



Barges carry National Guard vehicles down the Mississippi River. More than 60 barge-loads carrying 850 vehicles was a record deployment via waterway. (Photo by Sgt. Mike Krieg, Indiana Army National Guard)

Corps waterways carry record Guard deployment

The Indiana National Guard used the the waterway navigation system built and maintained by the U.S. Army Corps of Engineers for a history-making deployment.

More than 60 barge loads of military cargo moved down the Mississippi River to Louisiana. When the barges arrived in Alexandria, La., on May 6, they had set a record — the largest National Guard deployment by barges in history.

The barges carried 850 military vehicles. The equipment belongs to the Indiana Army National Guard's 76th Infantry Brigade. The enhanced brigade, headquartered in Indianapolis, was bound for a training exercise at the Joint Readiness Center at Fort Polk, La.

Working with the Military Traffic Management Command (MTMC), the Indiana National Guard's transportation officers opted for the movement by barge.

Convenience, savings.

"The Indiana National Guard has been planning this operation for two years," said John Randt, MTMC Public Affairs Officer. "We did an evaluation with the National Guard and, for this operation, movement by barge was the preferred method.

"The Corps of Engineers has set in place an interstate highway system of the water," Randt continued. "The locks are already operating, the chan-

nels are already dredged, and the buoys are in place. It offered great economies in efficiency and cost. The vehicles could be loaded in the backyard of the customer, and arrive within 40 miles of their destination. And, unlike active-duty soldiers who draw a regular paycheck, Guardsmen are paid when they work. The taxpayers would have paid for Guard drivers to drive all those vehicles across the nation.

"And there are savings in maintenance," Randt added. "From the warfighter's point of view, the vehicles rolled off the barge on May 6, got just 40 miles of use, and were ready to go into action immediately when they arrived at the Joint Readiness Center."

Canal Barge Company, Inc., of New Orleans loaded all 850 military vehicles simultaneously. A total of 45 barges were loaded in Clarksville, Ind.; 15 in Evansville, Ind.; and four in Peoria, Ill.

"This was a big project for us," said Charles Duet, project manager. "To get that many barges together, we had to use some outside sources."

Duet said the 19-day interval between loading and unloading was more than ample for the mission. The barges were staged on the Red River near the Port of Alexandria to be ready for offloading by Indiana Army National Guard soldiers May 6-7. From the port, the vehicles were just 40 miles from their destination at Fort Polk.

"Our units have been preparing for

this exercise for the past two years and some of the preparation has challenged the way the military does business," said Maj. Sara Hall, spokesperson for the Indiana Army National Guard. "Part of the solution was to barge much of the heavier equipment like wheeled vehicles. Clark Maritime Centre (Clarksville) was chosen, in part because of its capability to conduct a roll-on/roll-off operation."

The loading operation was unique to the port, said Hall.

"They haven't done anything of that magnitude before," she said. "To speed the loading, we got gravel and built a road right to the barge loading area."

DoT praise. The barge operation that stretched across the width of the Eastern U.S. and through three major rivers was praised by Richard Lolich, of the U.S. Department of Transportation's Maritime Administration.

"We just took hundreds and hundreds of heavy military vehicles and their crews off the interstate highway system," said Lolich, program manager of the Office of Ports and Domestic Shipping. "That represents a big savings in fuel and driver costs. Water transportation is unique for its safety and ability to move heavy cargoes at a relatively inexpensive cost."

(MTMC press release. Bernard Tate of Corps Headquarters also contributed to this article.)

Projects win design awards

By Bernard Tate
Headquarters

Two U.S. Army Corps of Engineers projects received awards in the Presidential Design Awards 2000 Program. The San Antonio Flood Control Tunnel managed by Fort Worth District, and the Hastings Groundwater Remediation Project managed by Kansas City District, each received Federal Design Achievement Awards.

A total of 35 federal projects were honored during the April 20 ceremony at the Women in Military Service for America Memorial at Arlington National Cemetery. Six people from Kansas City District and seven from Fort Worth District received certificates.

The San Antonio Flood Control Tunnel received the Chief of Engineers Award of Excellence for Environmental Design this year. The 24-foot tunnel is about 140 feet below ground and 3.1 miles long. In October 1998, a record flood threatened the downtown and Riverwalk areas. It is estimated the tunnel paid for itself during this event.

Groundwater at the Blane Naval Ammunition Depot, a Formerly Used Defense Site in Hastings, Neb., is contaminated with trichloroethylene. An innovative air sparging system made up of a vertical air injection well, a horizontal air injection well, and several vertical soil vapor extraction wells is cleaning up the site. This project received an Honor Award in the 1996 Chief of Engineers Design and Environmental Awards Program.

The quadrennial Presidential Design Awards are the only government-wide recognition of excellence in federal design. There are two levels of awards — Federal Design Achievement Awards are given by the National Endowment for the Arts to honor quality design. Presidential Awards for Design Excellence are awarded by the President for quality design under international standards. The program is administered by the National Endowment for the Arts and General Services Administration under the Federal Design Improvement Program.

Insights

Soft answer works for people, Corps, nation

By Lt. Col. (P) Tim Carlson
Chaplain, U.S. Army Corps of Engineers

The word "soft" is not one of our foremost choices in military language. Few of us rally around "soft" starts, "soft" promotion dates, or "soft" suspenses. So how ironic it seems that Solomon, purported to be the wisest man to ever live, wrote, "A soft answer turns away wrath." It seems like a soft answer that avoids wrath would be the *first* choice of military personnel, the ones who face the greatest risk during an international conflict.

Many men and women are socialized today to be firm, to be staid, to be forthright, to be hard. Such qualities have merit, but they also embody significant relational risk.

More than 40 years ago, I attended sixth grade at Sassafras Elementary School in southeastern Kentucky. Fights on the playground at recess were not uncommon. On one occasion two boys, one quite muscled, but small, and the other quite heavy and large had some disagreement over a relatively small matter. A watching crowd exacerbated the conflict, because neither boy wanted to back down in front of his friends. Instead of seeking clarification or understanding, harsh words were exchanged and, without warning, a fight ensued.

The larger boy, by the last name of Lovett, got the worst end of the fight but, almost paradoxically, the smaller lad carried the most guilt. Deep in his heart he knew that softer words could have made Lovett a new friend instead of an antagonist.

This is a principle which can be applied on any scale. Among civilized nations, diplomacy, not com-

bat, is usually the first choice for resolving conflicts.

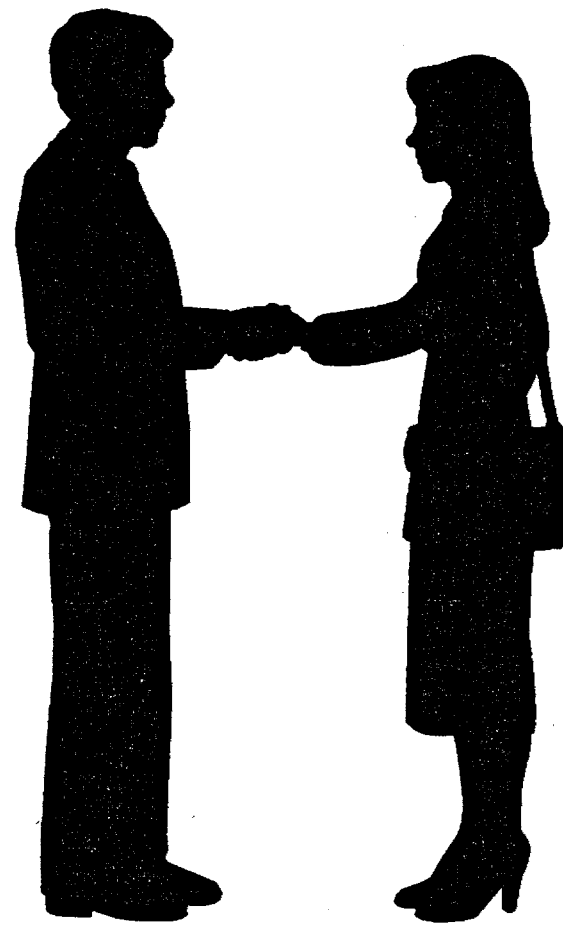
Despite the bitterness caused by the Civil War, Abraham Lincoln always spoke kindly of the South. One day, a Union supporter took him to task about his attitude. "Why try to make friends with our enemies?" Lincoln's antagonist asked. "We should destroy them!" Lincoln gently replied, "Am I not destroying my enemies when I make friends of them?"

Closer to home, even highly civilized members of our organization can occasionally lose their composure. Shouting and unpleasant words are cast at coworkers or leaders. Those affected by these situations often feel threat, dread, uncertainty, and even fight-or-flight fear. Thankfully, such situations are somewhat uncommon in corporate America.

All of us want to succeed and to extend success to our customers and to our world. But the synchronicity which teamwork demands finds its best fulfillment in calm, reasoned interactions among workers. Differing points of view can be seen as strengths and as healthy components of a dynamic organization. Leaders who encourage such thinking, and also model composure and calm, are best able to empower their teams to collective success.

How has it been for you lately? Do you ever feel tempted to "lose it," to "blow your stack," to "pop your cork"? The example of the Corps' leadership is a good one to follow. While an outburst will certainly give some immediate relief, most likely it will also leave an aftertaste of unrest with blighted spirits that will be unsettled and destabilized. Much like a tire that blows out, the pressure is gone, but also the ability to move forward ceases for everyone.

As we continue our demanding tasks of building



and maintaining the nation and world, let us follow the example of Lincoln and employ the wisdom of Solomon. More than 2,900 years ago Solomon said, "A soft answer turns away wrath." What a powerful way to make a friend! What a reasonable way to solve a problem! What an understanding way to hear another's concerns! What a time-tested way to build an indomitable team! And finally, what an efficacious way to strengthen our Corps of Engineers!

