



Flood-fights not for timid, weak

Article by Kevin Quinn
Photo by Bob Etzel
Omaha District

Emergency response work is not for the timid, the quiet, or the weak. Omaha District proved that when vicious rainstorms hit the Midwest in June.

Thanks to assistance from the U.S. Army Corps of Engineers and the Iowa National Guard, Hamburg, Iowa, survived the latest in a string of floods dating back to 1993. Weeks of storms pummeled the center of the country and severely tested water control measures. The stages and flows on the East and West Nishnabotna rivers set records.

Events leading up to the Hamburg emergency operations began on June 13 when heavy rains pounded the Nishnabotna River basin, already saturated after two weeks of storms. A 13-inch rain in Atlantic, Iowa, in a 12-hour period broke the state record. Eight to 12 inches fell on the Nishnabotna basin, with the heaviest rainfall centered on the East Nishnabotna.

With seven flood-fighters in the Hamburg vicinity, the Corps could predict the potential overtopping of federal and non-federal levees. The Hamburg levee, designed to pass 47,000 cubic feet per second (cfs) with two feet of freeboard, (60,000 cfs with no freeboard), was in the cross-hairs of a 90,000 cfs flow.

Omaha District Emergency Management Chief Jack Rose, working via home telephone on Sunday June 14, ordered sandbags and a pump for civil defense personnel at Red Oak, Iowa. It would be the first of eight pumps supplied to southwest Iowa and northwest Missouri for the flood-fight.

The district's Chief of Hydrology and Water Control, Tim Temeyer and his staff, also worked that Sunday monitoring the storm. At about 4 p.m., the National Weather Service (NWS) issued a flood warning for the East Nishnabotna River from Elliott to Riverton, Iowa.

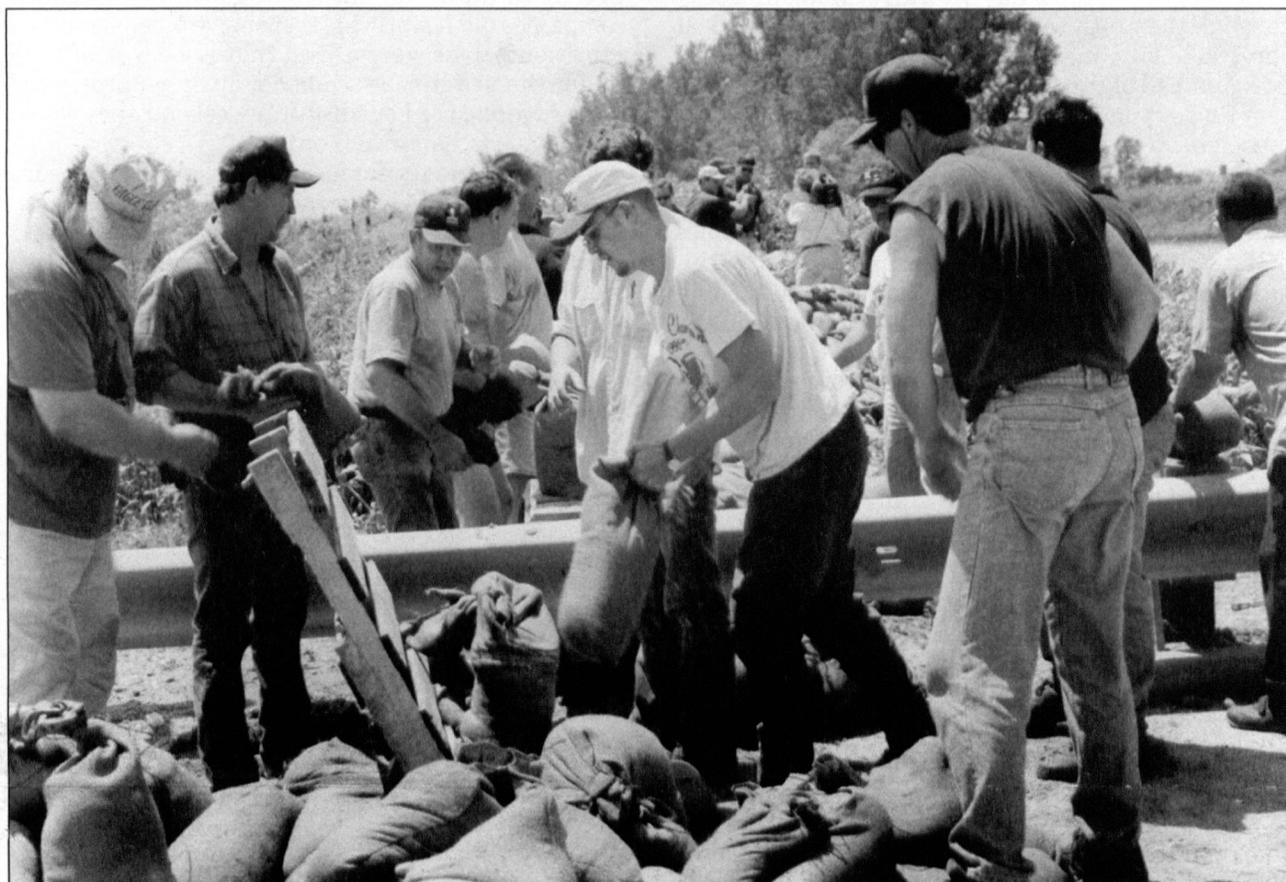
At 4:30 p.m., the NWS reissued that warning and extended it to the Nishnabotna River at Hamburg. (The East and West Nishnabotna Rivers come together about six miles north of Hamburg, creating the Nishnabotna River.) At that time, the East Nishnabotna at Red Oak was forecast to crest at 27.9 feet on June 16. The Nishnabotna at Hamburg was forecast to crest at 30.6 feet sometime on June 15.

At 1:15 a.m. on June 15, the West Nishnabotna at Hancock crested at 17.6 feet. Early that morning, the district activated its Emergency Operations Center (EOC). A Corps civil engineer and civil tech were dispatched to Red Oak to monitor the flood project and provide technical assistance.

The Corps gave Red Oak 40,800 sandbags and sandbagger equipment. Some seepage and boils were reported during the high water, and Corps personnel helped thwart the threat.

Although protected by the levee along the East Nishnabotna, some interior flooding occurred due to ponding along Red Oak Creek. Another Corps crew went to Hamburg to monitor the freeboard at the Highway 275 closure. Late Monday night, the West Nishnabotna River crested further downstream at Randolph, Iowa, at 23.85 feet. That crest was about five feet above flood stage and less than a foot below the flood of record in 1949.

Meanwhile, at Atlantic, which was pelted by 13 inches of rain, the East Nishnabotna crested at 23 feet, just over the record stage of 22.81 feet.



The citizens of Hamburg, Iowa, team up for sandbagging operations during the Nishnabotna flood.

Further downstream at Red Oak, the East Nishnabotna crested at 29.39 feet. That was 11.4 feet above flood stage, exceeding the 1947 record by 1.2 feet. The U.S. Geological Survey (USGS) measured a discharge of 64,000 cfs on Monday afternoon. The previous record was 38,000 cfs set in 1972.

By Tuesday morning, forecasts prepared by the Corps indicated that the peak flows at Hamburg could exceed 60,000 cfs and threaten the levees at Hamburg. The Corps advised locals to begin sandbagging low areas along the L-575 tieback southeast of town. Because of the record discharges, the Corps dispatched crews to install staff gages upstream from Hamburg to monitor river rises. The USGS was requested to measure the flow of the East and West Nishnabotna six miles upstream of Hamburg.

Additional Corps crews deployed for helicopter and ground reconnaissance to locate flood crests coming down the East and West Nishnabotna, and other crews later went to Hamburg to assist locals with the flood-fight and to monitor levee conditions.

At 9 p.m., the USGS reported it had measured a flow of 90,000 cfs coming from the East and West Nishnabotna. The Corps immediately advised local authorities of the potential levee overtopping at Hamburg and agreed with state officials to begin evacuating low areas.

So the Corps contacted the NWS at Valley, Neb., and convinced them to issue a revised flood warning for Hamburg based on measurements and field observation. At 10:40 p.m., the NWS issued the warning, and in minutes, local officials and the National Guard began evacuating Hamburg.

Just before midnight, the stages at the Hamburg gage began rising rapidly. The L-575 tieback levee southeast of town was overtopped at about 2 a.m. on June 17. Water reached near the top of the levee

segment near Hamburg, but it was not overtopped.

By this time, Omaha District had 10 people on location and another 20 employees working out of the EOC. Staff gages previously installed at key spots along the rivers, plus the USGS gage, proved useful, providing valuable information on the flood.

The Nishnabotna at Hamburg crested at 33.18 feet on June 17 at 7:30 a.m., exceeding the record 1993 flood by nearly three feet. The discharge of 65,100 cfs eclipsed the 1947 record discharge of 55,500 cfs, and was nearly double the peak discharge of 1993. The event was judged to be a 200-year flood.

The Corps installed staff gages at Ditch Six at the Highway 333 Bridge, and at I-29 and Main Street. Ditch Six is a major drainage and levee system on the west side of Hamburg which was near overtopping, threatening Hamburg from the north and west.

The I-29 gage measured levels of a large pond caused by overtopping the L-575 levee two miles downstream of Hamburg. This pond threatened Hamburg from the south.

With assistance from the Corps, locals blocked culverts under I-29 and prevented water from backing into Hamburg. A Corps employee suggested that hay bales could stem the flow of water through the 30-inch culverts. The bales slowed the flow enough so that sandbagging behind the bales could be effective. The Corps also assisted with the sandbagging across the I-29/Main Street underpass near the Ditch Six/Highway 333 crossing.

Forty-eight hours after the Hamburg evacuation, with the storms fading, Corps officials and citizens could catch a breath and see how significant their actions were in thwarting this potential disaster.

"Hamburg would be under six or seven feet of water if not for the performance of the levees and the well-trained personnel monitoring the rivers," said Rose.

Hot fire, cold mission

Jacksonville ice supports Florida fire-fight

Article by Christina Plunkett
Photo by Tony Santana
Jacksonville District

"We were challenged to fulfill this mission under the most extreme circumstances imaginable," said John Ashley, Chief, Readiness Branch.

It was the second day in July, about mid-way through the ninth week with temperatures stuck at the 100 degree mark and thunderstorms bringing fires instead of rain. About 7,000 fire fighters, military and support agency personnel from around the nation battled wildfires in 67 Florida counties.

The wildfires were relentless. For every one contained, it seemed lightning would start two more. Fickle winds, exploding pine trees, and endless domes of hot air made the fires nearly impossible to extinguish. Despite ground and air efforts including helicopter water drops and high-tech flame retardants, major highways were closed from Brevard to Duval counties and mandatory evacuations were more widespread than when Hurricane Andrew struck in 1992.

As many Florida counties went up in smoke, Jacksonville District activated its Emergency Operations Center (EOC) for an ironically chilly assignment. In the early hours of July 4, four Jacksonville District logistics specialists deployed to a staging area in Orlando to coordinate assistance for work camps in northern and central Florida. The Federal Emergency Management Agency (FEMA) had tasked the U.S. Army Corps of Engineers to provide truck loads of bagged ice, and refrigerated trailers to store them in.

