally intended as a basic mission of the DPW: HVAC equipment preventive maintenance.

That decision was reinforced by another 1994 survey of six randomly-selected, large East Coast and Midwest industries. That survey showed a direct relationship between HVAC equipment "up" time and profits. Now PM of both production line *and* production-related HVAC equipment has top priority.



Dave Davis

Canon of Virginia hired a temporary "service order" workforce to perform HVAC equipment breakdown repairs while the regular workforce organized and implemented a plant-wide HVAC equipment PM program. Within six months, the program was up and running, and the regular workforce resumed not only the dwindling "service order" repairs, but the plant-wide equipment PM program.

The trend toward scheduled PM is also showing up in smaller plumbing/heating service businesses in the private sector.

Many of these smaller businesses are now offering annual maintenance contracts, which include scheduled equipment PM early in both the heating and cooling seasons.

This strategy allows smaller companies to keep their service order backlogs at manageable levels, ensuring prompt service response to those fewer customers who still experience equipment failures during seasonal peaks.

Since DPW HVAC shops have essentially the same customer service responsibilities (large buildings and family housing systems), this annual maintenance contract concept has direct relevance to our DPW business.

A special task force in the DPW took on the mission of reinstituting such an HVAC equipment PM program at Fort Leavenworth. The task force consisted of the U-Do-It Store manager (who happened to have excellent automation skills), the HVAC shop foreman, the DPW automation management officer, and an HVAC mechanic. The mechanic's input ensured grassroots support from the other HVAC mechanics, who are the real key to the success of such a program. In addition, the mechanic made the program responsive to individual systems and mechanic needs, as well as "user friendly."

The DPW empowered the committee to choose whatever program they believed would work best at Fort Leavenworth. Eight equipment maintenance scheduling programs were evaluated. Five were readily available on the open market, while three others were already in existence within DOD (CERL's "Workman" and two Navy systems).

The committee then developed formal selection criteria, much like the typical request for proposal selection process. The two most important criteria were "user friendliness" and compatibility with PCs already in the shops. Others included availability of standard reports, ease in customizing reports, whether or not standard PM tasks are already loaded in the program, and ability to create new, equipment-unique PM tasks.

After applying these criteria, the committee settled on Microwest's Advanced Maintenance Management System (AMMS) 6.0. The software was procured and delivered in a record six days. It didn't hurt that some of the first buildings to go under the new HVAC equipment PM program were

to be the approval activities of DOIM, DOL Property Book, and Procurement.

Once the software was received, the *real* work began. The conscious commitment to equipment/system sustainment by top DPW management spared the HVAC shop from downsizing "cuts" over the past two years. However, the transition to PM of all major HVAC equipment postwide was to take place over a 4-5 year period. This would allow the existing service order mission to still be accomplished without impact on customer service.

The committee developed a priority list of buildings to go on the system, starting with the hospital and major ADP facilities on post. Then they included major academic buildings, as well as all four major barracks.

Since our HVAC mechanics were already organized into zones, each mechanic surveys his own buildings and equipment, and gathers the information to be loaded into the program. He also knows the equipment better than anyone else, and has been empowered to alter manufacturer-recommended tasks and frequencies.

As of this date, the 27 largest buildings on post are totally under this new program. In the year that these buildings have been under the program, there has already been a noticeable decline in HVAC-related service orders.

Using IFS-M, we selected and tracked HVAC service orders and costs in 7 randomly selected buildings out of the original 27. We found a 16-percent reduction in the number of HVAC service calls compared to the previous 12-month period. Even more significant was the 55.5-percent reduction in overall HVAC system maintenance costs for those 7 buildings compared to the previous year.

In fact, the program has been such a success that other foremen are now, on their own initiative, adding other utility system maintenance tasks. For example, they have since added 176 hydropulse boiler systems, 15 large domestic hot water systems, 365 water valves (exercising), nine large water main flushing areas, and 227 backflow prevention devices.

We are optimistic that, over time, our decision to get back to the basics will save us both time and money, and improve overall equipment reliability and system life expectancy for our customers.

☎ POC is Dave Davis, ATZL-GCE, (913) 684-5646 DSN 552. PWD

Dave Davis is the Deputy Director of Public Works at Fort Leavenworth, Kansas.

Fort Gordon—a model installation

by Peggy Kerrigan Heusinkveld

Fort Gordon, Georgia, is home to the U.S. Army Signal Center, where some 13,000 soldiers and their families live, work, and train on the 55,000-acre installation. With about 3,500 civilians on its payroll, it is one of the largest employers in east Georgia. Installation residents spend an estimated $635-million each year in local businesses.

These statistics are the reason why Fort Gordon was a good candidate for a Department of the Army program to create a model installation for the 21st century. The program was begun in 1993 to increase local community involvement in day-to-day management, and to unite military and civilian communities into a single community with common interests.