(The views expressed in this article are those of the author and do not reflect the official policy or position of the U.S. Army Corps of Engineers, the Department of the Army, the Department of Defense, or the U.S. Government.)

Vinyl replacing some steel sheet pilings

By Maurice Ruffin
New Orleans District

Since the U.S. Army Corps of Engineers first drove sheet piling decades ago, steel has been the material of choice. Now, New Orleans District (NOD) has pioneered the use of vinyl sheet piling to replace steel in some cases. New projects using the vinyl sheets in seepage cut-off walls are expected to net a myriad of benefits for the Corps in the near future.

"It's a never-ending accumulation of savings for the Corps and our cost-sharing partners, and it's here to stay," said John Bivona, Chief of Cost Engineering Branch. He said that the money-saving uses of the vinyl sheet pilings might still be unknown, if it were not for the insight of Wade Wright, a technician in civil engineering.

"The credit belongs to Wade for having the initiative to organize the value engineering study on vinyl sheet piling," Bivona said.

Wright came up with the idea in late 1997 as he searched for an alternative to cold-rolled steel, which tended to allow some seepage.

"I wanted something with more water-tight integrity," said Wright, who then began to investigate the

possibility of using vinyl. One reason it would prove to be a good alternative is because it featured an I-beam locking system, which resists separation once placed in the ground and provides a tighter seal against water seepage.

In January 1998, Wright initiated the study and wrote specifications on the properties of vinyl sheet pilings. Word spread and he began receiving calls from engineers at other Corps districts who were interested in using vinyl in their projects.

Private industry has been using the material in non-seepage projects for a few years, Bivona said, but that to his knowledge NOD is the first Corps district to design projects that specify vinyl as the sheet material.

The vinyl sheet pilings save the Corps 30 to 50 percent compared with steel, for at least three reasons. First, the steel sheet piling NOD uses costs between \$10 and \$12 per square foot; vinyl costs only \$4.50 to \$7.50. Second, vinyl sheet piling is lighter. Steel weighs between 20 and 22 pounds per square foot, while vinyl weighs from 3.5 to five pounds. This means lower transportation costs since more vinyl sheets can be loaded on each delivery truck. Also, steel sheets require heavy lifting equipment, while

workers can carry vinyl sheets. Third, lighter installation equipment (vibratory hammers and impact hammers) can be used, for even more savings.

Engineering Division has specified vinyl sheet use on five projects that are under construction. It has already been placed in the ground in a Southeast Louisiana Drainage Control Project (SELA) at the Woodmere-Sunnymeade. The accumulated savings for these projects will total about \$100,000.

"This may seem like a small savings, but it represents a significant beginning, since most flood control projects require seepage cut-offs," Bivona said.

The vinyl sheet pilings are made of modified polyvinyl chloride, a plastic that can be placed in the same environments as steel, said Peter Manning of Materials International in Atlanta, the company that won the bid on the first NOD project using vinyl sheets. And vinyl, unlike steel, does not corrode when exposed to the elements, said Manning.

"Salt, water, sunlight...all these things take a toll on steel," Manning said. "Vinyl will outlast steel every day of the week and taxpayers get to save a tremendous amount of money as a result."

Continued on next page

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Fort Worth District celebrates 50th

By Judy Marsicano
Fort Worth District

In the spring of 1949, when North Texas was just coming out of a three-year drought, torrential downpours and tornadoes brought Fort Worth's worst flood. Residents remember it as "The Big One" that put whole sections of downtown 10 feet under water.

It also led to the creation of Fort Worth District.

The Clear Fork of the Trinity River, extending along the southwest and downtown areas of the city, was out of its banks within a few hours. One by one, levees gave way to the raging floodwaters, causing considerable damage to industrial and residential property. Eleven people died, property damage estimates reached \$13 million, and thousands of residents were left homeless.

Galveston District already had several flood control projects under construction in North Texas, and the disaster convinced local politicians to press for their speedy completion. No one realized it, but Galveston District's field office in Fort Worth was a district in the making.

Fort Worth District officially opened its doors on April 16, 1950, during the 175th anniversary of the Corps' national organization, with a few hundred employees tasked to alleviate flooding in much of the Lone Star State.

Retiree Donald Samanie, a construction management engineer, was among the first employees to relocate from Galveston District to Fort Worth.

"I came here with the furniture and helped set up all the offices," he said. "We had a pretty good-sized workload with the construction of the lakes and the Fort Worth and Dallas floodways, but we had a top-notch group of people to do the work."

Samanie said there were no strangers among them, as many of the early employees had served together during World War II. "We just came home, took off our uniforms, and went right to work for the Corps," he said.

When the Korean War broke out in 1950, the nation reacted to another emergency (military expansion), and the Corps quickly responded to a new mission — military construction. While work on the civil projects continued, Fort Worth District was tasked to supervise the design and construction of dozens of Army and Air Force installations in Texas, Louisiana, New Mexico, Arkansas, and Oklahoma. To meet the demands of an increased workload, 200 additional employees were hired, making the district one of the largest in the Corps.

"I was at headquarters when we got the military mission and it was no secret that Fort Worth District had the expertise, the knowledge, and the experience to do military construction," Samanie recalled. "Fort Worth District has always enjoyed a good reputation."

By 1960, the district had completed its first 11 reservoirs, repaired and re-



The 1949 flood of the Trinity River in Fort Worth, Texas, led to the creation of Fort Worth District. (Photo courtesy of Fort Worth District)

stored numerous levees, and built the Fort Worth and Dallas floodways to enhance flood protection for both cities.

In the 1960s and 1970s, in response to the nationwide environmental movement, the district became more involved in managing watersheds and restoring wetlands.

The 1980s brought increased military work for Fort Worth District with the construction of some highly sophisticated projects in the technical arena such as the Large Blast Thermal Simulator at White Sands Missile Range. Another notable project is

the 475-bed Brooke Army Medical Center (BAMC) at Fort Sam Houston in San Antonio. The largest military hospital in the world, BAMC was completed at a cost of \$238 million and serves an estimated 1.1 million patients yearly.

Today, Fort Worth District operates and maintains 25 water resources projects, which provide much-needed flood control and 35 percent of Texas' water supply.

"More than 25 million people visit our reservoirs annually, taking advantage of some of the finest outdoor recreation facilities in the stewardship of

any federal agency," said Col. James Weller, District Commander. But, more importantly, these projects have prevented billions of dollars in damages to property owners and businesses over the years, he added.

In support of the military, the district currently manages construction at 17 active installations in Texas, New Mexico, and Louisiana, with extensive involvement in the design and construction of facilities such as barracks, family housing, training and aircraft facilities, schools, childcare centers, clinics and hospitals.

More and more federal agencies are recognizing the district's expertise in design, construction, contracting, and other services, Weller said. These include the Drug Enforcement Administration, the Department of Treasury, the Department of Housing and Urban Development, the Federal Emergency Management Agency, Bureau of Prisons, General Services Administration, and the Federal Aviation Administration.

In addition, the district was recently selected by the Immigration and Naturalization Service to serve as the INS national account manager for planning, design and construction activities across the U.S. The account manager serves as the "one door to the Corps" and as the INS customer advocate.

"During the past 50 years, Fort Worth District has witnessed the tremendous growth of the Dallas-Fort Worth Metroplex and other urban centers in Texas," Weller said. "Our missions will continue to evolve as will the needs of our customers, but we will meet each challenge with a skilled and dedicated workforce for many years to come."

Vinyl

Continued from previous page

Yet, despite vinyl's advantages, it is not expected to replace steel completely.

"Vinyl is a cost-effective alternative to steel, but it is not a one-to-one substitute because it depends on the application," said Bivona. "It is only a definite replacement in appropriate seepage cut-offs."

Vinyl's only disadvantage is that it is not as strong as steel, which means that it cannot be used in applications that require steel's ability to withstand extreme weight, said Wright.

Manning agrees.

"Vinyl is never going to replace steel. It's an alternative. Steel has structure and strength that vinyl doesn't. You're not going to build the Superdome on top of vinyl."

The key to the future of vinyl sheet piling in Corps projects will come by using it selectively. Bivona said about a dozen new SELA seepage projects will use vinyl sheet pilings, and that further applications are being explored. These applications might include flood walls and, possibly, in slope stabilization and channel lining projects.



A construction worker drives vinyl sheet piling at a New Orleans District project. (Photo courtesy of New Orleans District)

Partnering's 7 habits yield 'win-win'

By Bruce Garwood
Transatlantic Programs Center

"The significant problems we face cannot be solved at the same level of thinking we were at when we created them."

Albert Einstein

Partnering, the modern day handshake, works!

The process of partnering is a dynamic excursion into the world of mutual business cooperation. The simple yet sophisticated process allows two or more people (let's call them partners) to reach agreement and understanding of the rules under which they will operate and exactly what constitutes success.

I have facilitated more than 100 partnering workshops since 1991, and I have experienced a great deal, both good and bad. Those experiences have led me to this conclusion — partnering works and is absolutely critical in today's business relationships.

Years ago, the handshake was often enough, signaling that each partner trusted the other to act in good faith. But today's global commerce and technological impact have created an "in order for me to win, you must lose" attitude among business associates. They seem to be natural adversaries instead of partners. The partnering process enables participants to succeed in a *win-win* situation.

Partnering (done correctly, exercised religiously, and administered faithfully) gives up nothing contractually. The contract establishes a *legal* relationship between the parties; partnering establishes a *working* relationship, the framework for all parties to reap contractual success.

Successful partnering is the result of an issues-oriented process. Each contract is unique and each group of partners is unique, therefore each partnering session is unique. But I have concluded that there are seven fundamental conditions, the seven habits for successful partnering, that must be satisfied:

- Choose the right attendees.
- Choose the right facilitator.
- Identify the issues.
- Resolve issues with a formal resolution process.
- Create and sign the partnering agreement.
- Conduct periodic evaluations.
- Select an honest broker.