The team coordinated delivery of ice to 15 base camps and contracted for labor to unload the ice. The order consisted of 14 truck loads, each carrying about 40,000 pounds of bagged ice. The ice went to base camps throughout the fire-stricken areas of Florida.

The ice kept drinks and food cold in coolers for the firefighters and others working in remote areas with no refrigeration. Several truck loads were also initially kept at the Orlando staging area to replenish locations as needed. On the average, several bags were needed per cooler, and two coolers were used for each firefighting crew of four-to-six people, which adds up to about a bag of ice per person per day.

What made this mission difficult were the circumstances and timing of the disaster. Under the Corps' new concept of disaster operations, Readiness 2000, each district is responsible for specific missions, with a goal. The goal under this concept was to have contracts in place for all nine missions by May, before

the start of hurricane season. Charleston District is one of seven districts assigned the ice mission. When FEMA requested that the Corps support the ice assignment, Jeffery Adkins, one of Charleston's ice mission managers, came to Jacksonville to coordinate this mission with the EOC staff.

According to Adkins, when efforts were being made in May to fulfill the anticipated ice mission goals, companies did not provide responsive bids. Company representatives were afraid that if ice was needed under the worst-case scenario, during a prolonged heat wave and the Fourth of July weekend, they would not be able to honor the contract.

"This was the severe test of the operation because local ice plants were already sold out for the holiday," said Ashley. What did they do? "You start locally and go outward. Although we did get two truck loads from Publix Supermarkets in Lakeland, we had to contract with ice companies as far away as Michigan and Massachusetts."

As of July 15, around 520,000 pounds of ice had been delivered to the 15 base camps, with 47,400 more pounds stored at the staging area pending delivery. Contracts had been negotiated with local vendors for continued replenishment of ice if needed. The ice

team is now monitoring the consumption of ice, coordinating the delivery and loading of ice, and transferring it to higher demand sites.

The mission was expanded to include transportation of water and other food items in Flagler County. Another Jacksonville team member, Roxie Kulczynski, who was deployed to FEMA headquarters in Tallahassee in the

early days of the ice mission, also continues to provide administrative support to the ESF-3 (Emergency Support Function) cell. Charleston has also supplied the action officer, Marlene Judy, at the ESF-3 cell.

In the early days of the fire disaster, the Jacksonville District EOC also worked with the Department of Transportation to locate sources of bulldozers for firefighting efforts. This mission was assigned to the 20th Engineering Brigade.

The fires are being called the worst in the state's history and they will affect the entire nation. The U.S. Department of Agriculture recently designated the state an Agricultural Disaster Area. According to reports from affected counties, damage estimates include 495,712 acres, 337 homes and 33 businesses. There are 131 reported injuries. After President Bill Clinton visited some of Florida's devastated areas on July 9, he agreed to Governor Lawton Chiles' request for a federal and state task force to develop a long-term recovery plan for Florida.



Firefighters take a break from battling Florida fires with water kept cold by ice provided by Jacksonville District.

'Wow, that could happen to us!'

By Dr. Les Dixon
Pittsburgh District

Several weeks ago, I was driving along the highway when the lights of a police cruiser lit up behind me. I held my breath and waited to see if I was in trouble for speeding. Fortunately, the cop pulled over another driver. I thought, "Wow, that could have been me!"

And it reminded me of another scene I saw recently on Capitol Hill.

The witness sat in his seat, posture ramrod straight, eyes glaring straight ahead as he listened to the harsh words. He was sandwiched between the long rows of the audience behind him and, in front, the curved table of the Congressional subcommittee he had been called to testify before. The chairman of the subcommittee waved his pencil like a baton as he criticized the engineering and planning staff for:

- "...being too slow..."
- "... not being responsive to the customer..."
- "... being too expensive..."
- "... having a cumbersome process for reviewing and approving modifications..."
- "... not being innovative in design, construction, and contracting practices..."
- "... not being accountable..."
- "... being arrogant..."

These words stunned me. At one time or another, I have heard similar words from the customers of the U.S. Army Corps of Engineers. My palms perspired as I imagined myself in that witness seat.

Later, the chairman of the subcommittee briefed me on the corrective actions planned for the National Park Service's (NPS) Denver Service Center:

- NPS will establish project management practices and establish accountability.
- The Design Service Center staff will be cut by 50 percent.
- Ninety percent of all construction design and management will be given to architect-engineer firms.
- Standardized design and construction practices are to be used.
- Program management will be implemented.
- NPS will establish an outside peer review of each project.
- Park superintendents will be trained in contracting and construction practices.

I left that briefing with the sobering knowledge that this could happen to the Corps if we do not strive to meet and exceed our customers' expectations. I now have a new appreciation for our Strategic Vision and evolving business plans because "Wow, that could happen to us!"

(Dr. Les Dixon is Deputy District Engineer for Programs and Project Management in Pittsburgh District. He is currently working on a Congressional Fellowship, one-year program to gain first-hand knowledge of legislature. He is presently working for Pennsylvania Congressman John Murtha.)



Bosnia trip brings new perspective

By Nancy Gould
Savannah District

"Some guys buy a sports car to avoid a mid-life crisis. I went to Bosnia."

That, says Heber Pittman, is how he wound up almost half-way around the world, working in a war-ravaged country for five-and-a-half months.

Pittman, a biologist from Planning Division, was one of several Savannah District employees who responded to Transatlantic Division's request for volunteers to work in Bosnia. Real Estate employees Flo Jordan, Ann Hardinge, and Teresa Martinez also went. They wanted what many others who risk volunteer in a harsh environment want -- adventure, challenge, and inspiration.

All began their transition to Bosnia at Fort Benning, Ga., where they learned about chemical weaponry, how to use a 9mm pistol, and other means of self-protection. They spent another week of training in Germany before arriving in Bosnia.

"I got seven inoculations my first day at Fort Benning," said Pittman, who worked as the environmental officer with U.S. Task Force Eagle, which consisted of 14 basecamps and 8,000 troops. "After the inoculations I was sick and began to have doubts about being a part of the mission. When we got our chemical protection suits and gas masks, I knew I'd made a mistake! I had no idea what I was really getting into when I volunteered, and on my second night at Fort Benning I seriously considered leaving."

Pittman was not the only one having second thoughts. Martinez said the reality of what she was doing hit her on the flight to Bosnia as she sat alone engrossed in thought. As a civilian member of the peacekeeping team, Martinez understood that, just like soldiers, she was subject to danger. And as she sat among civilians and soldiers on the plane in her battle dress uniform, helmet and flak jacket, that reality was not easy to handle.

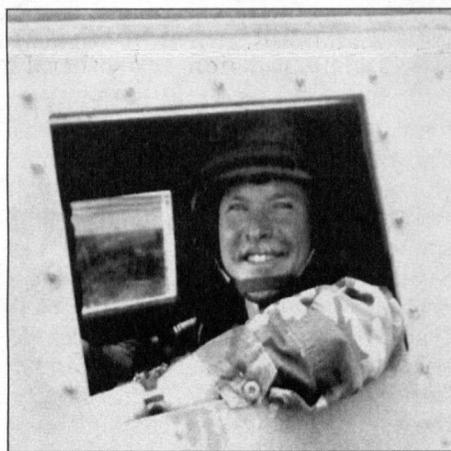
Another reality set in when Martinez arrived at the basecamp and saw her quarters -- a 20-by-8-foot structure called a conex, that she would share with another civilian. Some quarters had air-conditioning, but, just like the soldiers' area, hers did not.

"I made my small area nice," said Hardinge, who worked on the Contingency Real Estate Support Team (CREST).

Hardinge volunteered for two tours, each lasting about four months. Some people, she said, described the basecamp as a minimum security prison because, for the most part, people couldn't leave and there was no alcohol. "But, in spite of that, 'playing Army' in this surreal environment was fun," said Hardinge. "I loved the camaraderie and the feeling that I was part of such a worthy mission. Working with people from so many different countries who were supporting the mission was exciting. It was unlike



From left to right, Flo Jordan, Ann Hardinge, and Teresa Martinez pose with the Corps castle in Bosnia. (Photo courtesy of Savannah District)



Heber Pittman smiles inside an armored HMMV in Bosnia. (Photo courtesy of Savannah District)

any experience I have ever known."

The work Hardinge performed also provided a different kind of satisfaction from her work in the district. More a realty generalist than a realty specialist, each CREST member handled the entire spectrum of real estate duties. "Performing all aspects of the mission gave me more freedom and creativity to effectively accomplish my work," Hardinge said.

Martinez said that each realty specialist had contracting authority up to \$250,000, something they don't have in Savannah District. Besides clearing up a backlog of work, they saved the government about \$75,000 dollars.

As the environmental officer for 14 basecamps, Pittman also had a great deal of visibility and responsibility. "At one point it was decided I should attend a NATO environmental briefing for a high-ranking Italian general," Pittman said. "So the Army put together a convoy of four armored

biological problems.

"It was a 'by the seat of your pants' operation," Pittman said. "We all worked together to solve problems. That's the way it is in a contingency operation. Everything is up in the air, you solve problems as you go, almost the way it is in a real state of war."

Historically, Bosnia (formerly Yugoslavia) has always been torn by ethnic strife. After World War II, Yugoslavian president Tito forced the Moslems, Serbians, and Croats to live in peace. Fighting over land erupted between the groups after Tito's death.

When Jordan arrived in Bosnia, she was moved by the devastation and wondered how the people maintained their resolve to rebuild their country and their lives. "I wanted to understand the situation in that country," said Jordan. "I felt it would be beneficial since I would be leasing land and property from the different ethnic groups. However, I learned quickly that I couldn't take sides about who was right or wrong because people of all the groups had suffered. I tried to remain non-judgmental and only do my job.

"The locals were kind to us," continued Jordan. "It is their custom to be hospitable. I visited an older couple in their early 70s who were so gracious and sweet. At their insistence, I ate homemade cheese, a little 'ham thing' and drank coffee. It would have insulted them had I refused. The greatest thing that I brought back was some handmade doilies an elderly woman gave me. She made them herself when she was very young. I was honored.

"People were so grateful to have us there because since we came, they've had peace," Jordan said. "Their children were able to go back to school and they were rebuilding their lives and their homes. They have such optimism, such hope, and such strong family values. I never heard them complain."

Many people that Jordan met had lives full of trauma from the upheaval in their country. One woman in the area worked at the basecamp. Her husband and son had been killed and another son was missing. "Every day she came to work to mop floors at the main headquarters," said Jordan. "Because of the muddy conditions around camp, the floors were constantly a mess. She worked hard and her rough hands looked much older than her years. She had a goal to learn a new English word every day. I had such respect for her.

"The memories will last forever," said Jordan. "My priorities changed, I learned a lot. When I got home and walked into my apartment it was as though I had walked into the Hilton. I had a new appreciation for conveniences, luxuries, and all the freedoms I have taken for granted. Little things like grocery shopping, reading menus, ATMs, and driving on nice roads seemed like such privileges. But I realized more than anything that the things that are important in life are not material. Real satisfaction comes from relationships and family values."