Garrison commander COL Larry Crockett says that some of the most important changes on the installation involve environmental issues. Fort Gordon's energy office focused on improving energy efficiency, and in 1994 those efforts earned the fort first place in TRADOC's energy conservation competition. The installation received a $30,000 cash award which, Crockett says, will be used to expand energy conservation programming, and for the computer system that monitors the installation's energy use.

In the environmental area, the community is reducing engine emissions by replacing old vehicles with models that use cleaner burning natural gas fuel. "We found that natural gas vehicles were readily available, and didn't cost any more than the gasoline powered vehicles. We just incorporated the purchases into our existing schedule for vehicle replacement. The only extra cost was sending some of our mechanics for maintenance training," says Crockett.

Nature lovers in the area have made their voices heard too. Fort Gordon has a fascinating array of plants and animals. Some of them are rare enough to be included on the federal threatened and endangered species list. The community wanted a way to experience the flora and fauna on this unique natural landscape. Fort Gordon's Natural Resources Management Office went to work securing the funds and planning the construction of a wildlife viewing blind and a nature trail.

A survey of the two communities helped identify the changes to planning and operations that needed to be made. Many of these changes resulted from the ideas of individuals in the local areas. Suggestions are reviewed by the Community Planning Board at their monthly meetings. "The board is made up of family members, retirees, military and civilian representatives," Crockett says, "as well as officials from local government and business. The meetings are open to the public, and many people come to see what is going on."

At Fort Gordon, "customer driven" planning is helping to identify the best solutions for community issues. "When you involve the community, and everyone is involved in the decisions, you are more likely to find the best way to get things done," Crockett said. PWD

The ABCs of offloading contracting requirements

by Michael J. Organek

A recent memorandum* from the Assistant Secretary for Research, Development and Acquisition states that "Some activities are interpreting Army contract 'offloading' policy too narrowly..." and creating unnecessary difficulties in acquiring supplies and services.

To avoid statutory and organizational conflicts, here are some rules to remember for intra-DoD offloading:

According to the Federal Acquisition Regulation (FAR), Subpart 17.5, "The Economy Act provides the authority for placement of orders between major organizational units within an agency." It defines interagency acquisition as "...a procedure where an agency needing supplies or services (the requesting agency) obtains them from another agency (the servicing agency)."

Army Regulation 420-10 tells you what support services an installation may obtain from a USACE district/division/laboratory or USACPW, such as technical engineering, training, consulting, RPMA (custodial, refuse collection, roads & grounds, entomology, and more), and automated data processing requirements.

Every requesting activity (DPW) has an assigned servicing contracting office. If you wish to use another contracting office, you must coordinate the decision with the assigned contracting office. The same acquisition package and supporting information provided to the assigned office goes to the other office. You must also reveal any conditions or restrictions on funds to the servicing contracting office.

Accepting a Military Interdepartmental Purchase Request (MIPR) constitutes a one time agreement. Repeated contract support requests require a Memorandum of Agreement (MOA) signed by the *commanders* of both agencies or installations. Once the MOA is in place, technically, the contracting support is no longer considered offloading.

Another memorandum** from the Assistant Secretary for Research, Development and Acquisition states that "It is the Corps' multi-disciplinary technical capability that non-Corps activities should be acquiring, not the mere awarding of contracts." It further states that MACOM engineers and installations commanders should have procedures in place to support their Corps districts for the functions that the Corps can do more efficiently. Since "offloading" is not being performed, "The Corps becomes a valid source for acquiring the specified services or categories of service."

Remember, users/requiring activities should give their assigned supporting contracting office the opportunity to execute and manage significant procurement actions before they are offloaded to other Army activities. However, the assigned contracting office does not have a right of first refusal.

If certain categories of requirements are to be routinely sent to a contracting office other than the one assigned to you, identify them in workload planning (the Advanced Acquisition Plan and Annual Work Plan) and program oversight meetings.

Finally, when using offloading, you should be careful of any political ramifications due to downsizing, which may lead to parochial "turf" conflicts, Anti-Deficiency Act violations, and higher prices for goods and services. Year-end "dumping" of funds and circumventing the Competition in Contract Act are still no-nos. Following the acquisition approval process is the only way to go.