I'd like to describe these seven habits in more detail.

Choose the right attendees

Selecting the right mix of people to attend the partnering meeting is paramount to success. The right people are leaders who can make a corporate-level commitment and ensure implementation, and the people who will be responsible for interfacing with the other partners daily. If leaders do not participate, commitments made by a subordinate may not have the support of leadership. Those responsible for carrying out the partnering terms daily must be present to understand their mission and leadership's expectations.

Choose the right facilitator

The facilitator is critical, the glue that holds the meeting together and assures the group's desired results. The facilitator keeps communications open and the group headed towards its goal. However, the facilitator cannot accomplish this task without knowing the group's desired outcome, and thus be able to recognize when it is achieved.

Facilitators need more than just basic facilitation skills. For example, the facilitator for sophisticated engineering and construction or other highly technical contractual situations *must* have enough technical skills to recognize and understand the industry acronyms and language, knowledge broad-based in



contracting, engineering, and construction methodologies, techniques, and terms.

When searching for a suitable facilitator, rely on established reputations. Also, the Associated General Contractors, among the pioneers of partnering, maintains a list of successful construction industry facilitators.

Identify the issues

Each facilitation must have the attendees focused on identifying potential issues and problems specific to that contract and group of partners. When you concentrate on issues specific to your audience and their relationships, chances of success are maximized, and the potential for redundancy is minimized.

Resolve issues with a formal resolution process

During this phase of the partnering session, all parties are invited to identify potential or historically troublesome issues that may relate to that specific contract, and to establish a mechanism for dealing with them. Resolving issues with a formal resolution process is at the heart of partnering success.

Contract issues may be identified for clarity or emphasis, but they are *not* negotiable at the partnering table. This is where you establish a *working* relationship; the contract signing has already established the *legal* relationship. Although all issues are not normally resolved in this forum, they are all dealt with and diminished to non-problem status by the partners. The most important aspect of this process is that all issues are identified, dealt with or resolved, committed to record, and become part of the partnering agreement as to how the partners will treat each other during the contract.

Create and sign the partnering agreement

The partnering agreement is a formal document developed by all partners at the meeting, spelling out the goals and objectives related to the contract. An addendum with issues and resolutions is attached and becomes part of the formal document. Every participant should sign the partnering agreement as an expression of commitment to the process. Each

participant is given a copy of the document to serve as a constant reminder of the commitment throughout the life of the contract.

Conduct periodic evaluations

The signatories of a partnering agreement must periodically evaluate performance to see how the parties measure up to their collective agreements. Before the partnering session ends, participants should develop an evaluation document that they can leave with. The evaluation should be formal, written, and ask specific questions about the agreements the parties made to each other.

Normally, a quarterly evaluation is adequate for yearlong contracts, and time is adjusted accordingly for shorter-duration contracts. Also, a submission may be made whenever a participant feels the process has broken down.

To whom are these evaluations submitted? That is another significant point in the partnering process — having an honest broker to monitor success.

Select an honest broker

Participants should not leave a partnering meeting without completing this last crucial step. They must select an honest broker to monitor the process and work with the partners to ensure concurrence and success. In the workshops I facilitate, I generally serve as the honest broker. When the facilitator cannot serve in that capacity, partners should choose someone else among the group.

The need for an honest broker is crucial. If there is no honest broker to monitor the partners, the established process could (*and probably will*) break down. Then "business as usual" will prevail with a resulting failure in the partnering process. Too much is at stake to avoid this step.

"I can't understand why people are frightened of new ideas. I'm frightened of the old ones."

John Cage

It is very difficult, if not impossible, to deliver a quality product on time and within budget in an adversarial relationship. Using the partnering process wisely is an alternative that leads straight down the road of success.



Huntsville Center is the central contracting agency for barracks furniture and furnishings. (Photo courtesy of Huntsville Center)

Huntsville provides furniture for soldiers

By Angela Dixon
Huntsville Center

It is well known that the U.S. Army Corps of Engineers builds barracks for soldiers. But these are just big empty buildings. Who provides the tables, chairs, beds, and so on?

Huntsville Center is the central contracting agency for procuring furniture and furnishings for Unaccompanied Personnel Housing (UPH) for all Army installations worldwide. In this role, Huntsville Center assists with budget and acquisition planning, furniture specification requirements, delivery management, contract awards, and process improvement for the program.

To provide furniture for soldiers, Alicia Allen, program manager for the UPH, said an order from an installation puts everything in action. "When an order comes in, we start the process and it usually takes seven months to procure and deliver the furniture," she said.

The orders include a variety of items. "We purchase a lot of standard furniture like beds, desks, chests, and chairs," Allen said. "We also furnish the soldier's common areas and buy things like big screen televisions, pool tables, trash cans and draperies." Currently, there are about 150 orders for furniture.

The UPH program budget allows \$3,200 per soldier for renovated space, \$3,500 for new space, and \$4,000 for soldiers in Korea, since two soldiers are housed per room there.

Recently, Sue Werner, a contract specialist and member of the UPH team at Huntsville Center visited barracks at Fort Hood and Fort Sam Houston, both in Texas. The team visited a vacated barracks, a renovated one, and a new building. "The vacated barracks had mildew, flooring problems, missing windows and light fixtures," Werner said. "When we went to the renovated barracks several soldiers were moving in and they were very appreciative of the remodeling and new furniture."

Werner added that UPH is a fast-paced program because furnishing needs change all the time. "It is so gratifying to play a role in providing soldiers better living conditions because they deserve it."



Flow deflectors installed at Chief Joseph Dam are preventing damage to fish due to high-pressure gas forced into the water. (Photo from the Digital Visual Library)

Fish get 'bends,' too

By Leslie Kaye
Seattle District

Amid the blue-gray river waters of the Pacific Northwest, a steelhead salmon swims strongly upstream toward a mighty dam. Suddenly the big fish falters, starts swimming erratically, skids sideways into a mound of pea-sized gravel, and dies.

What happened? The water had become saturated with oxygen and nitrogen during its trip through the dam, and salmon cannot survive those conditions. U.S. Army Corps of Engineers districts have studied the problem, and are testing a remedy.

There are two ways the Corps knows that fish are being gassed — a hands-on Seattle District study that determined how Chief Joseph Dam produces the saturated gases, and an interagency team who produced a 17-dam model of gas production in the Snake and Columbia rivers.

The National Marine Fisheries Service's 1998 "Supplemental Biological Opinion on Steelhead in the Columbia River" resulted in the Chief Joseph Dam Gas Abatement Study by Seattle District's Operations Division and Hydrology and Hydraulics Section. The Total Dissolved Gas (TDG) Model was developed by Marian Valentine, the district's Senior Water Manager, and Mike Schneider, a hydraulics engineer with the Engineering Research and Development Center, along with people from Portland and Walla Walla districts, the Bureau of Reclamation, and the Bonneville Power Administration. Beth Coffey is project manager.

The TDG Model provides the first overall study of both the mid-Columbia and the lower river system when water is spilled from the dams. The cutting-edge, numerical model looks at how water becomes saturated with gases hourly at each of the 17 dams.

"The TDG Modeling System is 'cutting edge' because it looks at the entire river system," said Mike Deering, hydraulics engineer. "The model helps give a broader look at the river system overall, not just piece-meal. I think that's a first."

So we know dissolved gases can kill fish. But how? Think of a soft drink. During manufacture the liquid is carbonated (saturated with carbon dioxide) and sealed in the bottle under pressure. The pressure keeps the carbon dioxide in solution. But when the bottle is opened and the pressure released, the carbon dioxide escapes, causing the fizzing action.

Something similar happens to water flowing

through the dams.

According to Valentine, as water spills over a dam and plunges into a stilling basin, air is forced into solution by the water pressure. The dissolved gases (mostly oxygen and nitrogen) stay in the water as it moves downstream. "Fish breathe this water that has higher than normal concentrations of dissolved gases," Valentine said. When the water pressure decreases, "the gases come out of solution in their bloodstream and body tissues. The fish get the bends, just like scuba divers who surface too quickly."

Deering says, "If you do not abate the gases, a real problem develops for the fish." Some of these fish are listed under the Endangered Species Act, so the district has greater responsibility for creating better water quality conditions.

A field test of gas at Chief Joseph Dam was done in June 1999 to quantify spillway gas production.

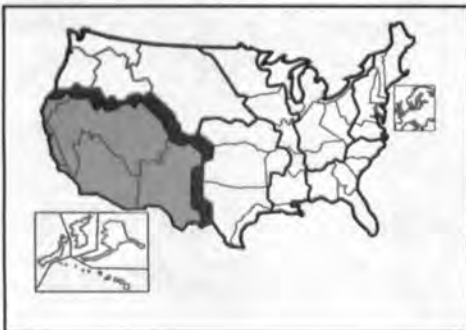
"The current phase of the Chief Joseph Dam Gas Abatement Study is the General Reevaluation Report which is focused on one structural alternative and one operational alternative," Valentine says. "These two alternatives can be combined to produce dramatically lower gas levels at Chief Joseph and Grand Coulee."

"This phase of study will wind down as the report is completed and sent to the Assistant Secretary of the Army for approval; then it will probably go into the plans and specs phase in FY 2001 with construction scheduled to start in FY 2002," Valentine added.

On the structural side, "flow deflectors have been installed on almost all of the eight lower dams on the lower Snake and Columbia rivers, as the most effective gas abatement alternative for the money," Valentine said. A flow deflector is a concrete "ski jump" attached to the downstream face of the spillway, just under the water surface, which creates a skimming flow. The water doesn't plunge into the stilling basin, so gases cannot get forced into solution.

"The operational alternative became obvious as the team learned more about water operations associated with flood control and power production," Valentine continued. "This alternative involves a shift of power and spill between Chief Joseph and Grand Coulee that takes advantage of flow deflectors at Chief Joseph and the larger powerhouse at Coulee."