HMMVs and sent me to Sarajevo. There were only 11 other people at the briefing, all relatively high-ranking military officers representing the nations in the peacekeeping operation. I was the only civilian."

The Dayton Peace Accord, which ended warfare in Bosnia, included provisions to stabilize the country. Bosnia was split into three sectors, each controlled by one of three NATO nations -- France, the United Kingdom, or the U.S. All Savannah District people were in MND North (Multi-National Division), the sector controlled by the U.S. at basecamp Task Force Eagle. They all worked for the Basecamp Coordinating Agency (BCCA).

Members of the BCCA team helped establish basecamps in MND North after it was occupied by the Special Forces. After a basecamp was built, CREST members began establishing leases with landowners. When they went out to meet with landowners, they were escorted by soldiers in convoys.

The environmental team assessed, inventoried, and monitored the property. To prevent pollution, Pittman's group ensured that oil, transmission fluid, and other types of hazardous waste material was properly handled and disposed.

"The U.S. made it a point to be a good steward of the land," said Pittman. "We didn't want to just go in there, inhabit the land, pollute it, and leave, especially since we were on a mission of peacekeeping and good will."

Pittman's role expanded beyond his environmental duties shortly after he joined BCCA. When commanders learned that he had a Ph.D. in biology, they asked for advice on a multitude of

Experiment moves from lab to river

Article by Jennifer King
Photos by David Ray
Waterways Experiment Station

Several U.S. Army Corps of Engineers facilities are joining to conduct full-scale barge impact experiments on the Allegheny and Ohio rivers. This research, led by the Waterways Experiment Station (WES), may affect how navigation structures are designed throughout the Corps.

The project involves the Information Technology Lab, Structures Lab, and Coastal and Hydraulics Lab at WES; Louisville District; Pittsburgh District; and the Directorate of Research and Development (DRD) at Headquarters.

The Corps is responsible for about 25,000 miles of commercially navigable channels and operates 237 lock chambers. Roughly 2.2 billion tons of commercially carried goods go through these facilities, equivalent to the tonnage carried by 1.5 million barges. These barges are a familiar sight on America's waterways and commerce depends on them, but they also cause a lot of wear-and-tear on the system, primarily when they strike lock chamber walls and other parts of navigation structures.

"We have two main goals in these experiments," said Robert Patev, WES's principal investigator on the project. "First, we want to validate and modify our existing design guidance on barge impact loads described in Engineering Technical Letter 1110-2-338 on Barge Impact Analysis.

"Second, we want to provide the proper models and guidance to determine realistic impact loads for designing innovative lock structures, as well as traditional Corps design," he said.

These full-scale experiments are being performed under the Innovations for Navigation Project Research and

Development Program funded by DRD. The program's objective is to identify and develop innovative technologies and methods to reduce construction cost and time, and minimize delays and risks to navigation and the environment during construction. This program will develop concepts for the rapid, cost-effective construction of navigation projects.

"The experiments will hopefully lead to a refined design for approach walls that should save money," said Bruce Riley, a structural engineer in the Directorate of Civil Works at Headquarters. "We will also have a better understanding of the impact the walls receive."

However, the barge impact study is only one of several in the Navigation Project R&D Program. "The barge impact study is one of 14 studies that were initiated under the program this fiscal year," said Bill McCleese, manager for the program.

The full-scale experiments will be conducted later this year on the Ohio River at the Robert C. Byrd Lock and Dam (formerly Gallipolis Lock and Dam) north of Huntington, W.Va. The full-scale study will use a fully instrumented and ballasted 15-barge tow and will be made on both the rigid and flexible guide walls at the dam.

Special instrumentation is being developed and tested by the WES Instrumentation Services Division to physically measure the impact force during the experiments. An inland waterway design of an energy absorbing fendering system also will be tested during these experiments.

Besides the full-scale experiments, prototype studies were conducted under this effort. The studies conducted last year were sponsored by the Ohio River Main Stem System Study in Louisville District, and the Monongahela

River Locks and Dams Two, Three and Four Replacement Project in Pittsburgh District. The primary goal of the prototype experiments was to learn how to quantify and measure impact forces when a barge strikes a lock wall.

These experiments were conducted on a concrete lock wall at Old Lock Two on the Allegheny River, just north of Allegheny River Lock and Dam Two in Pittsburgh. Actual impact experiments used a four-barge ballasted tow.

Thirty-six different prototype barge impact experiments were successfully completed. They included tests on three-inch thick fenders of Ultra-High Molecular Weight (UHMW) plastic to examine the force redistribution during impacts to the lock wall.

"The trial use of UHMW fenders was to see how much energy is absorbed and redirected during the impact on the fenders," Patev said. "From the preliminary results, these simple fenders greatly redirected the momentum of the barge and distributed the impact energy equally over the lock wall."

Specific instrumentation was used for the experiments. The WES team used a Differential Global Positioning System that included remote and base units to collect and process data to determine impact velocities, angles, and rotations during the experiments.

Riley attended the prototype experiments last year.

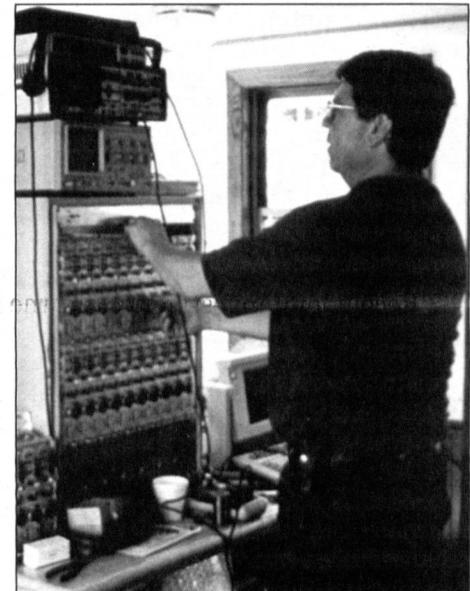
"I was impressed with the WES team, especially their organization and thoroughness," Riley said. "Everyone worked well together and knew what they needed to do. That helped make the tests a success."

Besides helping verify existing Corps procedures, the results from the prototype tests assisted in defining the instrumentation needed for the planned full-scale experiments. Additionally, these studies will be used to implement

realistic values for barge impact loads on navigation structures throughout the Corps.

To conduct the full-scale experiments, the Corps is partnering with a variety of industries. These include American Commercial Barge Lines, a barge and towboat supplier, and JEFFBOAT, a barge manufacturer. Svedala-Trellex is supplying the energy absorbing fendering system for the experiments.

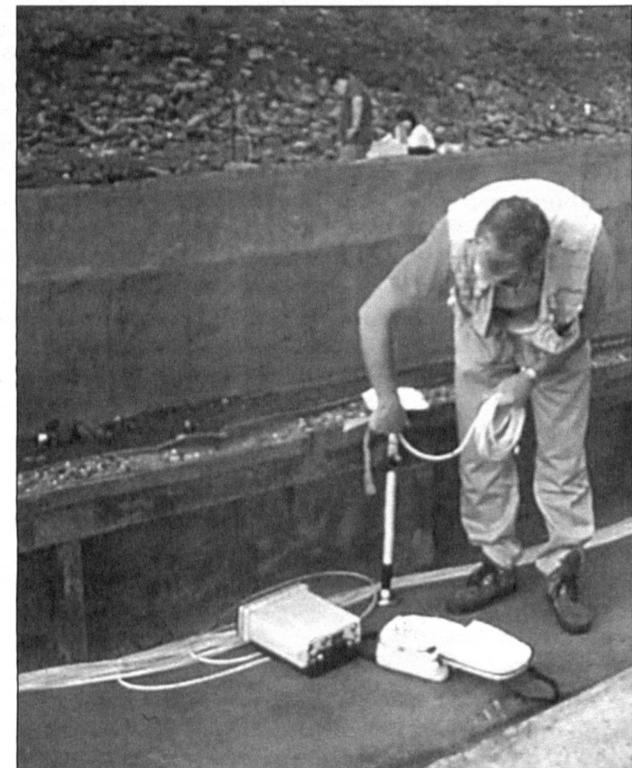
During the next few years, other research work is planned for the Design of Innovative Lock Walls for Barge Impact work unit under the Innovations for Navigation Projects R&D Program. These include more field experiments, installation of time-lapse videotape equipment at various locks to catalog velocities and angles of impact, and developing multi-criteria decision making tools to develop return period scenarios for Corps designs.



WES employee Bruce Barker checks the high-speed data acquisition equipment installed on the towboat.



Howard Park and Keith Green from WES install high-speed cameras and time-lapse video units that will capture the full-scale barge impact experiment.



Ron Wooley installs the Differential Global Positioning System on a barge.

New investigative unit stops fraudulent claims

A fraud investigation unit begun by Vicksburg District is saving the federal government millions of dollars in workman's compensation claims, but is costing dearly those caught in fraudulent activities.

Federal workers have a comprehensive package of employment benefits. The staples of the package are familiar -- health and life insurance, retirement, the Thrift Savings Plan, and annual leave and sick leave.

One of the most vital benefits is one that most employees will never use -- workers compensation. A federal employee injured in the line of duty can count on the medical bills and replacement wages being paid by the government until he or she can return to work.

Unfortunately, workers compensation is also vulnerable to fraud and abuse. To deal with that, the U.S. Army Corps of Engineers places workers compensation in a broad context of business practices -- safety and accident prevention programs, effective case management after an incident, establishing light-duty and return-to-work programs, and eliminating fraud.

In 1995, Richard Maxwell, Vicksburg District's Chief of Security and Law Enforcement, with the support of Lt. Col. Richard Miller, then the Provost Marshal of Lower Mississippi Valley Division, began investigating district employees receiving workers compensation who were suspected of making false statements to the Department of Labor.

Recent joint investigations by the Fraud Investigations Unit and the U.S. Department of Labor's Office of the Inspector General, have resulted in prison sentences for fraud offenders, probation, hours of community service, and fines and restitution of more than \$450,000. The investigations have also saved taxpayers more than \$18 million in future costs and reduced the annual charges by more than half a million dollars.

The cases that the Fraud Investigations Unit has investigated are widely varied.

A 51-year-old former tender operator from Raymond, Miss., had claimed two back injuries while employed by the Corps, and had been receiving compensation benefits for total disability since 1987. Investigation showed he was operating a cattle business and failed to report additional income. His sentence was two years' supervised probation and 100 hours of community service.

In addition to 23 months' confinement in federal prison and two years' supervised parole, a 42-year-old former food service worker from Vicksburg, Miss., was ordered to pay \$62,758.69 in restitution for filing false statements as part of his disability claim. He injured his back in 1990 when the quarterboat to which he was assigned was sunk by an out-of-control tanker on the Mississippi river. He failed to disclose that he had received a third party settlement related to the accident.