☎ POC is Michael J. Organek, CECPW-FM, (703) 428-6328 DSN 328. PWD

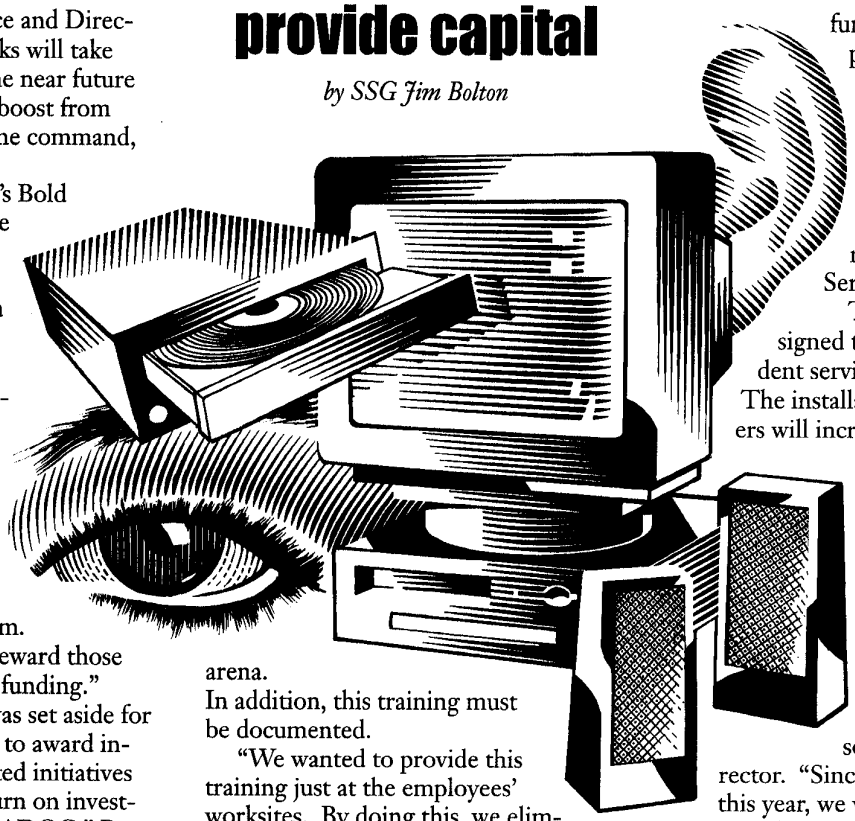
Michael J. Organek is a procurement analyst in the Directorate of Facilities Management.

** This memorandum, subject: Contract Offloading Clarification, is on USACPW's Home Page of the World Wide Web, and may be accessed through http://www.usacpw.belvoir.army.mil.*

*** This memorandum, subject: Contract Offloading Policy, is also on CPW's Home Page of the World Wide Web.*

Bold Grants provide capital

by SSG Jim Bolton



Fort Lee's Safety Office and Directorate of Public Works will take some bold steps in the near future thanks to a financial boost from the Training and Doctrine command, Fort Monroe, Virginia.

As part of TRADOC's Bold Grant program, Fort Lee is receiving more than $400,000 in funds for projects which promise a substantial return on investment.

"The Bold Grant program is a TRADOC initiative," Garrison Commander COL David W. Betts said. "TRADOC has money available, and instead of just dividing it up, they came up with the program. The system is set up to reward those with good ideas but lack funding."

Roughly $4 million was set aside for the Bold Grant program to award installations which submitted initiatives possessing a positive return on investment. "Throughout TRADOC," Betts said, "every project submitted which showed a true, tangible return was funded. Those installations which did their homework and submitted good, rational ideas received money to execute those ideas."

Fort Lee activities submitted several different packages to the Bold Grant program.

Rosalene Graham, Fort Lee safety manager, is excited about the $38,500 her office will receive to purchase multi-media kits and computer software. This equipment will be used for multi-media safety training for soldiers and civilian employees.

"Our initiative will provide the multi-media equipment so new soldiers and employees can sit down at a computer and interact with a training module," Graham said. "This will be followed by a computer-scored examination. The software will document and record all training."

Graham said the Occupational Safety and Health Administration requires a variety of annual training in the safety arena.

In addition, this training must be documented.

"We wanted to provide this training just at the employees' worksites. By doing this, we eliminate the need for contracting out instruction or tying up a supervisor's time for training employees."

"This training can be included in local standard operating procedures," Graham added, "and be tailored to our needs. There's no need to wait for scheduled classes. Training can take place at any time."

The Safety Office will use its Bold Grant funds to purchase seven sets of a variety of software titles and seven multi-media kits to upgrade computers. These multi-media training stations will be set up at the DPW; the Directorate of Logistics; Directorate of Community Activities; Directorate of Plans, Training, Mobilization and Security; the Safety Office; and two in 49th Quartermaster Group facilities.

Thanks to the Bold Grant program, these organizations can more easily meet the OSHA requirements and at the same time provide high quality, state-of-the-art training.

DPW will be using its $381,000 grant to supplement existing utilities funding for a series of projects to replace failing steam lines with new boilers in the 9300 barracks area, according to Michael Sly, acting chief of the Engineering, Plans and Services Division.

This project is designed to provide independent service to the barracks. The installation of separate boilers will increase efficiency and reduce re-occurring maintenance costs.

"Although this project has been high up on our priorities list, we probably would not have been able to begin until next year," said LTC Carla Coulson, Public Works director. "Since we were successful this year, we will continue to submit packets for additional potential Bold Grant projects."

"There are other facilities with steam line systems," said Sly. For example, the 8150 barracks run off steam line systems. They will eventually be replaced with boilers as well."

"Bold Grant provides the capital needed for programs which have a major impact on the installation," Betts said. "TRADOC intends to continue this program next year. I am in favor of it, and I have asked to make the grants available on a semi-annual basis instead of once a year to stimulate the creation of new initiatives."