Studies like this one, plus the site-specific information obtained by the installation of flow deflectors, can dramatically impact salmon and special protection fish listed under the Endangered Species Act.



Focus on South Pacific Division

Albuquerque, Los Angeles, Sacramento, San Francisco

Division spans old West, new West

Frank Rezac
South Pacific Division

South Pacific Division (SPD) reflects the geographic, environmental, and cultural diversity of the nation. The division encompasses some 762,000 square miles – all or parts of California, Arizona, Nevada, Utah, New Mexico, Oregon, Idaho, Wyoming, Colorado, and Texas.

This area is home to more than 170 Native American nations, and 390 of the nation's endangered species. Due to its Sunbelt location, the region has experienced incredible growth in the past two decades, which impacts the area's infrastructure and affects SPD's water resources mission. Due to its Pacific Rim location, the major commercial harbors play a vital role in our country's foreign trade with its Pacific trading partners.

SPD supports major Army installations such as the National Training Center at Fort Irwin, Calif., and Fort Huachuca, Ariz. Major Air Force customers include Nellis, Edwards, Vandenberg, Luke, Kirtland, and Holloman Air Force bases.

The division has been headquartered in San Francisco for well over a century and has had its present district structure since 1888. In June 1996, the division headquarters and San Francisco District collocated in San Francisco's financial district.

Four districts. SPD has more than 2,500 employees and a budget of about \$700 million. The four districts (San Francisco, Los Angeles, Sacramento, and Albuquerque) oversee the military and civil programs in the region. San Francisco District's mission is civil works only. Albuquerque District has military construction (MILCON) responsibilities limited to Air Force bases in New Mexico. Sacramento District is the military design district and handles MILCON activities for the Army and Air Force in Northern California, Northern Nevada, and Utah. Los Angeles District manages MILCON for the Army and Air Force in Southern California, Southern Nevada, and Arizona.

SPD has a rich heritage of service to the nation in

both its civil and MILCON missions. The Sacramento River was included in 1917 legislation with the Mississippi for flood control studies. That civil works heritage continues into the 21st century with flood control projects completed or underway at Little Dell, Utah; Tropicana/Flamingo Washes in Nevada; Los Angeles County Drainage Area; and the Santa Ana Mainstem project in California. Navigation improvements at major commercial harbors have been completed in Los Angeles, Oakland, and Humboldt harbors. Environmental restoration projects were conducted in Northern California in the late 1990s, restoring almost 5,000 acres of seasonal and tidal wetlands.

Collaborations. The division is engaged in several multi-agency collaborations. Most notable is the CALFED Bay-Delta Program, an undertaking that will dictate how water is used in California, balancing the needs of a growing population and the natural environment. The efforts also include the Federal Interagency Task Force to look at non-structural flood recovery and floodplain management alternatives, and the Los Angeles Region Contaminated Sediments Task Force. The Corps and the Environmental Protection Agency co-sponsored the Water Quality Workshop, part of the Lake Tahoe Federal Interagency Partnership. Collaborative efforts now underway are building on the Long Term Management Strategy task force initiated in 1989 that resolved the dredged material disposal problems in San Francisco Bay.

The nature of SPD's civil works program contrasts sharply with that of its sister organizations across the Corps. Construction has dominated the budget in recent years, reaching a high of \$250 million in fiscal year 1998 (FY98). The Operations and Maintenance program has hovered around the \$100 million mark for the past four or five years. Strong elements of the civil works budget are the survey and Preconstruction Engineering and Design programs. They have maintained a healthy level of about \$29 million per year with many studies going to ultimate construction.

The region is no stranger to natural disasters. The 7.1 Loma Prieta earthquake struck in 1989, followed five years later by the Northridge earthquake. About 700 Corps employees handled missions following each event. In 1990 and 1991, fire storms struck Santa Barbara and Oakland. SPD responded to floods in 1986, 1992, 1993, and the Pineapple Express and El Nino events of 1997 and 1998, respectively.

MILCON. The MILCON program is highlighted by its contributions to national programs, including building Nike missile sites, the west coast launch facilities for the space shuttle at Vandenberg Air Force Base, and completion of the chemical demilitarization facility at Tooele Army Depot.

Military construction in the 1990s was strongly influenced by the Base Realignment and Closure (BRAC) program that saw many Army and Air Force installations close. Heavy construction activities began at Fort Huachuca to receive units moving there from Fort Devens, Mass., and at March Air Force Base as units of the Air Force Reserve and California Air National Guard moved there.

SPD also has a unique Foreign Military Sales program of \$100 million to beddown the German Air Force training program at Holloman Air Force Base. With the proposed land expansion at the National Training Center at Fort Irwin, there is \$83 million included for real estate acquisition to support that program in the division's FY01 budget.

Focus. SPD's focus is to aggressively pursue the Corps Vision, build the regional team, optimize the organization, and delight the customer. To support these efforts, SPD has established cross-functional district support teams, one for each district for civil works, and one programmatic team for military construction and environmental. The team focus is to resolve project and funding issues, move products efficiently through the system, improve communications, and to serve as the district champion for all project actions.

Continued on next page



From Seven Oaks Dam in Southern California, the last of the large-scale flood control dams (left), to an administration building at Fort Huachuca, Ariz., South Pacific Division's activities span the entire range of Corps missions. (Left photo by Alex Watt, right photo courtesy of Sacramento District)

District missions continue to grow

By Gary Britter
Sacramento District

Sacramento District became a separate district of the U.S. Army Corps of Engineers in October 1929. Before then, it was known as the Sacramento Sub-Office of the San Francisco District. Its original boundaries were entirely within California.

Its earliest missions began in the late 1800s to improve navigation and to repair and prevent stream damage caused by hydraulic mining debris. This work expanded to include surveying most streams and rivers within its boundaries. The district's military mission was added when World War II began.

Expanding missions

The district's workload, staff, and geography have continued to expand. Today 1,100 team members handle work in all or part of eight states covering about 300,000 square miles and 300,000 miles of waterways. Sacramento District missions include planning, design, construction, regulatory, real estate, recreation, and environmental services.

The district is a U.S. Army Corps of Engineers design center of expertise for hazardous, toxic, and radiological waste cleanup; the Automated Review and Management System for managing design review comments; and wash racks for tanks, trucks, and other military vehicles.

The district's workload for fiscal year 2000 is estimated at \$473 million — \$303 million military and \$170 million civil.

Civil works

The district's civil works activities include flood control, water supply, navigation, recreation, regulatory, water quality, fish and wildlife conservation and enhancement, environmental cleanup, and disaster response.

In 1997, the district completed restoration of 4,000 acres of wetlands in the Yolo Basin, near Sacramento. President Bill Clinton dedicated the wetlands in November 1997, noting that the wetland restoration effort was the largest in the nation at that time west of the Everglades.

Sacramento District team members were instrumental in flood fighting and recovery efforts for the record storms in California and Nevada in 1997, and the 1998 floods caused by the Pineapple Express and El Niño storms. They also respond to hurricanes and other natural disasters in the U.S. and its territories.

As a result of these devastating floods, Sacramento District is conducting a comprehensive flood control and environmental restoration study for the California Central Valley and its watersheds.

The district operates 14 multipurpose flood control dams in California and participates in the flood control



Sacramento District restored 4,000 acres of wetlands in Yolo Basin. President Bill Clinton dedicated the project in November 1997. (Photo courtesy of Sacramento District)

operation of 15 dams owned by other federal, state, local, and private interests. These reservoirs and the flood control levee and bypass systems in the district prevented an estimated \$43 billion in flood damages since they were completed.

Recreation facilities are operated at 10 of the district's reservoirs. These facilities host about three million recreation visitors annually.

The district completed the Sacra-

mento River Deep Water Ship Channel in 1963, making Sacramento, 90 miles inland, a seaport. The district also maintains the deepwater ship channel to the Port of Stockton.

In the mid-1990s, the district completed work on the Castle, Redbank, and Fancher flood control dams in California's Central Valley and Little Dell Dam in Utah.

Under Section 404 of the Clean Water Act of 1972 and Section 10 of the Rivers and Harbors Act of 1899, the district safeguards navigable waters and wetlands in its 300,000 square mile area.

In addition, the district provides engineering services to other federal

agencies including the Environmental Protection Agency, Bureau of Indian Affairs, Federal Emergency Management Agency, Department of Justice, Farm Services Agency, NASA, the Federal Aviation Administration, the Resolution Trust Corporation, and the General Services Administration.

The district is the account manager for potential water resources support that may be requested by Mexico through South Pacific Division.

Military programs

The Base Realignment and Closure (BRAC) program impacts 15 of the 39 Army and Air Force installations for which the district does planning, design, construction, and real estate actions. Under BRAC the district has large programs for homeowners assistance, environmental cleanup, reuse, and disposal.

Environmental clean up successes include Sacramento Army Depot, Hamilton Army Airfield near San Francisco, the Presidio of San Francisco, and many other installations.

Our traditional projects include automated warehouses, test and repair facilities for aircraft and other sophisticated equipment, dental clinics, barracks, family housing, day care centers, hospitals, and more. Cleaning up hazardous, toxic, and radiological waste at military installations continues to be a growing activity.

In mid-1993, the district completed the Chemical Demilitarization plant at Tooele Army Depot in Utah. This plant is destroying the chemical weapons stockpiled at Tooele.

To assist military and civilian employees affected by base closures, the district operates a Home Owners Assistance program. This program helps homeowners reduce their financial losses when they must sell their homes after an installation closes due to BRAC action.



Division

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Another aspect of supporting our regional focus is our Information Technology (IT) Council, chaired by the deputy commander, to address technology standardization and requirements across the business center.