A former construction inspector, now 70 years old, from Ferriday, La., received a sentence of 20 months' confinement in a federal prison, and three years of supervised probation, a fine of \$2,000, and was ordered to pay restitution of \$62,396.23 for drawing disability from the Corps, Veterans Administration, and Social Security Administration. He failed to report earned income from his business to each of those agencies. He had received Corps benefits since 1985 for an arm injury.

Another failure to report a third party settlement following the quarterboat accident earned a 28-year-old former revetment worker from Fayette, Miss., a five-month federal prison sentence, 24 months' supervised probation, and a fine of \$25 for court costs.



Richard Maxwell, Vicksburg District's Chief of Security and Law Enforcement, explains his investigative methods during a recent partnering conference with Departments of Justice and Labor and the Social Security Administration. (Photo courtesy of Vicksburg District.)

He was also ordered to pay restitution of \$50,334.91.

A 51-year-old computer scientist employed by the Waterways Experiment Station pled guilty to making false statements to obtain Federal Employee Compensation and was fined \$2,500 and ordered to pay restitution. He was also placed on federal probation for three years and ordered to not possess a firearm during his probation. He was receiving compensation since 1989 due to job-related stress.

In addition, all these individuals are subject to investigation and prosecution by the Internal Revenue Service (IRS) for failing to report taxable income and are all subject to civil action by the U.S. Department of Justice.

The Fraud Investigation Unit has been so effective that it has been expanded and funding has been provided by Headquarters to investigate workers compensation fraud throughout the Corps.

"We currently have more than 150 criminal investigations in the workers compensation area ongoing nationwide in the Corps involving former employees," said Maxwell.

"This initiative has been so effective because it is a well-led and coordinated effort between Dick Maxwell's unit at Vicksburg and Page Dupstadt, Workers Compensation Program Manager in the Headquarters Safety and Occupational Health Office," said Lt. Col. Rick Miller, the Corps' Provost Marshal. "The efforts of Page and his extremely supportive supervisor, Connie DeWitte, in obtaining funding and command advocacy have been absolutely pivotal in the successful execution of this initiative."

"The significant factor in these investigations is that once someone is convicted of a fraud in the receipt of workers' compensation, they lose their benefits, resulting in a reduction on workers' compensation for the Corps, and that translates into a savings for the taxpayer. It's clear that it doesn't pay to try to make money off the government. Maybe people will think twice after learning the consequences," Maxwell said.

(Patty Elliott of the Vicksburg District Public Affairs Office, and Page Dupstadt of the Headquarters Safety Office contributed to this article.)

Workers comp provides financial safety net

By Richard Dowling
Pittsburgh District

Despite the fact that some people abuse the workers compensation system and fraudulently earn money from it, there are others for whom it has been a lifesaver.

Bill Celli has a special reason to applaud efforts to protect the workers compensation program -- it was the silver lining in a very dark cloud when he was critically injured on the job in March 1997.

"Worker's comp was a great comfort to me... (it) was especially comforting to know that my bills were being taken care of and I could concentrate on my recovery," Celli said recently after returning from a month in a Boston-area hospital.

This trip was the latest in several treatments that have brought Celli back from the brink of death and given him hope of working again for the U.S. Army Corps of Engineers.

"I am really hopeful that I can be back on the job in October or November," Celli said. He is recuperating at home, cared for by his wife, Carolyn, who went with him to Boston.

Counting four episodes of surgery, hospitalization, medicine, and rehabilitation, the total payments from the workers compensation program now total "well over a million dollars," according to an estimate by the Pittsburgh District Civilian Personnel Advisory Center.

Celli said that Debra Jefferson of the local office deserves special praise for handling the paperwork. "I didn't have to worry. Everyone's been real helpful. I don't think I can ever thank them enough."

Celli was supervising a crew from Pittsburgh District's Repair Fleet the evening of March 15, 1997, when a large crane-mounted pump, weighing more than five tons, suddenly tipped, crushing him against a bulkhead. As the crane was moved, the pump's swinging discharge chute ripped his life-jacket off and threw him into the frigid Ohio River.

Two co-workers, Donald Fortney and Terrence O'Tell, jumped into the water to rescue him and were later recognized with heroism medals from the Secretary of the Army.

Celli faced a lengthy hospitalization for severe internal injuries, and surgery to remove portions of his digestive tract. He now eats six small meals a day, rather than three, and is in physical therapy three days a week.

Thanks to workers compensation, "I didn't have to worry about them," Celli said of the more than a million dollars in bills. "I had a lot of tests, a lot of treatment, a lot of medicine, and Debra Jefferson has taken care of all of them, whether it was a hospital bed at home or a hearing aid."

"When someone (in non-government work) gets hurt on the job, they worry about being able to pay their bills and stuff," Celli said. "The (workers compensation) system really took away my worries about that."

British engineer learns new language with Corps

Article and Photo
By Denise Tann
Baltimore District

When Maj. Nick Holland, a British Royal Engineer officer, arrived in the states in 1997 to begin a special assignment at the Pentagon Renovation (PenRen) Office, he encountered one major obstacle - decoding the acronyms of the U.S. Army Corps of Engineers, like DDE, BRAC, and IRP.

"I knew coming into a new environment would mean doing things differently, but I had a particularly hard time understanding those abbreviations," Holland said. "There are hundreds of them."

Now Holland, who waded through the numerous abbreviations that he heard while working at the Pentagon Renovation project, now feels well-versed in Corps lingo in his new assignment as the acting Deputy District Engineer for Military Programs and Deputy Commander for the Baltimore District, which began on June 22.

About this new assignment, Holland said, "I'm relishing the challenges of a busy position where I will be gaining an awful lot of professional responsibility."

Holland came to the district headquarters on April 2, and spent several months working in the district's Design Branch in the Mechanical Engineering Section. These last two assignments mark the final phase of a two-year commitment in the Professional Engineer Training Program.

This training program, sponsored by the Royal School of Military Engineering, allows a small, select group of Royal Engineer officers to gain experiences toward earning a professional engineer's license. The engineers receive the professional training while concurrently earning a master's degree.

Once Holland completes the program in October, he will receive the designation of Full Chartered Engineer and accept another assignment in England.

Holland says his plate is full right now, between balancing the program training and academic requirements along with his new job responsibilities. But he said this experience is more rewarding than 10 years ago when he earned his bachelor's degree in engineering science from Oxford University.

"Being able to see the practical application and to know that the theory being taught actually works is very satisfying," he said. While at PenRen, Holland said he enjoyed tracking a project, hitting an obstacle, and doing some on-site brainstorming and problem-solving that required more than a quick fix.

Although his schedule is demanding, Holland said he still finds time for his family, which accompanied him here from their home in London, and now reside in a neighborhood in northwest Washington, D.C.

"Working long hours is a sign of the times, and often necessary, but family is very important," Holland said. "While job satisfaction is half the battle, I think I'm able to manage this intense program because I have a happy family."

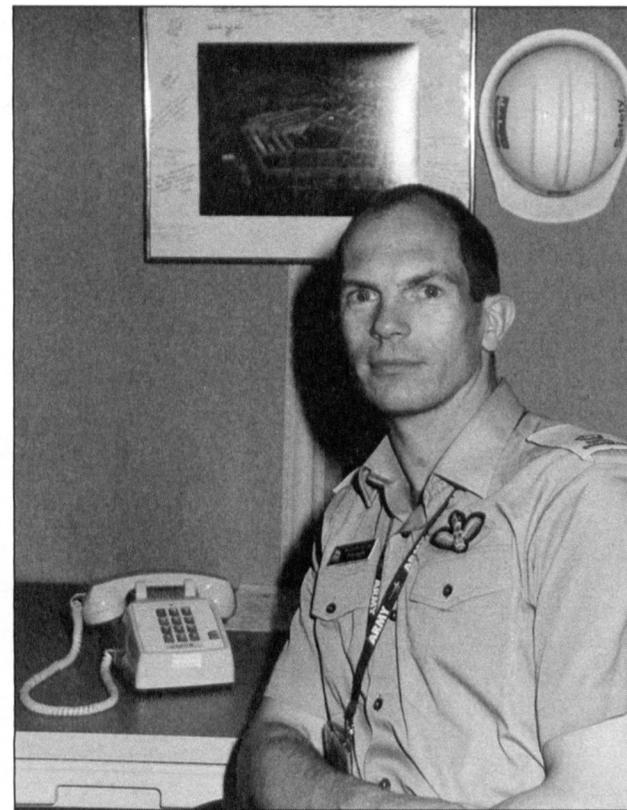
Besides visiting museums, camping and participating in the children's activities as a family, Holland said he also enjoys going solo-riding on his motorcycle in the countryside.

According to Holland, the family also enjoys some of the cultural differences. He said seeing the vast number of religious denominations fascinates them. They also enjoy eating sweet foods for breakfast.

"I've become particularly fond of pancakes and waffles," said Holland. "At home we would normally have sweets at lunch or dinner, or with tea, but not for breakfast."

Holland is no stranger to America. This is his fourth lengthy stay here. His first occurred at age six, when his father, now a retired Royal Air Force officer, did an 18-month tour at the Naval Air Station at Patuxent, Md.

Holland says that he has had memorable experi-



Maj. Nick Holland, British Royal Engineers, is working with Baltimore District as part of his training toward becoming a professional engineer.

ences throughout his 16-year military career. As an executive officer, Holland said, "I had to deal with the 'niff-naff' of the day-to-day soldier's life. There was one soldier who had not been well looked after and, though it took two years, he finally straightened out. It gave me great satisfaction."

Holland also is proud of his time in the Persian Gulf in 1990. His unit was the first British company to deploy to the desert.

Holland said he looks for satisfying experiences. "If I have to wake up one morning and regret coming to work, it's time for a change," he said. "That's one benefit of being in the military. If you get an assignment like that, you know you'll move on soon." But Holland quickly adds that this is one assignment he will be reluctant to leave.

Recruiters welcome visitors aboard *Essayons*

Article by Heidi Helwig
Photo by Bill Johnson
Portland District

In record-breaking numbers, nearly 10,000 people toured Portland District's dredge during the Rose Festival. On June 4-7, the hopper dredge *Essayons* graced the seawall again as a member of the Portland, Ore., Rose Festival's official fleet, and its crew hosted 9,583 tourists. In the process, the dredge and its crew also gave a boost to Army Reserve recruiters.

"We set a new record," said Ron Henry, captain of the dredge. "This is the most visitors we've ever had during the Rose Festival, or during any other open house."

All 9,583 tourists had the opportunity to learn about the inner workings of a dredge, including tours of the engine room and the bridge.

They also got to meet Army recruiters. Joining the *Essayons* and its crew were 11 uniformed recruiters from the U.S. Army Recruiting Battalions from Portland, Rose City, and Gateway, Ore. Working together, dredge crew mem-

bers explained the dredge operations while the recruiters greeted guests, handed out *Essayons* brochures, and were available to discuss career opportunities in the Army Reserves.