Betts said the Garrison staff is actively seeking new submissions for next year's Bold Grant program. "It just makes good business sense," he said. PWD

SSG Jim Bolton is the acting noncommissioned officer in charge of the Public Affairs Office, U.S. Army Combined Arms Support Command and Fort Lee, Fort Lee, VA.

Getaway for weary travelers

by SSG Jim Bolton

For a mere $25 per night, weary travelers can enjoy not only a good night's rest but a choice of exotic accommodations. The Fort Lee Lodging Operations office offers travelers a choice of 12 suites, with themes ranging from sports and the colorful tropics to Civil War-era and bridal motifs, at Feldman Hall, building 4229.

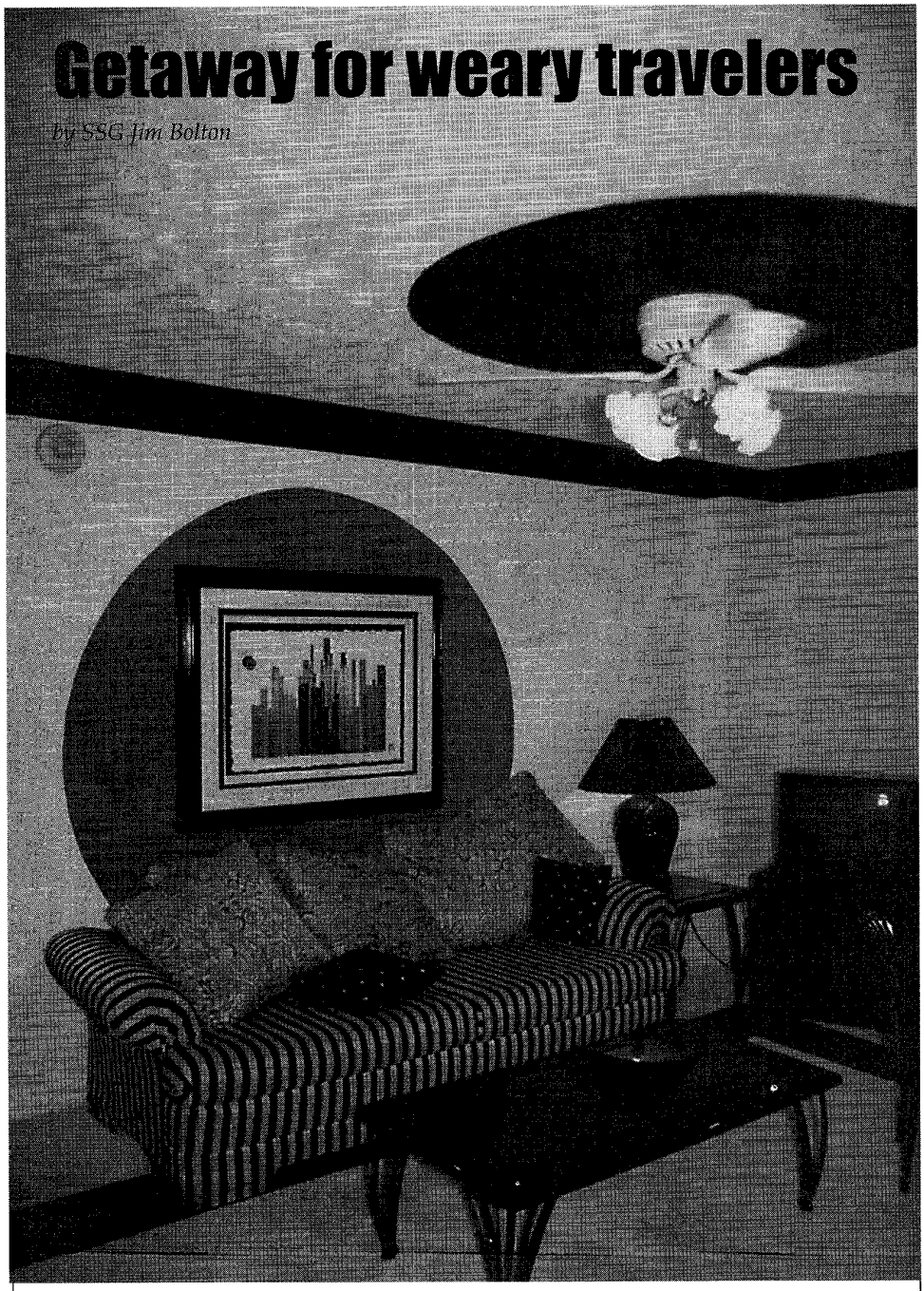
The suites have been renovated within the last two years, said Craig C. Turner, administration assistant with the lodging office. "The renovations were done entirely in-house," he said. "From the theme and design to ordering furniture, painting and artwork, the rooms took about six weeks each to renovate."

The cost of the renovations was about $130,000 or an average of $11,000 per apartment-size suite, according to lodging officials.