Business center. SPD is also pursuing the Regional Business Center concept. In today's rapidly changing business environment, the regional business center provides increased flexibility and potential for mission success. For this concept to work, the SPD Regional Management Board realized the need to standardize our management and business strategies throughout the division. A multi-district team assembled to develop a process focused on effective management, execution, delivery, and closeout of projects. Our Regional Project Management Business Process (RPMBP)

grew from this effort and will soon provide procedures and tools to manage all our business functions. The RPMBP will also fully use existing Corps standard databases to meet our information needs.

Leadership. This year saw the initiation of SPD's Leadership Development Program. Twenty-seven participants from throughout the division are participating in this regional program to provide opportunities for team members to build relationships and work on projects of benefit to the common division mission. Besides an individual professional development program, each participant works with his or her colleagues to take advantage of local opportunities. The group also completed several regional training opportunities including a custom-designed course by the Center for Army Leadership, and a week in Washing-

ton to dissect a public policy issue.

Headquarters SPD is the senior military command in the San Francisco area. Base closure actions have seriously impacted military service members and their families, and military family housing has become a critical need. SPD has taken the lead to preserve available military housing for soldiers, sailors, and airmen who continue to be stationed in the area.

On Oct. 1, the Army will assume control of about 800 family housing units at Moffett Field south of San Francisco. This will meet the continuing need for military housing in this region, with SPD serving as the executive agent for Forces Command.

SPD serves a diverse, energetic, progressive, and dynamic region. The division will continue to bring the skills and expertise found in its regional team to bear on all challenges it faces. The regional team is South Pacific Division.

Focus on South Pacific Division

District acclaimed for military work

By Joan Mier
Albuquerque District

Albuquerque District is a full-service district. Whether it's a large dam, miles of levees, a nuclear waste storage facility, or military construction projects, Albuquerque District has the experience and capability to do the job.

It is the fourth largest district in geographic size in the Corps, covering all of New Mexico, about one-third of Colorado, and one-fifth of Texas. The district operates and maintains flood control facilities and related recreation areas throughout New Mexico and southern Colorado. It also provides design, construction, and operations and maintenance services to three Air Force bases in New Mexico — Cannon near Clovis, Holloman near Alamogordo, and Kirtland in Albuquerque. In Arizona, the district also provides the same services to Davis-Monthan Air Force Base in Tucson and Luke Air Force Base in Phoenix.

And the district has been acclaimed for its military work. Last year, the Air Combat Command named the district its Design Agent of the Year. The Air Force named the district its Design Agent of the Year in 1997, and in 1992 the Air Force named the district its Design Agent of the Year and Construction Agent of the Year.

Several factors led to this recognition. At Holloman Air Force Base, the district manages \$100 million in construction to support of the German air force's Tornado beddown program. These projects include a 75,000 square foot maintenance hangar, three parking shelters to each hold six aircraft, and a jet engine workshop — all designed in-house.

Besides those facilities, there will be a flight simulator building, supply warehouse, three dormitory buildings, a wing headquarters building, a munitions storage and maintenance facility, aircraft ground equipment vehicle maintenance shop, liquid oxygen maintenance facility, and a 25-acre aircraft parking apron. All construction will be completed late this year, when 800 more German military personnel and their families will be stationed at Holloman.

Albuquerque District also continues to have a commanding presence at Kirtland Air Force Base. It is currently designing a Nuclear Weapons Integration Facility (NWIF), and building a Theatre Air Command and Control

Simulation Facility (TACCSF) and an Advanced Laser Facility (ALF). It also recently completed building the Manzano Bridge on the base's east side. All are design/build projects.

For the NWIF, the district developed a three-dimensional model in-house for the Air Force Materiel Command because the AFMC prefers that method to visualize its facilities. The district was one of the first in the Corps to do this kind of work for AFMC. The computer model of the 36,000 square foot building showed all streets, surrounding buildings, and landscaping. It includes a "fly-through" feature showing a panoramic view of the building from all sides. Awarded last August, the NWIF will provide a modern workplace to safely and efficiently track the storage of nuclear weapons.

The TACCSF currently under construction will be a hub for simulating joint forces war through computerized data links. For example, through visual simulation, it will be possible for an Air Force pilot to link up to a Navy pilot and feel like they are flying together. Communication for the virtual reality facility will be the largest of any facility currently at Kirtland. The two-story, 80,000 square foot facility will contain a Secured Compartmentalized Information Facility (SCIF). Inside the SCIF, top-secret simulations can

take place and open storage of documents is allowed because of the high level of security required to gain access.

The \$8.5 million ALF is also under construction. It will be used by the Air Force Research Laboratory to develop laser technology for the airborne laser program. The lasers are mounted on 747s and used to explode missiles in the air. This facility will develop the lasers. The 20,000 square foot facility also includes an 8,000 square foot laser testing area. The technology needed to build the facility is equivalent to building a hospital. The chemical piping and tubing included in the construction make it a high-tech building.

Activities at Cannon Air Force Base have quieted since the "beddown" of the F-111 fighter-bombers, but the district continues to work at the base. The Logistics Administrative Facility for the Air Combat Command is a prime example. The project posed challenges such as the location on a long, narrow strip of land with a ditch running



Albuquerque District manages \$100 million in construction to support the German air force's Tornado beddown program at Holloman Air Force Base, N.M. (Photo courtesy of Albuquerque District)

through the center, and a Request for Proposal that no longer met user needs. However, all problems were resolved to the satisfaction of all parties, including the 170 occupants who moved in last May. The 42,000 square foot facility houses four agencies — logistics, contracting, transportation, and supply. A procedure called commissioning was used to test the facility's mechanical and electrical systems. Commissioning starts up and tests all these systems at once rather than individually and is an excellent way to ensure all systems function properly together.

Civil works is also a viable mission for Albuquerque District and one in which the district has much experience.

The \$47 million project three-channel system flood control project in Alamogordo, N.M., designed by the district, will protect 4,257 structures that are currently in the flood plain. The design uses existing channels in the city and allows for new channels to be incorporated. Project specifications will be complete in September, and construction will be awarded in November.

Albuquerque District and Las Cruces, N.M., have a project cooperation agreement to build an \$8.8 million flood control project. The project will enlarge and modify two existing detention basins and an irrigation canal, which will remove more than 500 homes and businesses from the 100-year flood plain, and significantly reduce flooding impact for 1,800 more. Construction begins this month and will take 14 months.

Phase II of the Lomaland project in El Paso, Texas, should be complete

by the end of December. Lomaland is part of the district's El Paso Flood Control Project, which began in 1988 with building Phelps Dodge Basin. That was followed by the Americas Basin and Bluff Channel. Phase III of Lomaland was awarded in March.

Support for Others is another large part of the district's workload, and the work for the Immigration and Naturalization Service (INS) is an excellent example. It began a couple of years ago with a few small projects and has grown steadily. The district has completed the INS's El Paso Service Processing Center, and design for a new 100-man border patrol station at Alpine, Texas, began early this year.

Phase I of the Presidio Housing project for the Border Patrol in Texas is complete. The project consists of design, construction, and land acquisition for housing units for Border Patrol and Customs personnel and their families stationed there. Phase II of the project is underway, with seven units scheduled last month.

The district is in the first phase of the \$15 million Yuma Sector Headquarters in Arizona. It is building a 40,670 square foot vehicle maintenance and storage warehouse. The project's next phase includes building a headquarters building, fuel island, and car wash. Designs for the second phase are complete and the district is awaiting FY01 funds to award the contract.

The New Mexico Army National Guard is another large Support for Others customer. The district is designing a road and gate entrance for its Santa Fe headquarters. Improvements to the armory in Albuquerque are com-

Continued on next page



Focus on South Pacific Division

Small district has big civil mission

By Doug MaKitten
San Francisco District

San Francisco District was established in 1866 with authority for river and harbor work in the Pacific Coast area west of the Rocky Mountains. In effect, the district extended from Canada to Mexico, and west to the Hawaii. Today the district's area is much smaller, but it still plays an important role in keeping California's economy booming while protecting the environment.

Most of the 40,000 square miles in San Francisco District's area of responsibility is in a narrow strip of the northern California coastline. It is about 600 miles long, rarely more than 50 miles wide, from the Oregon border to just south of Monterey, Calif. The district also has responsibility for the Klamath River Basin in southern Oregon that drains into the Pacific Ocean.

Civil works. San Francisco District is a civil works district. It has about 300 employees and a workload in fiscal year 2000 of \$74 million. District missions include navigation and coastal maintenance and improvements to ports and harbors, regulatory compliance and permit activities, flood control planning activities, emergency management, and mobilization.

The district's operation and maintenance program includes dredging projects totaling 4.5 million cubic yards annually in San Francisco Bay Area navigation channels. The work is vital, since much of the bay is shallow, with more than 70 percent of it less than 20 feet deep.

Strategic partners of the district include the Port of Oakland, the Santa Clara Valley Water District (SCVWD), the Sonoma County Water Agency, and the California Coastal Commission.

In 1998, the district completed a major project with the Port of Oakland, deepening port channels to 42 feet. Work is already underway on a project to go to 50 feet deep.

The SCVWD serves San Jose, with the third largest population in the state, and the surrounding area. Currently, the district is working on seven flood control studies and projects with the SCVWD.

Studies. The district has nine studies and projects going with the Sonoma County Water Agency. They range from ecosystem restorations in the Russian River, San Pablo Bay, and Napa Salt Marsh areas, to water supply management of the district's Warm Springs and Coyote dams.

The district is involved in four studies and projects with the California Coastal Conservancy. This includes the award-winning Sonoma Baylands



Debris collection in San Francisco Bay is one of San Francisco District's high-visibility civil works missions. Crews collect about 80 tons of debris a month. (Photo courtesy of San Francisco District)

wetlands restoration demonstration project, and the Hamilton Army Airfield wetlands restoration.

The Hamilton project will recreate about 900 acres of tidal wetlands on a former Air Force base. The project will include the beneficial use of dredged material from the Oakland 50-foot deepening project.