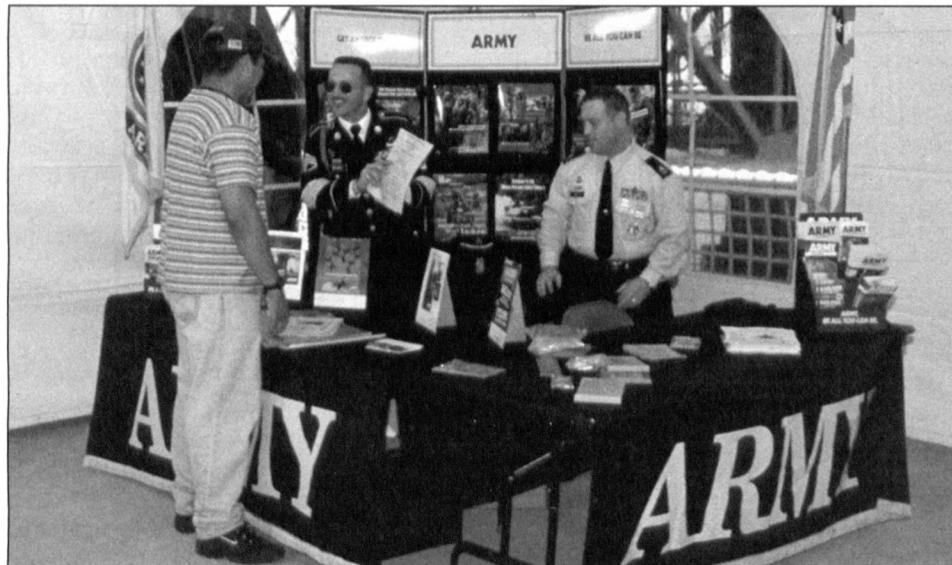
The tourists learned that the

Essayons helps maintain the entrance bars, rivers, and harbors on the coasts of California, Oregon, Hawaii, and Alaska and, in an emergency, the Mississippi River. Because of its size and dredging depth, the *Essayons* is well-

sued for dredging large coastal entrances.

Described on the radio during the Rose Festival as a "floating Hoover," the dredge does operate somewhat like a vacuum cleaner -- huge mechanical arms drag along a channel, sucking up shoals of sand and deepening the channel to its authorized depth. The *Essayons* is automated for operation with a semi-automatic drag-arm handling system. A 42-person merchant marine crew operates the *Essayons*. Sophisticated instrumentation allows constant production monitoring and enables the crew to maintain maximum dredging efficiency 24 hours a day.

"We play a very important role here in the Pacific Northwest," said Dave Beach, chief of the Corps' Channels and Harbors Project. "We were pleased to be able to share our work with some of the thousands of people we serve every day by providing for safe navigation. Without the Rose Festival, we most likely would not have the opportunity to meet so many of our regional customers."



Army recruiters joined the crew on the dredge *Essayons* during the Portland, Or., Rose Festival to meet and greet visitors to the dredge and tell them about the Army and the Corps of Engineers

No deposit, lots of return

Plastic bridge may open new markets

By Dana Finney
CERL



Built of recycled mixed plastic, this bridge can support a small truck and should last for 50 years. (Photo courtesy of CERL)

Bridges are built from almost every substance known -- stone, lumber, iron, concrete, even ice.

Here's a new one -- plastic. A new plastic bridge at Fort Leonard Wood, Mo., shows the potential for recycling waste plastic, while providing an alternative to conventional wood construction. Completed in June, the bridge spans a creek at Gammon Field, and it represents a reuse of some 13,000 pounds of mixed plastics that otherwise would have gone into landfill.

"This construction is significant in that, while larger structures have been built using recycled plastic lumber, no other known structure has the structural capacity of this bridge," said Richard Lampo, a researcher at the U.S. Army Construction Engineering Research Laboratories (CERL), which led the project to build the bridge.

The recycled plastic bridge replaces an older wooden bridge. The structure, 25 feet long and 26.5 feet wide, rests on six steel beams that supported the original bridge. It is designed to bear loads up to light vehicles.

"I drove my half-ton pickup over it," said Stan Martin, civil engineering technician in the fort's Directorate of Public Works (DPW). "The bridge looks great. It just looks like a painted wooden bridge until you get up close and see that it's plastic."

The bridge was built under a joint project involving CERL, the U.S. Environmental Protection Agency (EPA), and the DPW. Also participating were Battelle, a Department of Energy lab, and the Plastic Lumber Trade Association (PLTA). Four companies donated materials to build the bridge, and M.G. McLaren Consulting Engineers of West Nyack, NY, and Rutgers University also worked on the project.

McLaren designed the bridge using a protocol they developed for recycled plastics in coordination with the Ameri-

can Society for Testing and Materials and the PLTA. The capacity of the new bridge is more than 30 tons over the entire structure. "The railings meet code requirements, and deflections and dynamic response are well within accepted limits for this type of bridge," said Malcolm McLaren, president of M.G. McLaren.

More than 8.4 billion pounds of plastic containers are produced each year in the U.S., with some six billion pounds landfilled as waste. Recognizing the environmental and potential economic benefits of reusing some of the waste plastic, several entrepreneurs started making plastic lumber and timber products. But unstable market demands for plastic lumber led to the failure of many start-up companies.

"Historically, markets for mixed plastics have been weak, which has greatly limited recycling of these materials," said Terry Grist, an environmental protection specialist at the EPA Headquarters' Office of Solid Waste. "The success of projects such as this one will open new markets for these

materials and provide the opportunity to increase the overall recovery rate for plastics."

CERL has been working since the early 1990's with Rutgers, EPA, and a group of plastic lumber manufacturers to improve product quality and develop standards and specifications for the materials. CERL's interest was to add this environmentally friendly technology into the Corps' military and civil works construction. At the same time, EPA had announced a national goal to recover 35 percent of municipal solid waste.

According to Grist, "During the past 10 years, EPA has worked hard to encourage recycling through the development of end-use markets for products made from recovered materials." One such effort has been to develop tools such as procurement guidelines which designate items containing recovered materials that government agencies must purchase.

Recycled plastic lumber offers a replacement for wood products, many of which are treated with chemicals to

resist rot and insects. Chemically treated wood can require special handling and disposal, and chemicals can leach into the environment if not disposed of properly. Wood structures that are not treated with chemicals have to be maintained periodically by coating with preservatives, which can release gases into the atmosphere. Plastic lumber requires no such maintenance.

"We have wooden bridges and they're a maintenance problem," said Martin. "We have to send crews out two or three times a year to replace deteriorated lumber and fasteners that have worked loose. Most of our wood bridges are on running or hiking paths so the splinters and loose fasteners become a safety hazard."

Martin estimates that bridges made with chemically treated wood last about 15 years under the climate and usage at Fort Leonard Wood. Untreated wood bridges may have to be replaced as often as every five years. In contrast, CERL's Lampo projects a 50-year, maintenance-free service life for the plastic lumber bridge (although the steel supports may need repainting).

CERL and the DPW will continue to monitor the bridge's performance. By successfully demonstrating recycled plastic lumber in a large-scale, structural application, the project opens up a world of potential for diverting waste plastics to beneficial use -- and the supply of raw materials is virtually limitless.

"It would take 87 miles of a bridge the same width as this one to use up just one year of landfilled plastics," Lampo said. "We're not going to run out of raw materials any time soon."

According to McLaren, "The challenge is to promote the acceptance of these materials in the regulatory, design, and construction communities. I believe the future of our industry demands the use of alternate materials for construction, and the reuse of discarded materials is an obvious benefit to society."

Barracks complex offers soldiers contemporary living

By Debi Horne
Baltimore District

Contemporary living is now a new style of life for soldiers stationed at Fort Detrick, Md. Gone are the World War II buildings with community bathrooms, kitchens, and bunks. Welcome to the Unaccompanied Enlisted Personnel Housing Complex.

Built to accommodate the transfer of single soldiers affected by the BRAC-95 closure of Fort Ritchie, Md., this complex contains five barracks buildings, a community building, and a company operations building. With 48 rooms in each bar-

racks building, the complex provides housing for up to 240 enlisted and noncommissioned officers.

Modern housing provides that lower grade enlisted servicemembers will share adjoining rooms, each with their own walk-in closet, separated by a kitchenette/bath area. Each noncommissioned officer will have two rooms, private bath, walk-in closet and kitchenette/bath area.

The community building contains a game room, personal mail service area, kitchen facilities, meeting hall, individual storage bins in the lower level, and the central power and heat plant for the entire complex.

The company operations building contains 6,000 square feet of individual office space with modular furniture.

"The partnership of Baltimore District personnel resulted in completing the design and environmental assessment phases in record time," said Jon Sadler, project manager. "In only six short months the environmental assessment and design work to include

geotechnical and topographical reviews, site work, and state approvals, were completed. This was just an amazing accomplishment and the quality of the design is outstanding.

"The teamwork and support we received from the Military District of Washington, the Office of the Assistant Chief of Staff for Installation Management, Corps Headquarters, tenants and the post also assured successful completion of a challenging project," Sadler added.

Sadler said this project was significant because, even with some design and construction challenges along the way, the complex was still completed three months ahead of schedule. He attributes this to the aggressive nature of the contractor, CCI, Inc. and their high quality workmanship.

Each building memorializes the lives of deceased soldiers whose dedication to duty sets the example for all soldiers to follow. At a ribbon-cutting ceremony May 18, family members assisted in unveiling the dedication plaques.

Reading, writing and research

CRREL's Arctic Education Office reaches public through students

Article by Jillian Roderick
Photo by Dr. Debra Meese
CRREL

The Cold Regions Research and Engineering Laboratory (CRREL) does more than perform cutting edge research and engineering. CRREL also offers high quality educational outreach programs that enrich the lives of both CRREL staff and participants in the Hanover, N.H., area and far away spots like Barrow, Alaska.

CRREL maintains an Arctic Education Office (ARCEO) that offers a link between researchers and the public. Examples include partnerships between teachers and students in the Hanover area with teachers and students in Barrow. Elementary students at the Bernice Ray School in New Hampshire have established e-mail pen pals with students at the Ipalok Elementary School in Barrow. This allows Ray students to learn more about the Arctic and Native American culture.

Dr. Debra Meese, director of ARCEO and a CRREL ice researcher, believes such a program is beneficial because it exposes students in the lower 48 states to a way of life that is completely unfamiliar.

As part of ARCEO, fifth graders at Bernice Ray spent a week at CRREL, where they performed experiments, spoke to Navy divers, and learned about the Arctic environment. Ray school students are also following the Surface Heat Budget of the Arctic project, a 13-month expedition that measures the surface heat budget of the Arctic. Consequently, they are learning about navigation, sea ice, and meteorology.

In 1996, Tim Buckley, a high school biology teacher in Barrow, participated in the Arctic West Section 1996 aboard the Coast Guard vessel Polar Sea with Meese and other CRREL researchers. Since that cruise, Buckley and Meese have continued to work together. To complement their academic curriculum, Buckley's students assist CRREL researchers in local studies such as collecting sea ice samples for Meese off of the coast of Barrow.

Meese also facilitates the Arctic Program which prepares teachers to travel to the Arctic for research projects. When they return, they have valuable first-hand knowledge and experience. Meese stresses that these programs are "very young and that expansion is a major goal."