"The building was built in the early 1970s," Turner said. "Because of the wear and tear, we just needed an upgrade. And, when we built the guest house with an additional 40 rooms, we felt we could use the rooms in [building] 4229 for suites."

Lodging maintenance personnel replaced molding, trim and baseboards as well as stucco ceilings and installed ceiling fans. All bedding, furniture and linens were purchased economically at local department stores, the Post Exchange or through General Service Administration catalogues, Turner said.

"Before, each room had two double beds and pull-out couches," he said. "They were primarily used for soldiers enroute to new assignments. Now the rooms, open to all military grades, are more suited for couples or temporary duty personnel accommodations. These rooms are more exotic, fancier than some expensive hotels downtown."



After 6 suite. (Photo by SSG Jim Bolton)

Each suite houses a sleeping area, living area, bathroom and kitchenette. "We all take a lot of pride in our suites knowing that someone from our staff came up with the themes and designed them," Turner said. "Our housekeepers are assigned individual suites to maintain. They all put in extra time and add that 'extra touch,' because the suites are so different than any other room."

The Fort Lee Lodging Operations office is constantly working to improve its facilities for its customers," Turner said. "I consider us one of the best. We have received compliments from our patrons. Many of them will request the same room after staying when they return to Fort Lee." Normally, each suite is available for up to two weeks at a time. PWD

New FEAP workshops on water quality modeling, sewer management

Two training workshops to introduce decision-support software for public works personnel are planned for 4th Quarter FY 96 at locations to be determined. If you're responsible for your installation's water distribution system or sanitary sewer, these workshops will be a great opportunity to learn how the programs can help you manage water quality or sewer system operation. Limited funding for both workshops is available to cover travel and per diem under the Facilities Engineering Applications Program (FEAP).

The first workshop covers EPANET. This Windows-based program can monitor decay of chlorine residual, trihalomethane formation, and other chemical properties in water distribution systems. In addition, it:

- Provides a flow model that simulates water quality within the system.
- Determines pipe flows, node pressures, storage tank elevations and substance concentrations throughout the distribution network.
- Calculates water age and trace sources.
- Models reactions within the water and with the pipe walls, as well as chemical mass transport between the pipe walls and flowing water.

EPANET successfully modeled the effects of several options for improving Fort Monmouth's water quality in a FEAP demonstration. It also proved useful in planning effective flushing and chlorine booster activities.

The program will especially benefit any installation that has water quality problems such as reduced flow due to downsizing, chlorine residual, red water, dissolved oxygen concentration, and chemical imbalance.

The second workshop will introduce a proprietary system modified for application to Army bases (the Army has an unlimited use site license). The Sewer Inventory and Maintenance Management System for Infiltration and Inflow Control (SIMMS-IIC) computer program is a powerful tool for sewer rehabilitation.

Wastewater collection systems on military installations require periodic maintenance, repair, and occasional upgrading. Deteriorated wastewater collection systems are vulnerable to infiltrated water leaking into the system through cracks in the pipes, manholes, and building laterals, which adds significantly to operation and maintenance costs. SIMMS-IIC gives installation managers a logical, systematic way to evaluate sewer systems and determine the cost-effectiveness of any rehabilitation program to control infiltration and inflow (I/I).

Before using SIMMS-IIC, a Sewer System Evaluation Survey (SSES) is done to determine the specific location, estimated flow rate, method of rehabilitation, and costs of rehabilitation versus cost of transportation and treatment for each defined source of I/I. Steps in the SSES include:

- Visual inspection.
- Smoke testing.
- Dye water tracing and flooding.
- Internal television inspection.

Once the SSES is done, data from the subsystems targeted for rehabilitation are evaluated in the SIMMS-IIC computer program for processing. Results are listed in many forms, including an optimal rehabilitation plan, a detailed benefit-to-cost ratio, and a system task prioritization. Finally, different rehabilitation plans can be compared, and the effectiveness of each can point to the optimal solution.

Benefits include better control of the wastewater collection system, reduced operations and maintenance (O&M) budget (10-15 percent) as a result of better planned O&M versus unexpected trouble shooting, and optimized decision-making for future rehabilitation projects.

Both workshops, co-hosted by CERL and CPW, will be one-day hands-on training sessions geared towards new users. Attendees will receive lecture and classnotes and copies of the software. Call soon to take advantage of the FEAP funds; one person per installation for each workshop, please.

☎ POC is Richard Scholze, (217) 398-5590 or 800-USA-CERL; ext 5590 or FAX: (217) 398-5564. PWD

CPW sponsors privatization training

CPW's Directorate of Engineering has developed a three-day training workshop for personnel at all levels who are or will be involved in utilities privatization.