The Hamilton project is important by itself, but it also reflects the success of the Corps' Long Term Management Strategy (LTMS) for disposing of dredged material in the San Francisco Bay Area. More than 10 years in the making, LTMS ended the "mudlock" of the 1980s when disagreements between regulatory agencies, environ-

mental interest groups, and dredgers nearly brought dredging to a halt.

Led by the district, the LTMS involved more than 70 agencies and groups working to meet the Bay Area's dredging needs for the next 50 years. The June 1999 signing of a record of decision by the South Pacific Division commander and the EPA Regional Administrator was a major step. This June a draft management plan, the next step towards LTMS implementation, is scheduled for release.

An offshoot of the LTMS process was developing the Dredged Material Management Office, an interagency group led by the district, that jointly evaluates dredging permit applications and streamlines the permit process.

Debris. Debris collection in San Francisco Bay is another high-visibility mission. Crews on converted aircraft recovery vessels collect about 80 tons a month. This is especially im-

portant after storms, which carry huge amounts of debris into the bay.

The Bay Model Visitor Center provides public information and education programs about the environmental, historical, and cultural elements of San Francisco Bay. The football-field-sized scale model of the bay and delta attracts more than 150,000 visitors a year. Until recently, the model was used for scientific research. It will close as a research tool this year, but will be maintained in a "wet" condition for visitors. Meanwhile, the district's modeling mission will be done by computer.

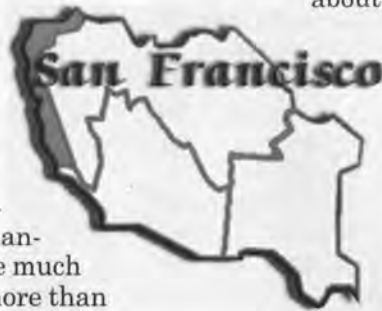
The district also has two multipurpose flood control reservoirs, Lake Mendocino and Coyote Dam, and Lake Sonoma and Warm Springs Dam. These recreation areas welcome hundreds of thousands of visitors each year.

Environment. The San Francisco Bay Area is a center of environmental activism. San Francisco District also has thousands of acres of valuable wetlands in its jurisdiction. As a result, every project or study by the district undergoes intense scrutiny. So do the hundreds of permit decisions made each year. Because of this, Regulatory Branch is one of the largest, and busiest, organizations in the district.

The district has many other achievements and challenges. Deepening projects have been completed at the busy ports of Richmond, Calif., and Humboldt in Eureka, Calif., and a flood control project in Petaluma, Calif., is scheduled for completion in December.

The district also recently completed a short-fuse assessment of an alternate alignment for the seismic retrofit of the San Francisco-Oakland Bay Bridge.

Future. The future looks bright, too. LTMS implementation, the Port of Oakland deepening project, and the Hamilton Airfield wetlands restoration were noted above. Also on the horizon are the Upper Guadalupe River flood control project in San Jose and solving flood control problems of Central California's Pajaro River.



Albuquerque

Continued from previous page
plete. For FY00, the National Guard has requested design services for several sites around the state.

The district's family housing program epitomizes One Door to the Corps, sharing responsibilities with other districts. The district is working with Kansas City District to complete an \$18 million family housing project at Whiteman Air Force Base, Mo. Kansas City procured the real estate and managed construction, while Albuquerque District performs design reviews and executes project manage-

ment. The district partnered with Tulsa District to build 180 single family and duplex homes at Altus Air Force Base, Okla., which is almost complete.

Since 1986, the district has managed an acequia program. Acequias are diversion dams that serve 30 to 40 irrigators. They originated in New Mexico in the 17th century when the Spaniards brought their irrigation techniques. The program is high profile because of its historical and cultural significance.

Of course, no project can begin without contracting services, and the dis-

trict has a full range of these. It currently has several Indefinite Delivery Indefinite Quantity (IDIQ) contracts. IDIQ contracts simplify and speed up the process, enabling the contract specialist to issue task orders for a variety of services as part of the main contract. Task orders can be completed in days versus the weeks or months to initiate another contract. The district has IDIQ contracts for construction, architecture-engineering services, environmental engineering, cultural resources services, drilling, mapping, geotechnical engineering, and hydrology and hydraulic work.

Not 'Hollywood District'

L.A. District performs military, civil work for Southwest

By Dr. Fred-Otto Egeler
Los Angeles District

Since its activation in 1898, when the Army directed Capt. J. J. Meyler to build the San Pedro Breakwater with 18 men, Los Angeles District has served the Southwest. The districts' responsibilities cover all or part of southern California, Arizona, southern Nevada, and southwestern Utah — 226,000 square miles with 420 miles of shoreline and 14 harbors. Its missions include military construction, civil works, regulatory, and Support for Others/Work for Others. District headquarters is in downtown Los Angeles, with 22 field offices in California, Arizona, and Nevada.

Military program

The district designs and supervises construction of facilities for nine Army and Air Force bases, ranging from medical facilities to child development centers, from dormitories to tank firing pads. It has built maintenance facilities for the Thunderbirds demonstration team and the F-22 beddown facility.

The district also acquires, disposes of, and manages real estate, including obtaining new lands for the National Training Center at Fort Irwin, Calif.

Civil works

The district designs and supervises construction of dams, flood control projects, and provides operation and maintenance of 14 flood control structures/dams. The civil works mission also includes environmental studies and projects, beach erosion control, and reimbursable work for others.

The district has played a major role in developing water resources. The district has undertaken four large construction efforts in the past 10 years:

Santa Ana River Mainstem Flood Control Project — The project provides flood protection to a three-county area, with emphasis on the heavily urban Lower Santa Ana River Basin in Orange County, Calif. Total project cost is \$1.3 billion. The local sponsors are the Flood Control Districts of Orange County, San Bernardino County, and Riverside County.

The project includes building the Seven Oaks Dam on the upper Santa Ana River; modifications to the existing Prado Dam to protect against a 190-



This artist's conception shows how Pier 400 at the Port of Los Angeles will look after completion. (Photo courtesy of Los Angeles District)

year flood event; channel improvements for protection from a 100-year flood along Santiago Creek; building the Lower Santa Ana River channel to protect from a 190-year flood; and channel improvements to protect against a 100-year flood on San Timoteo Creek.

Port of Los Angeles — The project is dredging 47 million cubic yards and creating 590 acres of new landfill (Pier 400). Stage 1 deepened the main channel to 63 feet, dredged part of the northern channel to 45 feet, and created the southern portion of Pier 400 landfill. In Stage 2, the Corps is dredging the main channel to 81 feet, the southern channel to 75 feet, and extending the northern channel to the east at 45 feet. The sponsor built Stage 1, and the Corps is building Stage 2. Estimated project cost is \$401 million. The local sponsor is the Department of Beaches and Harbors, County of Los Angeles.

Tropicana and Flamingo Washes Flood Control Project — The Las Vegas Wash and Tributaries project provides flood control to the Las Vegas area by diverting flood flows into one of four detention basins, then releasing outflows at non-damaging rates. The project is west of and through the Las Vegas area along the Tropicana and Flamingo Washes.

The project has four major features — a collection system, primary channels, detention basins, and debris basins. The current cost estimate is \$284

million. When completed, the project will provide a 100-year level of flood protection. There are two non-federal sponsors — the Clark County Regional Flood Control District and the Clark County Department of Public Works.

Los Angeles County Drainage Area Flood Control Project — LACDA covers Lower Los Angeles River, Rio Hondo River, and Compton Creek in Los Angeles County. The flood control project addresses flooding problems from rapid urbanization since the drainage system was built in the 1930s and 1940s.

The project consists of parapet walls along the Lower Los Angeles River, the Rio Hondo River, and part of Compton Creek; bridge relocations; bridge pier nose extensions; and armor-ing levee back slopes. Total cost is \$240 million, and the local sponsor is the Los Angeles County Flood Control District.

Construction Operations

Construction Operations Division is a full-service construction management organization. The construction side provides construction contract management to any government agency. Operations Branch's navigation team maintains 14 harbors along the California coast from Morro Bay to San Diego, plus 16 flood control dams in California, Arizona, and Nevada.

Regulatory program

The district permits all work in navigable waters and adjacent wetlands, and provides floodplain management. It implements a monitoring and compliance program to support Corps' responsibilities under the Clean Water Act. Monitoring project and mitigation sites helps ensure minimal impact to aquatic resources and more than 300 endangered and threatened species.

Regulatory Branch personnel work closely with other federal, state, and local agencies to implement complementary programs, minimize conflicts, and review and investigate reports of violation or non-compliance in more than 2,000 permits a year.

Emergency operations

Emergency Management Branch handles mobilization during disasters. The district maintains readiness to ensure prompt, efficient response, and is responsible for one of South Pacific Division's National Deployable Tactical Operations Systems (DTOC).

In the past four years, two of the Corps' Emergency Managers of the Year came from L.A. District. In recent years, emergency team members assisted during disasters including Hurricane Georges, Hurricane Andrew, and the Northridge earthquake.

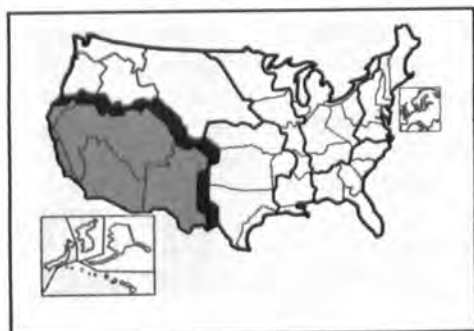
Work for others

The district also works for the Navy, the Marines, the Army Reserve and National Guard, the Defense Logistics Agency, and the Defense Finance and Accounting Service. It leases more than 200 recruiting stations in Arizona, California, and Nevada.