The Equal Employment Opportunity (EEO) Office also coordinates various outreach programs including the Women In Science Program (WISP), high school apprenticeships, and Workforce Recruitment for College Students with Disabilities.

WISP is a Dartmouth College effort, joined by area facilities like the Dartmouth-Hitchcock Medical Center and CRREL. CRREL teams first-year college women with a scientist/engi-



Students from Tim Buckley's class perform field work in Barrow, Alaska. Buckley's students assist CRREL researchers in local studies by collecting ice samples and doing other tasks.

neer. The CRREL member is a tutor, mentor and advisor.

WISP originated to remedy the under-representation of women in the sciences. Gerald Bettis, Director of CRREL's EEO Office, believes WISP's success is proved by the "dramatic increase in women choosing majors in science and engineering."

In WISP's first five years, more than 360 women participated in research internships, and 155 faculty and researchers volunteered as WISP sponsors. In 1995 alone, 236 women were paired with CRREL mentors. Samantha Feakin, a 1998 WISP participant, says "Overall, I have become more confident. I have gained a broader understanding of the opportunities available in science."

The Workforce Recruitment Program for College Students With Disabilities is another program CRREL participates in. This summer, CRREL is employing two students through this program. It gives job experience with hands-on training to college students with disabilities.

CRREL also maintains an internship

program for area high school students. The program, established by the Department of Defense, gets students with an interest in science more involved in the field. Each year, about 10 area high schools select three candidates to compete for two or three positions per year at CRREL.

Students are guaranteed a summer job, and employment during other school vacations for up to six years as long as the student maintains good grades and majors in a science field.

Annye Notman, who is in her second year at Tulane University in New Orleans, has worked at CRREL for three years through the program and expects to spend two months at CRREL's Alaska field office in Fairbanks this summer. At any time, CRREL employs at least 15 students through this program.

Leonard Zabilansky, a civil engineer in CRREL's Ice Engineering Division, is the Western New Hampshire regional co-director of MathCounts, a national program that challenges seventh and eighth graders to achieve in math. In 1997, 350,000 students

across the U.S. participated in MathCounts. Students, (mathletes) answer math questions individually in the Sprint and Target Rounds, and as a four-member team in the Team Round. The top 10 scorers of the Sprint Round then compete in an oral Countdown Round.

"MathCounts makes students more excited about math because on all levels (local, state and national), they get to work with others who are excited about math," said Margo Maddock, coach for the Frances C. Richmond High School team which has won the state-level competition five times in the last six years. "It provides an opportunity for stronger students to excel."

Zabilansky also coordinates CRREL's participation in the School-to-Work program sponsored by Vermont. This was the first year of the partnership between Newbury Elementary School, School-to-Work, and CRREL.

Through School-to-Work, 30 sixth graders at the Newbury Elementary School established a year-long partnership with CRREL. The students learned about the causes of riverbank erosion and the prevention of such erosion by following CRREL's Riprap Test Basin research. They also made their own replica of the river embankment model used in the test basin to calibrate/sort/sieve the riprap, a protective layer of quarry stone placed to prevent erosion. Students worked with CRREL team engineers and researchers, learned about ice formations and performed experiments using the scientific method. The program consisted of both an academic curriculum and on-site visits to CRREL.

CRREL also provides outreach in the field of robotics. Dr. Jim Lever, a mechanical engineer, is a coach for the Lebanon High School team in the For Inspiration and Recognition of Science and Technology (FIRST) competition. FIRST is a nationwide program that inspires high school students to excel in science by offering positive role models and the challenge of competition.

Lever's group has engineers, one teacher, three or four parents, and 25 students. Teams have six weeks to design and build a robot for the national competition. The process requires a great deal of time and commitment by team members and the volunteers. This year, Archimedes, the robot built by Lever and his students, finished in the top 25 percent nationally.

The Upper Connecticut River Valley Junior Solar Sprint Program brings together about 400 seventh- and eighth-grade students from 15 schools in northern Vermont and New Hampshire.

Students work in teams to build and race solar-powered model cars. Bob Hachnel, a CRREL research mechanical engineer, is area coordinator, and Michael Walsh, a mechanical engineer, is assistant coordinator.

Arsenal provides expertise, machined parts

By Tom Bell
Watervliet Arsenal

Cannons and dredges seem as unrelated as two pieces of hardware can be. But the precision heavy metalwork required to build cannons has become an important money-saving resource for the U.S. Army Corps of Engineers, and an important source of work for Watervliet Arsenal (WVA) in Watervliet, N.Y.

Long recognized as a world leader in the design and manufacture of cannon, WVA has expanded its utility to the Department of Defense through product diversification, including building or repairing equipment for Corps' dredges and service craft. Due to design similarities between many marine components and the large-caliber cannon normally produced at WVA, the arsenal's capabilities can support a wide range of Corps hardware.

Work began in 1995 with the weld cladding and remachining of propulsion shafts for the Wilmington District dredge *Schweizer*. With that success, WVA received another contract from Wilmington to build replacement shafts for the dredge *Fry*. Although initial difficulties were encountered in processing the stainless steel involved, effective procedure changes ensured that the *Fry* shafts were completed and delivered in good order.

The arsenal also produced a new propulsion shaft for St. Louis District's

Pathfinder-type towboat.

Philadelphia District representatives toured the arsenal in February 1996 to assess its ability to make replacement parts for the dredge *McFarland*.

"During this inspection we decided to have Watervliet Arsenal manufacture spare parts for the *McFarland*," said Mark Saylor, team leader of the *McFarland* Support Team. "The arsenal's extensive manufacturing capabilities were impressive and it was clear they would meet our requirements. We placed an order with Watervliet in May 1996 for parts for hopper door operating mechanisms and dredge pumps. This was followed-up by an order in October 1996 for rudder parts."

These projects involved complex machining, welding, fabrication, plating, assembly, and inspection. All items were completed and delivered to the Fort Mifflin Distribution Center in time to support the October 1997 drydock overhaul of the *McFarland* at Colonna's Shipyard in Norfolk, Va. As part of WVA's commitment to customer service, arsenal personnel visited the shipyard during the overhaul to insure that all WVA-produced equipment met both installation and functional specifications.

During a discussion about Corps/Watervliet teaming initiatives, Saylor said that "in this age of downsizing and the shrinking of our industrial base,

quality control often becomes lost. While the *McFarland* parts are not subject to harsh battlefield conditions, they are subject to extreme wear due to the dredging process. Quality, particularly in maintaining required tolerances, is extremely important. Any time spent remachining incorrectly manufactured parts results in lost dredging time. This is what matters to the customers. Further, the cost of parts manufactured by Watervliet Arsenal was reasonable compared to the cost of parts obtained through private industry, with the added benefit of rigid quality control."

Becoming a marine equipment supplier required adjustments for the arsenal. Personnel made an intense effort to become fully knowledgeable of related industry standards, along with the unique design, manufacturing and test requirements of the American Bureau of Shipping (ABS). Also, many arsenal members used training with industry members to refine skills required for highly specialized activities, like the fiberglass coating of propulsion shafts.

Through such efforts, WVA established an ability to provide a full range of manufacturing services for operating or maintaining Corps marine vessels and associated systems. Additionally, a teaming arrangement with Benet Laboratories, a co-located Armament Research, Development and Engineering Center, will enable design,

reverse engineering, and/or metallurgical support on Corps-related projects.

In late 1997, discussions with Steve Cucullu, Port Engineer for the dredge *Wheeler* in New Orleans District, led to WVA providing a quote for refurbishing two spare 47-foot-long tail shafts for the dredge. The price and availability was acceptable and the shafts were forwarded to WVA for repairs, including removing and replacing worn liners and fiberglass coatings. All prescribed tasks were accomplished and the shafts received both customer and ABS approval for return shipment to New Orleans in June.

"Fitting the three liners on each shaft required precision machine work due to the size and close tolerances," said Cucullu. "We were impressed with their quality assurance program and attention to detail. They kept us informed throughout the entire process with thorough and accurate reports."

Current initiatives include providing manufacturing services to both New York and Philadelphia districts for repairing or replacing a variety of marine equipment, including propulsion shafts and other items associated with on-board dredge mechanisms.

In recognition of the close relationship between the Corps and the ABS, all WVA manufacturing and quality procedures associated with processing Corps marine equipment are developed and applied according to applicable ABS rules.

Boeing hires Corps for missile program

By Kim Speer
Huntsville Programs Center

Government agencies hiring contractors for their skills and services is commonplace, but a contractor "hiring" a government agency is rare indeed. However, that's exactly what Boeing Corp. recently did when it decided to partner with the U.S. Army Engineering and Support Center, Huntsville for traditional architectural-engineering design and construction oversight work for the National Missile Defense program.

The Huntsville Center will act as the "one door to the Corps" for various support roles that the U.S. Army Corps of Engineers will play as a partner in Boeing's systems integration contract and the National Missile Defense Program (NMDP).

The NMDP is intended to defend America against limited attack by intercontinental ballistic missiles (ICBMs) that could be aimed at the U.S. in the future. The Huntsville Center has a long history with the Ballistic Missile Defense Program. Huntsville Center's conception and original mission was entirely devoted to the design and construction of facilities for the Army's SENTINEL/SAFEGUARD Ballistic Missile Defense (BMD) System in the late 1960s. Although the SENTINEL mission gradu-

ally diminished, the Huntsville Center has remained an active participant in the Ballistic Missile Defense program for more than three decades. In 1992, Headquarters appointed Huntsville Center the program manager for all Corps support throughout the life cycle of the program.

The Corps' involvement is only a piece of the National Missile Defense Program contract awarded to Boeing by the Ballistic Missile Defense Organization in 1998. As the lead systems integrator, Boeing's three-year contract is worth about \$1.6 billion. According to Boeing officials, current plans include developing and demonstrating the ballistic missile defense system to a point at which a decision to deploy can be made by 2000.

The Boeing decision has an even larger impact for the Corps. While Huntsville Center will maintain the design role, and retain the lead for Corps actions, other Corps offices will also provide their services. Plans for potential facility sites in both North Dakota and in Alaska must be developed, and the Corps' geographic districts will continue their traditional role.

This means both Omaha and Alaska districts will be partners with Huntsville in the design phase, and will provide any construction services required in their areas.

After the facility requirements are finalized, and construction is approved to proceed, the Huntsville Center will continue to act as the "one door to the Corps" for the Ballistic Missile Defense Organization and the National Missile Defense program, but the responsible geographic district will manage the construction. "The construction oversight provided by the responsible district will definitely mean an increased workload and funding for that district," said John Romeo, program manager.

The Cold Regions Research and Engineering Laboratory (CRREL) also will provide its expertise in the development of both facilities. "CRREL has always been involved with facilities in these areas, and they will continue their role," he added.

Additionally, the Huntsville Center has offered to support Boeing in design and construction of proposed facilities for missile integration and testing. Currently Boeing plans the construction of three missile silos for testing and training purposes. The test silos would be located at Kwajalein Atoll in the South Pacific and Vandenberg Air Force Base, Calif., with the training silo located at the Boeing facility in Huntsville, Ala. "We believe Corps participation will help facilitate integration of the various elements as the program comes together in the future," said Romeo.