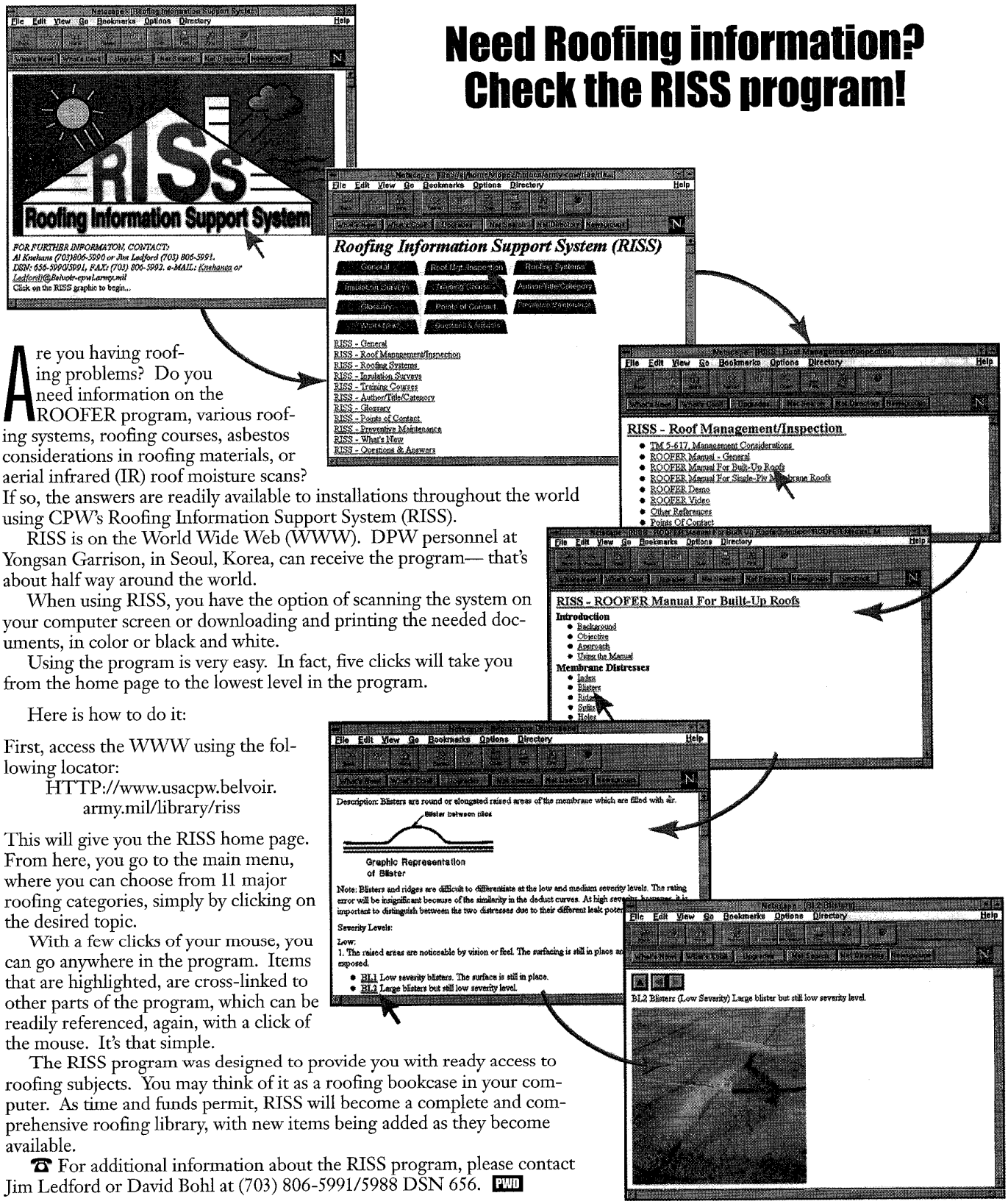
The workshop addresses all aspects of utility privatization including:

- Rate development.
- Cost of service studies.
- Life-cycle cost analyses.
- Utility contracting.
- Real estate easements and transfer.
- Fair market value.
- Environmental assessments.
- Legal issues.
- Base Realignment and Closure.

The first session was held in Springfield, Virginia, from 16-19 April 1996. Attendees included installation, MACOM, HQDA and Corps of Engineers personnel. The Directorate of Engineering plans to update the training based on the responses from the this session.

Two more sessions are planned for the current fiscal year; one on the West Coast from 18-20 June and one in the Southeast in mid-September to reduce travel costs. Tuition is $300.00. For more information, please call Myron Kellberg at 703-806-6020 DSN 656. PWD

Need Roofing information? Check the RISS program!



Are you having roofing problems? Do you need information on the ROOFER program, various roofing systems, roofing courses, asbestos considerations in roofing materials, or aerial infrared (IR) roof moisture scans? If so, the answers are readily available to installations throughout the world using CPW's Roofing Information Support System (RISS).

RISS is on the World Wide Web (WWW). DPW personnel at Yongsan Garrison, in Seoul, Korea, can receive the program— that's about half way around the world.

When using RISS, you have the option of scanning the system on your computer screen or downloading and printing the needed documents, in color or black and white.

Using the program is very easy. In fact, five clicks will take you from the home page to the lowest level in the program.