Support for others

The district provides engineering design and construction expertise to other government agencies including the Food and Drug Administration, National Aeronautics and Space Administration, Federal Aviation Administration, the Southern California and Western Region Bureau of Prisons, and the Immigration and Naturalization Service. Most recently, the district began providing general engineering services to the L.A. Unified School District to support application for Federal Commerce Commission E-Rate funding, and the identification, environmental compliance, and acquisition of sites for new elementary schools.

For more about L.A. District, see the website at www.spl.usace.army.mil.



Focus on South Pacific Division

Albuquerque, Los Angeles, Sacramento, San Francisco

Small businesses do big job for Corps

By Gay Monteverde
Portland District

With the passage of the Small Business Act in 1953, Congress officially recognized the importance of small business to the national economy. The act states that small businesses will be given a fair proportion of federal government procurement dollars. To that end, federal agencies have committed to ensuring that small businesses receive a prescribed share of the federal contracts available to the private sector.

There are small business programs throughout the U.S. Army Corps of Engineers. In Portland District, the task of running the Small Business Program belongs to Rene Baron, Deputy for Small Business in Contracting Division.

"The contributions of small businesses enhance the global competitiveness of the nation and contribute directly to the quality of life and the standard of living of all Americans," said Baron, who has held the position five years. "Congress has recognized this with several programs to encourage and develop the actual and potential capacity of small business, using the \$179 billion the government expends annually in its procurement program.

Defining small business

Within the Small Business Program, there are four designated categories — small businesses, small disadvantaged businesses, women-owned businesses, and historically under-utilized business (HUB) zones.

The definition of small business varies. For example, architect/engineers can make \$4 million a year but still be considered a small business; for other industries, the amount is much less. The size of some industries is measured by the number of employees they have. The Corps has set a goal of 38.3 percent of all contacting dollars to go to small business. For Portland District, that means contracting out 38.3 percent of about \$100 million each year.

A woman-owned business is one in which 51 percent of the business is owned and operated by women. Five percent of total contracting dollars goes to women-owned small businesses. For Portland District, this goal has been a challenge. According to Baron, the Pacific Northwest does not have many women-owned construction firms or businesses that produce the kind of products that Portland District buys.

The third target group is small disadvantaged businesses, those owned by minorities (African American, Hispanic, Native American, etc.). The Corps targets these businesses for 10.5 percent of all contacting dollars.

A fourth target group was developed recently — HUB zones. An area where the average income is very low or unemployment is very high is considered a HUB zone. The intent is to encourage businesses to locate in these areas, or to encourage the growth and



expansion of businesses there. A business must not only be located in the HUB zone; it must also have 35 percent of its employees living in a HUB zone. The initial goal is to designate 1.5 percent of contracting dollars to HUB zone firms. According to Baron, Corps contracting dollars for this target group are modest, but when combined with contacting dollars from other federal agencies, the impact could be dramatic.

Besides these four main categories, there are special programs like 8(a) businesses, so called because they are addressed in Section 8(a) of the Small Business Act. A disadvantaged firm is certified by the Small Business Administration as an 8(a) firm, allowing federal agencies to contract directly with the firm without competition. Baron points out that sometimes district staffs are happy to learn about 8(a) firms because they don't have to go through the competitive process to hire them, saving time and money.

Reaching out

One part of Baron's job is to convince small businesses to work with the federal government. She admits this is sometimes daunting because the federal government is often seen as a huge and unwelcoming bureaucracy. Baron coaches companies through the paperwork and assorted hoops, letting them know about upcoming jobs and making the experience easier.

Where does Baron find small businesses? She belongs to the Minority Business Opportunity Committee where she meets with representatives from other federal agencies and large businesses that have the same goals.

She works with groups such as the Society of American Military Engineers and the Hispanic American Chamber of Commerce.

Baron also participates in procurement fairs. For example, every other year in October there is a major procurement fair in Portland that coincides with National Minority Business Week. Federal agencies, municipalities and large businesses participate.

Each district and division throughout the Corps has an equivalent to Baron on staff, and she works with those deputies as well, especially in Seattle and Walla Walla districts.

In-house commitment

Baron also spends time convincing Corps staff that it's a good thing to go to small businesses.

"Sometimes there's a little resistance," she admits. "People think of small disadvantaged business as one that doesn't have a lot of experience or depth, when that is really not the case. The irony is that when I can convince them, they rave about how fabulous the firm is after working with them.

"It is important that everybody know why we do this," she adds. "It's not because we have a goal, but because it is the *right thing to do*. People think they're doing their job when they get the job done in the shortest amount of time for the least money. Sometimes doing business with a small firm which hasn't worked with the federal government before takes effort. But when you think in terms of what is good for the entire country, this program impacts a bigger bottom line."

Baron offers two examples of successful collaborations with small business.

"Colville Tribal Service is a Native American firm that has done work for us, replacing the Columbia River treaty fishing access sites," she said. "Colville has done such an outstanding job that it won't be hard to convince anybody to go to them in the future.

"Ebony Ironworks is one of our 8(a) firms," she adds. "They do metal fabrication on the big trash racks. At first it was hard to make people see that a small disadvantaged business could do the job, but now they rave about the work that Ebony Ironworks does."

Chief of Engineers Lt. Gen. Joe Ballard is firmly behind the program, according to Baron. In fact, three years ago, Ballard implemented a national small business conference which is held in December in Washington, D.C. Every district sends their commander, the deputy for small business, and the chief of contracting. Small businesses are invited from all over the country to market directly to every district.

Baron admits, "I'm very grateful that Lt. Gen. Ballard has picked this as one of his emphasis areas."

Baron is also pleased that the district staff is supportive. "For example, Planning, Programs and Project Management staff are considering it part of their job to make sure that we've met our district goals. And Col. Butler is also supportive and interested.

"My job is to make sure the district meets their goals," Baron explained. "I'm available, regardless of whether its in the Willamette Valley or downstairs in this building. I want the district staff to know the value of the program and what it really means to the country. I want them to know that by supporting the small business program, they're doing the right thing."

Missile silos destroyed

By Sheri Hronek
Omaha District

For nearly a third of the 20th century, Minuteman missiles stood sentry along the northern borders of the U.S. But with the end of the Cold War came the 1991 Strategic Arms Reduction Treaty that called for dismantling some missile sites. Omaha District has played an integral role in efforts to comply with the treaty's requirements.

In 1995 the federal Base Realignment and Closure Commission decided to empty the Minuteman III missile silos under the jurisdiction of Grand Forks Air Force Base in eastern North Dakota. The last missile was removed from its silo in June 1998 in preparation for demolishing the silos and their control facilities.

The first silo was imploded last Oct. 6 near Langdon, N.D., just a few miles from the Canadian border. Thirteen more were imploded before demolition work halted when the ground froze.

The Corps worked with the Air Force to prepare the specifications and drawings and is currently supervising the \$13,758,000 construction contract for demolishing 150 underground missile silos and 15 underground missile launch control facilities. The contract is in three phases, with each phase including 50 silos and five control facilities. The missile sites cover about 11,000 square miles, ranging from a 30-minute to a 3.5-hour drive from Grand Forks.

Fiscal year 2000 (FY00) funding has been received for the second phase, and work will start this spring. The third phase is to be funded in FY01.

The completion date of the silo implosion is November 2001, as required by the treaty. All of the silos must be imploded by the date, according to Erv Fahrenkrug, Chief of ICBM Facilities Engineering of the Air Force Space Command.

"Everything seems to be moving along pretty well," said Fahrenkrug. "We're making progress." Observation and final site grading will be completed after November 2001.

Omaha District project manager Larry Bringewatt, noted that the Air Force is a repeat customer for the U.S. Army Corps of Engineers on the demolition project. "We put the package together in 1992 and 1993 when 150 missile silos were demolished at Ellsworth Air Force Base, S.D., and 150 at Whiteman Air Force Base, Mo. The Air Force was really pleased with those projects. They saw what we could do and wanted us to do it again."

The Grand Forks project was not identical to the previous projects. "Grand Forks was built later than the ones at Ellsworth, and there was an evolution of the system," Bringewatt said. "The generators were in a capsule underground, while at Ellsworth they were in a building that was partially out of the ground. The top of the silos and the lids for the silos were more heavily reinforced at Grand Forks."



Corps and civilian workers inspect the results of blasting a missile silo. (Photo courtesy of Omaha District)



A cloud of smoke marks the destruction of an ICBM silo. (Photo courtesy of Omaha District)

The Corps design team worked with the Air Force to find information on the facilities.

"The silos and control facilities were built in the '60s," said Tim Campbell, lead designer. "The Air Force Missile Group did a really good job of keeping as-built information. They had a lot of changes to the facilities during the years, and they had worked on keeping drawings up-to-date to show what was done. There are always some things that are different, because it's hard to keep track of so many years of modifications and changes. We collected quite a few as-built drawings and information about the sites; it was a big part of the project."

The 150 silos are built of quarter-inch steel liner plate, which is surrounded by 14 inches of reinforced concrete. They are 12 feet in diameter and 90 feet deep. "The 15 launch control facilities are basically underground bunkers, two capsules 60 feet below grade," Bringewatt said.

One capsule had mechanical equipment, air handling equipment, and the generator, while the other was the living space with the control equipment.

"There were environmental issues since some of the sites are close to wetlands, and we made sure that we weren't impacting them," Campbell said. "Because there was living space in a one-story building above grade and in a capsule, sewage was discharged into the lagoons. Some of the sludge had to be sampled and tested as part of the closure," although most of the lagoons were dry.

"The Air Force is probably leading the way on the environmental aspects," said Sgt. Rob Mims, Public Affairs Officer of Grand Forks Air Force Base. "We have to set the example, so we're probably leading the way as far as being environmentally sound and turning it back to nature."

Delma Stoner, Omaha District environmental engineer, noted that the sites included underground storage tanks and sewage lagoons. "They have to be in compliance with the state regulations; all the tanks at the site either are removed or stay in place, but in accordance with regulations."