A Ground-based Interceptor test vehicle is launched from Kwajalein as part of the National Missile Defense Program. (Photo courtesy of Huntsville Programs Center.)

New dome saves fuel in Japan

By Capt. Jason Tanaka
Japan District

Japan District recently completed a unique project, the Tsurumi Dome. The project built a geodesic aluminum dome roof atop Tank 603 at the Tsurumi Operating Unit No. 1 (OU-1) Fuel Terminal. The terminal, operated by Yokosuka Naval Base's Fleet and Industrial Supply Center's Fuel Department, is in the Yokohama harbor between Yokohama City and Haneda.

It presented several unique challenges for the district and is one of the first domes of its type in Japan. Successful completion of the project required teamwork between several agencies.

The project was just a small portion of a larger contract that teamed three U.S. Army Corps of Engineers districts. The Defense Fuel Supply Center (DFSC) (now the Defense Energy Support Center) at Fort Belvoir, Va., funded the project. The venture called for designing and building geodesic aluminum dome roofs over six floating roof, bulk fuel storage tanks. Five tanks were at the Defense Fuel Supply Point (DFSP) at Manchester, Wash., and the sixth tank was Tank 603 at Tsurumi OU-1.

Louisville District worked with DFSC to solicit and award the project as a design-build contract. Following award and design, Louisville District transferred construction to Seattle District to oversee work at Manchester, and to Japan District to oversee work at Tsurumi.

Louisville District prepared the solicitation package with the assistance of Japan and Seattle districts to ensure site specific contracting and construction requirements were included. The contract award committee included members from all three districts.

In September 1996, Louisville District awarded the contract to TEMCOR, a California-based company specializing in designing and building aluminum clear span structures. Louisville District oversaw design of the domes and in August 1997 transferred the construction at Tsurumi to Japan District. The district issued TEMCOR a notice to proceed with building on Sept. 30, 1997. After initial construction submittal review and acceptance, work on the project began last Jan. 12.

Another unusual aspect for Japan District was that the project's prime construction contractor was a U.S.-based company. Japan District normally oversees construction contracts awarded to local Japanese contractors. Since TEMCOR did not have all

the requisite licenses to build in Japan, all the labor at Tsurumi had to be sub-contracted to a licensed construction contractor in Japan. TEMCOR selected Nippon Hodo as its subcontractor.

The work at Tsurumi first called for cleaning and freeing the fuel tank of vapor to ensure a safe working environment. Next, the contractor made various tank modifications such as removing projecting points so all the tank parts would fit under the new dome roof. Modifications to the tank also included adding a new gauging pipe and gauging platform. The last major stage of work was building the dome.

TEMCOR, as the prime contractor, sent a site superintendent, Shawn Michaels, to oversee Nippon Hodo's work and the dome construction. Nippon Hodo did the tank cleaning, vapor freeing, and modifications. TEMCOR made all of the aluminum dome parts at its plant in California and shipped the material, along with special tools, to Japan.

Since the Nippon Hodo crew had never built a geodesic frame structure, Michaels had to explain and demonstrate each step. This included tasks from laying out and connecting the aluminum members of the geodesic frame, to installing specialized bolts to connect the members. All this through an interpreter.

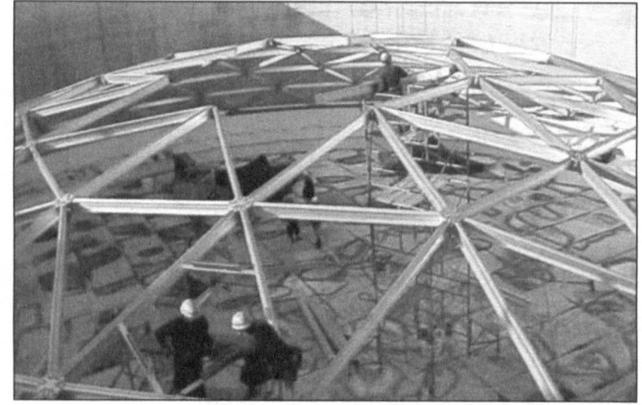
Even with an untrained crew, Michaels and his crew built the dome and secured it to the top of the tank in less than 20 working days.

TEMCOR's simple yet functional design, plus its complete, accurate production and delivery of the materials, in addition to Nippon Hodo's dedicated crew, made such productivity possible. They completed the project on March 30 four days ahead of schedule.

Most of the work involved significant safety risk. Besides the inherent fire hazards of working in a fuel terminal, the tank cleaning work was performed in a permit-required confined space, and fall protection precautions were needed for work on top of the tank. Tank modifications also required welding both outside and inside the fuel storage tank.

The Tsurumi Fuel Terminal emptied the tank before start of the tank cleaning work and kept several adjacent tanks empty to permit safe welding. The Fleet Activities Yokosuka Fire Department assisted in issuing welding permits and ensuring the site conditions were safe.

The fire department's personnel also assisted the dome leak test by providing a water pump truck, hoses, and crew. The crew sprayed water on the



A shot from above the dome shows its geodesic skeleton. (Photo courtesy of Japan District)

dome roof so the contractor could identify leaks that required re-caulking.

Until this year, Japanese law required steel tank roofs for all fuel storage tanks. Typically, floating roof tanks are sealed at the edges with rubber gaskets. These seals, left exposed to sunlight, will degrade and eventually allow water to seep along the sides of the tank and into the fuel. With a dome atop the tank, rainwater is diverted to the outside of the tank.

Another significant benefit of an aluminum dome roof is that it reflects much of the sunlight, which keeps the fuel at a lower temperature, thus reducing loss by fuel from evaporation. The savings in fuel retained can help recover the cost of building the dome roof.

The geodesic frame pattern and the use of lightweight aluminum for both the framing and the panels permit the roof to span the entire diameter of the tank (119 feet) with no intermediate supports. Teflon pads on the connection plates between the aluminum frame and the steel tank allows the frame to expand and contract with heat and cold. The teflon pads also separate the aluminum roof and steel tank to prevent corrosion. Silicon seals keep the dome relatively maintenance free.

TEMCOR provided a four-year warranty of the work.

With the recent change to Japanese law, Japanese industry has shown significant interest in building more geodesic dome roofs over fuel storage tanks. Experience gained in this project places Japan District in a position to assist its partners in similar projects.



Flying from the top of the dams' control structures, this flag reminds boaters in Kansas City District to act safely.

Flag calls boater attention to need for water safety

Article by Larry Crump
Photo by Brad Cox
Kansas City District

Kansas City District has launched a new effort to make boating enthusiasts and other water recreationists aware of the importance of wearing life jackets. It is flying giant-sized flags at most of its lake projects that carry a striking message and may be seen for miles out on the water.

The flags, made of lightweight polyvinyl material reinforced on the edges by a strong nylon thread, measure six feet wide by 10 feet long. The message is simple -- *Save Lives*. The words reinforce the image of a four-foot-high life jacket, colored in safety orange, silhouetted against the blue background of the flag. The flags are mounted on special poles at the lakes' water control structures.

The idea for the flag was suggested by Jim Bell, a

member of the district's Water Safety Committee who is stationed at Hillsdale Lake. The committee had the flags specially commissioned and they are now flying at most of the lakes.

According to the Coast Guard, some 11 million boats are registered by states and jurisdictions. Each year more than 7,000 boating accidents, 4,000 injuries and 500 drownings occur nationwide. Capsizing and falls overboard account for more than half of all boating fatalities. More than 80 percent of drowning victims were not wearing life jackets. The flags are designed to help lower that percentage.

The idea of similar large flags may soon spread to other districts and agencies. Gary Foster's talk about them received a positive reception from representative of the U.S. Army Corps of Engineers and other federal, state and local agencies at the International Boaters and Water Safety Summit in Hollywood, Fla., on May 4-8.

Around the Corps

SES news

The following Senior Executive Service (SES) reassignments will be effective in August.

Dwight Beranek will be reassigned from Director of Engineering and Technical Services (ETS) in Great Lakes and Ohio River Division (LRD) to Chief of Engineering Division in the Directorate of Military Programs at Headquarters.

Paul Robinson will be reassigned from Director of ETS in Southwestern Division (SWD) to Director of ETS in LRD.

Kristine Allaman will be reassigned from Director of ETS in Northwestern Division (NWD) to Director of the Corps' Center for Public Works.

Steve Stockton will be reassigned from Chief of Engineering Division in the Directorate of Civil Works in Headquarters to Director of ETS of South Pacific Division (SPD).

Carl Enson will be reassigned from Director of ETS in SPD to Chief of Engineering Division in the Directorate of Civil works in Headquarters.

The following appointments to the SES will be effective in August.

Joseph Tyler, Chief of Engineering Division in Pittsburgh District, will become the Director of Programs Management (PM) in North Atlantic Division.

Louis Carr, Chief of Construction Division in NWD, will become the Director of ETS in Pacific Ocean Division.

Michael White, Director of PM in LRD, will become the Director of PM in NWD.

Donald Basham, Deputy District Engineer (DDE) for PM in Louisville District, will become the Director of ETS in Mississippi Valley Division.

Robert Vining, Chief of Planning Division in SPD, will become the Director of PM in LRD.

James Crews, Chief of Construction Operations in LRD, will become the Director of ETS in NWD.

Anthony Leketa, the DDE and Chief of PM in Baltimore District, will become the Director of PM in South Atlantic Division.

Charles Shuford, DDE for PM in Wilmington District will become Director of ETS in SWD.

Quality awards

Three members of the Topographic Engineering Center (TEC) recently received 1998 Army Small Business Innovation Research (SBIR) Phase II Quality Awards. The recipients were Dr. William E. Roper, TEC's Director; Verner Guthrie, the Technical Representative; and June Jamieson, SBIR Coordinator.

Vexcel Corp. developed a computer-based mapping work station that creates maps from the Interferometric Synthetic Aperture Radars (SAR). It collects processed SAR data, applies automated algorithms to locate map layers, and produces terrain maps from anywhere in the world in a day or less. It also offers significant commercial mapping opportunities.

The Army SBIR Program sponsors an annual Quality Awards Program that recognizes top Army SBIR Phase II projects for their technical achievement, contribution to the Army, and dual-use commercialization potential.

Congress initiated the SBIR program in 1982 to increase small business involvement in federal research and development. Successful Army SBIR research efforts move through three phases. Phase I, feasibility study, lasts up to six months; Phase II, R&D, lasts up to two years; and Phase III, commercialization.

Advance measures project

The first advance measures project in the Great Lakes and Ohio River Division has been completed at Van Buren Point in Portland, N. Y. Buffalo District completed a 260-foot repair to the gabion structure at the site. The project is the first of a series

begun in 1997.

"An advance measures project is a temporary (15-year design life) structure built in response to an imminent threat to human life and/or developed property," said Gary Shoffstall, civil engineer on temporary assignment in the Emergency Management Branch.