Here is how to do it:

First, access the WWW using the following locator:

HTTP://www.usacpw.belvoir.army.mil/library/riss

This will give you the RISS home page. From here, you go to the main menu, where you can choose from 11 major roofing categories, simply by clicking on the desired topic.

With a few clicks of your mouse, you can go anywhere in the program. Items that are highlighted, are cross-linked to other parts of the program, which can be readily referenced, again, with a click of the mouse. It's that simple.

The RISS program was designed to provide you with ready access to roofing subjects. You may think of it as a roofing bookcase in your computer. As time and funds permit, RISS will become a complete and comprehensive roofing library, with new items being added as they become available.

☎ For additional information about the RISS program, please contact Jim Ledford or David Bohl at (703) 806-5991/5988 DSN 656. PWD

New Army Deis Data System

A new Army Deis Data System (ADDS) is being developed to replace the current (ADDS) PAX system. The new system has many benefits over the old ADDS. It will:

- Reduce the operating costs of the PAX system, currently about $250,000 per year, to about $50,000 per year.
- Be a local PC-based reporting program that provides a user-friendly Graphical User Interface (GUI) and reporting system. This will free installations from having to stay on the phone lines to make their energy data entries.
- Give installations free access to the PC program at all times. They will not have to rely on input windows to enter their data.
- Give installations access to reports showing their data input and usage, allowing them to better plan their energy needs and resources.
- Provide screen input boxes, and the computer will do the calculations wherever needed. On the old system, the user had to make manual calculations and enter the data on a single line.
- Automatically generate a file which will be transmitted to the Headquarters Adds Computer located at Fort Belvoir, Virginia. From there, reports will be sent to DoD and become available to MACOMS and subMACOMS.

The first new ADDS system will run in the DOS environment and the following upgrade will be Windows based.

☎ POC is John Simmons, CECPW-EM, (703) 806-6066 DSN 656. PWD

CPW PROFILE

by Alexandra K. Sylchin

James Webster

Business Improvement Division

In 1992, James (Jim) Webster was the chief of the Executive Software and Communications Division at the Engineering Automation Support Activity (EASA), but he was also spending a few hours a week working for the Engineering and Housing Support Center (EHSC) as chief of the Engineering and Housing Systems Division. When EASA was dissolved, it was only natural that he join EHSC as a permanent staff member.

Jim Webster helps installations determine the LAN configurations that will work best for them. (Photo by Richard Brown.)

Today, he's assisting in the migration of IFS-M into the client/server environment and away from the UNISYS 5000 mini-computers. "With Windows NT, we're stepping into a whole new world," says Jim enthusiastically. "We're finally getting rid of a big piece of antiquated equipment, and what we'll save on one year of maintenance will cover the cost of buying a new dual Pentium server with a 3-year warranty. Then, we'll load the IFS-M database onto the server, the application software onto the client PCs; and the users will move from DOS to a Windows environment."

To prepare installations for the change to LANs, Jim developed the **IFS-M Cookbook to the Future**. This handbook tells installation personnel how to install a LAN, reducing the need for contract support during the critical site-survey and cable installation phase.

Jim provides installations with technical advice on selecting, configuring, and purchasing computer and LAN equipment. Acting as the liaison between installation representatives and contractors, he uses government contracts as well as the open market to select and procure equipment for installations. If there's a problem, Jim assists by working with the installation and vendor to find a suitable solution.

Jim spends much of his time on the telephone working with installations and support personnel in resolving computer and LAN problems. A question he is often asked is how the new equipment interfaces with existing equipment. The answer is "Great!"

"I spent so much time on the phone that I developed a serious problem with my shoulder from pressing the phone between my neck and shoulder so tightly," recalls Jim. He eliminated the problem by purchasing a headset.

Many installation LANs have already been configured or partially configured in the past. When an installation calls Jim, he can pull its configuration up on his computer screen and have better insight into what additional equipment may be needed, where problem areas may exist, or how best to expand that LAN.

"The future of the automation field really looks great," says Jim. He also enjoys working on his computer at home, which is hooked up to his office computer, and reading computer magazines. You may reach Jim at (703) 428-7101 DSN 328, e-mail: jim.f.webster@ cpw01.usace.army.mil PWD

Lessons from the Army's leading Pollution Prevention Program

by Peggy Kerrigan Heusinkveld

Fort Eustis occupies a finger of land that stretches between the Warwick and James Rivers as they wind their ways to the Chesapeake Bay, near Newport News, Virginia. A quiet morning might reveal a white tailed deer tip-toeing along a pine edged marsh or an occasional bald eagle navigating through the tree tops.

The Army has owned this scenic spot since 1918. Currently, Fort Eustis is home to the U.S. Army Transportation Center, NCO Academy, Army Aviation Logistics School, 8th Transportation Brigade, Joint Strategic Deployment Training Center, and the 7th Transportation Group. Fort Eustis also has a full complement of facilities that support the nearly 15,000 people working and living there. Considering the proximity to their neighbors in nature, it is no surprise that pollution prevention is a special concern of the Environmental and Natural Resources Division (ENRD), Directorate of Public Works, at Fort Eustis.