An initial advance measures project was built at Van Buren Point in 1974, after a storm that overwhelmed the natural shoreline, washed out roads, toppled power lines and damaged underground utility lines. A 2,000-foot long gabion (stone-filled wire baskets) structure was built along the southwest corner of the bay at Van Buren Point to provide flood protection and shield underground utilities near the shore.

The Van Buren Point Beach Homeowners Association faithfully maintained the gabion structure until waves created by northeast winds and seasonal ice flows caused the eastern portion to collapse into the lake.

Strock Paving and Construction of Lancaster, N. Y. won the \$110,500 contract on April 24 to replace 260 feet of the damaged gabion structure. They replaced the bottom layer of gabion baskets with quarried rock weighing between 700 and 3,000 pounds. The rock was extended in front of the new gabions to serve as a toe/bench foundation.

During final inspection, the modified design proved successful. The new section stopped three-to-four-foot waves, while they overtopped the older part of the structure and landed on the road behind it. James Webster of the Homeowner's Association said they were "beyond happy" repairs and with the speed which the Buffalo District responded to the emergency.

Vet clinic

(Editor's note: Due to a printing error, the accompanying photo was distorted in the July "Engineer Update." It is correctly printed here.)

Military working dogs helped cut the ribbon to the new Veterinary Clinic in Wuerzburg during a recent opening ceremony. Located in Building 26 at Leighton Barracks, Europe District began interior renovations last October in preparation for the clinic's move from the basement of the Wuerzburg Army Hospital.

The new facility now offers three separate waiting rooms, four separate kennels, four screening rooms, a surgery prep room, a lab, an X-Ray room, and a pharmacy. Upgrades to the heating, water, and electricity were also completed.

"This is a dramatic improvement from what we're used to," said Maj. Dan Holland, deputy commander of the 72nd Medical Detachment. "We were in a really old facility before, and space was limited. This new facility is much more efficient. It's really going to improve ease, safety, and patient flow."

"The waiting room is a lot larger," said veterinarian Jim McLaughlan. "There are three exam rooms and we now have X-Ray and developing capabilities. A prep-room and separate surgery room has been



A ribbon "biting" ceremony opens the new Veterinary Clinic. (Photo courtesy of Europe District)

added and we're able to put larger dog kennels in the clinic. We were working with five people in one tiny office, so the additional office space is a big improvement."

Arctic cruise

On June 2, the Coast Guard cutter *Polar Sea* departed Nome, Alaska, on a 27-day cruise to study the Arctic Ocean. On board were Barrow High School teacher Tim Buckley and Aaron Putnam, a teacher/student team taking part in a science education program, Teachers Experiencing the Arctic (TEA).

The TEA program is directed by Dr. Debra Meese, an ice researcher with the Cold Regions Research and Engineering Laboratory (CRREL), and is funded by the National Science Foundation's Office of Polar Programs, and the Education and Human Resources Directorate.

When they arrived in the Arctic circle, Buckley and Putnam and other members of the crew studied the chemical and biological properties of ice and ice-entrained sediments. The *Polar Sea* allowed them to get into the ice pack to collect samples for onboard analysis. Later, the samples will be analyzed by specialized labs at CRREL.

The *Polar Sea* returned to port on June 2. Those interested in monitoring the vessel's activities may do so at the website <http://www.oz.net/~polarsea/>. TEA also has a website at <http://www.glacier.rice.edu/chapter/tea/teaintroduction.html>.

Corrections

Maj. Gen. Lewis Pick was the 37th Chief of Engineers, not the 44th as reported in the August *Engineer Update*.

Ed Gustek is an engineer with Buffalo District, not New York District as reported in the June *Engineer Update*.

Emergency Manager of the Year

The Emergency Manager of the Year is Lizabeth Miller of Los Angeles District. Miller received her award from Maj. Gen. Russell Fuhrman, Director of Civil Works, during a ceremony on July 17 at Headquarters.

Fall hazard

During the last year, the Safety, Security and Occupational Health Office has noticed an increase in reported accidents from falls in the various government buildings' hallways. Many of these falls are caused by spilled liquids which are not immediately cleaned up.

A wet floor can be as slippery as ice, and small spills can be especially difficult to see. This presents a serious falling hazard where people can easily break bones or receive other serious injuries.

Here are a few tips to keep floors dry and safe:

- Keep lids tight on cups.
- Don't fill drinks to the brim.
- If you wash an item in the restroom, make sure it's dried thoroughly before carrying it back to your office.
- When carrying coffee pots filled with water, put a paper towel under the pot to help catch wayward drips and splashes.
- Be careful not to "track" water from the drinking fountain.

● Don't have the attitude that "the cleaning crew will eventually clean it up." It only takes a split second for someone to slip.

If you *do* spill something on the floor, please be safety conscious and immediately clean it up. If a spill is too large for you to handle, contact your building's facilities office right away.

Senior Corps lawyer rests his case

Article by Bernard Tate
Photo by F.T. Eyre
Headquarters

If there were more lawyers like Les Edelman, there would be fewer lawyer jokes. Of course, there would also be fewer lawyers because there would be less litigation. Edelman, Chief Counsel of the U.S. Army Corps of Engineers, has spent much of his career practicing preventative law, finding better ways to prevent and resolve disputes.

"My style of law means that I can solve more problems over a cup of coffee than I can any other way," said Edelman. "There are times you have to litigate, but I think the really good work is done in preventing litigation."

And it works. During Edelman's watch, the Corps reduced contractor claims against the government from 1,103 claims in 1986 to 276 this year. The contract appeals caseload has fallen from 692 appeals in 1987 to its current level of 274 active appeals.

After 40 years of such successes, Edelman is retiring soon. He took time recently to reminisce about the road he's traveled and what he's learned.

He says he always felt drawn to public service.

"Immigrants (and my parents were both immigrants from Russia) felt that government service was a way to repay this country for the opportunities they had received," said Edelman. "And it was about that time John Kennedy said, 'Ask not what your country can do for you; ask what you can do for your country.' So I think those two things tied together."

After getting his masters degree from the Columbia University School of Law, he joined Detroit District in 1958. For the next 10 years he served in Detroit and Chicago districts, North Central Division, the Corps' Missile Construction Office, and finally in Headquarters as Assistant Chief Counsel for Civil Works and Legislation.

Edelman gained a reputation for good legal advice. In 1968, George Fallon, chairman of the Committee on Public Works and Transportation in the House of Representatives, recruited him as the committee's counsel. From 1968 to 1979, Edelman worked on legislation including Urban Mass Transportation Acts, Economic Development Acts, Disaster Relief Assistance Acts, the Airline Deregulation Act, and the Clean Water Acts of 1970, 1972, and 1977.

"I had staff responsibility for those bills," said Edelman. "Writing law is the compilation of many peoples' thoughts and proposals. I was responsible for pulling everything together, for the language, putting people's ideas in, and seeking compromise among many different positions and people."

According to Edelman, probably no bills he worked on had more impact than the Clean Water Acts.

"Many people believe the 1972 Clean Water Act was the most important single legislation of the century because it was the bellwether of environmental change," Edelman said. "There are other bills I feel good about, but the Clean Water Act of 1972 was probably the most significant bill I was involved with."

In 1979, Lt. Gen. John Morris, Chief of Engineers, invited Edelman back to the Corps as Chief Counsel.

"In the early 1980s, we were overwhelmed with litigation, particularly in construction contracts," said Edelman. "We had more than a thousand cases at the courts, and it would take three to 11 years to get a decision. Every contract was a battle. We were complaining, and the industry was complaining."

"The chief judge at the Armed Services Board of Contract Appeals said the situation was out of control," said Edelman. "I called together a few of my people and said, 'If it's out of control, we'd better find another way of doing business.'"

"So we started looking for a better way with these cases, and we discovered alternate dispute resolution," said Edelman. "ADR includes mini-trials, me-



Les Edelman, Chief Counsel and legendary champion of alternate dispute resolution and partnering, will retire Sept. 3.

diation, facilitation, fact-finding. We particularly liked that ADR can create deals with win-win situations. We believed that if we could resolve these disputes without going to full-scale litigation, we could maintain a business relationship with the contractors so that there wasn't always a fight."

Edelman and his Corps team first experimented with mini-trials. In a mini-trial, a Corps representative, a contractor representative, and a neutral third party hear the case. Witnesses give testimony, evidence is presented, but there is no cross-examination and no judge. After hearing the evidence, the parties try to negotiate an agreement.

After success in a small experimental case, Edelman's team tackled the Tennessee-Tombigbee Waterway case. The Corps had a potential liability of more than \$55 million and the case could have dragged on for years. But a mini-trial settled it for \$17.25 million in a short time.

"Afterwards, a small cell of people created an ADR training program, and the Chief of Engineers authorized us to train four or five hundred senior people in ADR to change the litigation mind-set," Edelman said. "We worked carefully training people, writing success stories and how-to manuals to bring about a cultural change, and providing a small center of expertise where the field could seek advice."

"While we were doing that, some smart people on the construction side came to me and asked, 'If we can create change in the way we resolve disputes, why can't we do something to avoid disputes?' And that led to partnering."

Partnering creates cooperative relationships among Corps personnel, contractors, and customers. The key is a workshop held before a project starts where all key participants learn to work together by building trust, identifying common interests, and opening lines of communication.

Edelman earned a lot of awards for his successes, but two hold special meaning. One is a scale-model brass hard-hat on a walnut stand. Edelman is the only non-engineer to earn the Corps' Hard-Hat Award.

"I have a good relationship with the construction people," Edelman said. "I've been fortunate; I've won a lot national awards. But I was pleased when I got

that award because my clients gave it to me."

The other award Edelman cherishes is the Mentorship Award from a group now called the Emerging Leaders.

"Several people who have done well both in and out of the government have told me I was their mentor, but I didn't realize I was doing it," Edelman said. "I think a person who *wants* to be mentored finds a role-model, someone they either admire, or who does things the way they want to do them. If they watch their role-model carefully, they learn. And if they have a good relationship where they can discuss the rationale for certain actions and decisions, that's even better. Formal mentoring programs are invaluable, too, but I've found that informal mentoring is best."

The awards are not the only things that Edelman is proud of. He is proud of being a public servant.

"When I entered public service, it was considered an honorable profession," Edelman said. "But I've noticed that almost an anger has built up against public service. I don't think people today understand the role of government. The role of government is to do what cannot be done by others."

"I think it's important to feel pride in public service," Edelman said. "I've seen people hear criticism of public service and not respond, and I think that's wrong. We *ought* to respond to critics, particularly when they don't know the facts. You start by learning what your agency has done and understanding your role in it. Then have the courage to confront the know-nothings who malign public service."

Edelman will retire Sept. 3. What is the man who preaches pride in public service proudest of?

"That's almost impossible to answer," Edelman said. "I'm proud of a lot of things. I've been privileged to be in the right place at the right time many times. When I was involved in closing the so-called missile gap, that was the most important thing at the time. When I worked on The Hill, the Clean Water Act of 1972 was the most important thing at that time. And I feel proud of the opportunities I've had in championing ADR and partnering."

"Maybe they all tie together in that I've done what I was supposed to do, which was work in public service and do good things," Edelman said.