Intense activity, in the past, took its environmental toll on parts of the 8,228 acre peninsula. Fortunately, because of increased knowledge in the environmental sciences and dedication to restoring and safeguarding the natural resources in and around all Army installations, the future is bright.

An important element of that future is ENRD's comprehensive environmental planning. The division's Pollution Prevention Program is one of its keys to securing that future. Fort Eustis has adopted a policy that says "Pollution should be prevented or reduced at the source whenever feasible..."

Helen Worthington, ENRD's pollution prevention coordinator, says the program had a small start but now reaches to the very core of installation operations.

"At first, we did things we could do for free," Worthington remembers. "For instance, we started the Commander's Environmental Excellence Awards Program." The award acknowledges military units and civilian activities that make significant contributions to im-

proving environmental practices on the post. "It was a simple thing, but it drew attention to what we were ultimately trying to do," she says.

Today, Fort Eustis is a leading Army installation for pollution prevention initiatives, having received the Department of the Army's Quality Award for Pollution Prevention in 1994. This is recognition for successfully carrying out a number of source reduction strategies.

For instance, ENRD reviewed the quantities, use and storage of hazardous chemicals at about 80 Fort Eustis activities. This information was incorporated into a database that established a baseline for hazardous chemical use. This data is updated quarterly and will allow Fort Eustis to track information for preparing reports to regulators and assessments of pollution prevention efforts.

Worthington helps post activities identify and substitute materials or equipment that are more environmentally friendly. She invites manufacturers to demonstrate safer products directly to their potential users. One example is the use of aqueous parts washers. This water-based technology virtually eliminates the need for some petroleum-based solvents. The installation also uses an anti-freeze recycler, oil filtering units, sludge de-watering systems and other technologies that enable Fort Eustis to generate less waste.

Worthington's training efforts have also contributed to the successes of the pollution prevention program. Training is instrumental to pollution prevention at all Army installations. To augment this training, Worthington has developed presentations that familiarize newcomers with the installation's environmental efforts.

Additionally, each April Fort Eustis hosts "Eco-Logic." Designed to coincide with Earth Day events, the fair educates and entertains about 500 visitors with over 40 environmental exhibits. "It takes the coordination and hard work of everybody on the post," says Worthington. "Their enthusiasm shows how much they believe in what we are doing here."

Further, the environmentally-minded folks at Fort Eustis also take part in the annual "Clean the Bay Day," usually held in June.

Military and local residents remove litter and debris from the lower reaches of the Chesapeake Bay to help protect the fragile waterway.

"Their enthusiasm shows how much they believe in what we are doing here."

—Helen Worthington, ENRD's pollution prevention coordinator

Recent pollution prevention efforts address unit work sites and the centralized management of hazardous materials. These are being accomplished by two of the post's newest programs.

The first gets people at work sites to focus on opportunities for pollution prevention. Units are encouraged to identify potential problem areas with the help of a Pollution Prevention Opportunity Assessment (PPOA). With ENRD's help, and this assessment, organizations can identify problem areas and decide how to minimize or eliminate them.

"The best ideas come from the people who are on the job," Worthington says of the soldiers and civilians she meets. She points out that providing the instruction for conducting this assessment is vital to its success. "Give them the tools to be responsible for their own programs," she says. "They are most likely to follow through with solutions they come up with on their own. And, let's face it, they know their jobs better than anyone else does."

Another pollution prevention measure is the management of hazardous materials. Called HAZMART, the pilot program is modeled after a successful program initiated by the Navy. Fort Eustis is the first Army troop installation to test the plan.

The 10th Transportation Battalion of the U.S. Army Transportation Center (USATC) is currently on-line with HAZMART's automated system called Hazardous Inventory Control System (HICS). HICS tracks the stocking and distribution of hazardous materials, such as paints and solvents. The system will track the materials used by the 10th Battalion during its test period, and if successful be expanded to other USATC units at Fort Eustis and Fort Story, Virginia.

The aim of the HAZMART program is to reduce the volume of hazardous material by centralizing its procurement and distribution. This, in turn, should reduce the volume of hazardous waste created by the activity. An evaluation period will determine the program's success. If feasible, HAZMART could be implemented postwide.

Fort Eustis' ENRD emphasizes the importance of making everyone feel involved. "Pollution prevention goes across the boundaries of all program areas," Worthington says. "You can buy all the fancy equipment in the world, but if people who use it don't understand why they need to make the change, nothing will be accomplished."

Worthington gets people's attention and keeps it by consistently reinforcing the ideals of pollution prevention and acknowledging improvements.

By striving to eliminate the sources of pollution, the natural resources staff is guiding the Fort Eustis community toward good environmental stewardship. As their reward, the people who live and work on Fort Eustis can be reminded of their achievements whenever they gaze across the gleaming waterways and wildlife-rich wetlands that they call home. PWD