Instead of removing the lagoons, they will be backfilled and tested to be sure there is no contaminant. "The main thing is to be sure that the environment is safe for someone who would take over the site." The Corps reviewed the environmental assessment.

Omaha District geologist Tim Jensen worked on requirements for closing wells, which include water wells, cathodic protection wells, and monitoring wells. "We used some cutting-edge methods," he said. "These wells were built in the '60s-'70s time frame; well construction and environments are stricter now."

The Corps awarded the \$13.7 million contract to demolish the silos and launch facilities to Veit and Company, Inc., of Rogers, Mo. Bart Anderson, Veit vice president, said that one of the challenges of this project is "just the magnitude, spread out to 165 different sites across 11,000 square miles. This

Continued on next page

**Cold
War
clean-
up**

**Corps
people
destroy the
weapons of
America's
longest war**

Missiles

Continued from previous page
summer we might be working on 20 different sites in one day."

Mark Mailander, Black Hills Area Engineer for the Omaha District, commented on the schedule. "We have a very fine-tuned operation that we've developed since we awarded it, then and now. We have the subcontractors pretty well lined out. They know what they can do and how long it takes them, and we have a pretty good idea what we need to do. Weather will play a big part in that plan. Also funding."

Blasting was discontinued in December because of frozen ground. "But there is still a lot of salvage going on in the silos," said Steve Hasner, Omaha District resident engineer at Grand Forks Air Force Base. "We have a contractor that has been pretty easy to work with, as well as a local missile engineering group that has been extremely cooperative."

"So far it seems to be working well," said Scott Rudolf, chief missile engineer. "We haven't run into anything that was unexpected. The contract got off to a late start because the environmental impact statement took longer to get signed and finished. So we didn't get the whole summer of 1999. But I think with the easy winter we are having they will catch up this summer. Everything seems to be going well."

According to Anderson, the process in the silos includes first salvaging metal liners from the silos. Holes are then drilled into the silos and packed with about 800 pounds of explosives; then the silo is blasted.

"They move in with the heavy equipment, usually two back-hoes, and start tearing it apart," Anderson said. "They dig it out to a depth of 20 feet."

The silo with its observation cone then sits for 90 days during the observation phase required by START. During that time, the Russians can verify by technical means that it has been dismantled according to the treaty.

Don Speulda, Omaha District project office, verifies the activity and notifies the Treaty Compliance Office. According to Speulda, "these milestones or activities have a specific timeline by treaty requirements and are non-negotiable and will not be compromised for any situation."

After 90 days, "we come in and back-fill it — take all the dirt and throw it back in the hole, compact it, level it off, and spread gravel or grass seed," Anderson said.

The 110-ton silo cap is buried 10 feet below the surface in front of the destroyed silo. "The lid doesn't shatter well, so rather than trying to shatter it, they just bury it," Bringewatt said.

Speulda described the implosion of the first silo last October. "The implosion sent chunks of concrete about 100 feet into the air. All you could hear was a muffled boom and then a grayish brown dust cloud with debris."

Campbell, who also witnessed the first silo implosion, said that the contractor drilled 66 holes into the silo and set the explosives with seven separate delays "so a certain amount would go off and then another and then another. By doing seven delays he limited the



Vaughn Viet (left) and Bart Anderson, both contractors, stand in the control room of an old Minuteman missile silo. Anderson is leaning on the launch control panel. The control room will be welded shut, and the elevator shaft filled with debris. (Photo courtesy of Omaha District)

ground shock and sound."

In the launch facilities, the contractor salvages anything useable from the capsules, then the door is welded shut and the elevator shaft is filled. The land will be disposed through the government disposal regulations.

Some remnants may remain for future generations to view, because the START treaty includes provisions for displays. Stan Rogers, natural and cultural resource planner at Grand Forks Air Force Base, said that the Grand Forks system was eligible for the Register of Historic Places. They are developing an agreement between Grand Forks Air Force Base, Army Material Command, Space Command,

and the State Historical Society of North Dakota for displaying artifacts from the Minuteman mission in North Dakota. The nature of the display has not been determined.

Some images have been preserved, however. Mailander explained that the launch control capsule which housed personnel while they were on duty had graffiti on the walls.

"When you spend a lot of time down in the control, I guess you write on the walls or draw pictures on the walls. They had some real interesting...we'll call it artwork."

The artwork has been photographed for preservation after the capsules are sealed and inaccessible.

Nuke weapons bunker built in Siberia

By Max Rizley Jr.
Galveston District

If you think the world hasn't changed drastically, imagine yourself as someone from the 1950s or 1960s waking up from a Rip Van Winkle snooze and reading this headline: "U.S. builds nuclear bunkers in Russia."

That would certainly catch the eye of a dedicated Cold Warrior.

But this is 2000, not 1960, and all that's left of the Cold War is the cold, according to a Galveston District member who just got back from a two-year sojourn in Siberia helping the Russians build a nuclear weapons storage bunker.

Carl Anderson, now thawing himself in Galveston's subtropical sun, is a member of the district's project management team. He returned Stateside Feb. 10 after 26 months in Kyshtim, located at the edge of Siberia about 900 miles east of Moscow.

He was working with Galveston District's Southern Area Office in Corpus Christi, Texas, when he packed his bags in October 1997 for the overseas assignment with Transatlantic Programs Center. Anderson arrived in Kyshtim the following January.

"We were building a storage facility for nuclear material coming out of dis-



Carl Anderson (left) and two Russian co-workers pose in front of the nuclear weapons bunker in Siberia. (Photo courtesy of Carl Anderson)

mantled weapons," said Anderson, who was resident engineer on the project. The weapons were being disposed of under the Nunn-Lugar nuclear arms reduction act. The bunker Anderson oversaw was 450 feet long by 240 wide. It had double walls built of pre-cast concrete, with sand filling the space between the walls.

Anderson said he spent three winters there, and Siberia was, well, Siberia.

"We had about three feet of snow on the ground all winter, and the temperature averaged about minus 25," Anderson said. "The coldest it got when I was there was 38 below zero."

As might be expected, the subarctic

climate affected the construction process. The concrete for the building was mixed with a chemical to keep it from freezing before the concrete cured, "and if it got lower than minus 30, we shut down work," said Anderson. "But most of the times when we shut down, it was because of the high winds. When we'd get ready to place the concrete, we had a big 747 engine in a cage to blow the snow away and warm up the reinforcing steel before pouring."

You might think life in the frozen tundra of Siberia would offer little recreation other than tag-team stove stoking but, as the advertisement said, "Think snow."

"We did a lot of cross-country skiing," said Anderson. "We were right at the base of the Ural Mountains; it was kind of like eastern Colorado."

Anderson said he got along well with the local residents.

"They're good people," he said. "Most of them are fairly poor, once you get outside of Moscow. "It was kind of rustic, probably about like it was here in the 1940s. It was a remote area."

Still, even with sunshine, beaches, and palm trees to look forward to upon arrival in Galveston, Anderson left Siberia with mixed emotions.

"I left some good friends behind," he said.

Web-cams give you eyes everywhere

By Marie Darling
Cold Regions Research and
Engineering Laboratory

At a U.S. Army Corps of Engineers laboratory in Hanover, N. H., a technical staff member has taken an Internet idea and made remote worksite monitoring a reality.

According to John Gagnon, a technical staff member with the Cold Regions Research and Engineering Laboratory (CRREL), all it takes to "see" your work site hundreds of miles away is a camera and phone modem connected to the Internet. And he should know, because Gagnon has successfully linked many web-cams to the Internet all over the country during the past couple of years to bring the work site closer, allowing the researcher to observe from a desktop computer what is happening at a specific site.

"All it takes is a written proposal and a package that consists of a camera, phone modem and, for a nominal fee, you're up and running on the Internet," explained Gagnon. Initially, Gagnon's idea was to connect the winter activities of Soo Locks in the Upper Peninsula of Michigan (the series of locks which connects Lake Superior with the



John Gagnon hooks up batteries and a solar panel to power web-cams to monitor nesting sites. (Photo courtesy of CRREL)

lower lakes) to the Internet so that ice navigation could be observed from the Hanover facilities.

Access to distant sites like the Soo Locks enables research civil engineers like CRREL employee Andrew Tuthill to monitor the severity of ice conditions at the locks without the cost and downtime of travel from Hanover.

Tuthill used this information to calibrate and verify a physical model of

the Soo Locks. The purpose of the model study was to develop solutions to ice problems at the locks. The web-cams enabled Tuthill to monitor the ice situation at the Soo Locks during the early spring and, better yet, he could save images and make animations of the vessels moving into the ice-filled locks.

The web-cam images helped Tuthill to understand the interaction between

the ice, the vessels, and the structure, then to design a model testing schedule to address the problem in the Hanover lab.

There are many applications for this technology. Academia can use Web camera images to teach students about the mechanics of ice and related problems. From the classroom, students can access many sites, such as locks and dams in Illinois and Michigan, and even observe experiments and physical model studies conducted at CRREL. Barge operators and lockmasters have also used the Web images to keep up-to-date on the ice conditions at particular sites. The technology has also been used to observe endangered species with minimal disruption of their habitat.

CRREL's "cammed" sites are at www.crrel.usace.army.mil/ierd/webcams/. The sites of interest are under the key words "web camera." The most popular site is the Soo Locks in Sault Ste. Marie, Mich. This site has received up to 30,000 hits per day!

With all the existing and potential uses of Web cams, the possibilities are endless. CRREL engineers have shown that web-cams are the next best thing to being there.

Sergeant enjoys work in Japan District

Article by Maureen Ramsey
Photo by Doyal Dunn
Japan District

It's a long way from Missouri to Japan, and from being one sergeant among many to being the only one. But Sgt. First Class John Longcor made that jump. The former drill sergeant at Fort Leonard Wood, Mo., is stationed at the Marine Corps Air Station in Iwakuni, Japan. He is one of only five soldiers assigned to the Marine air station, and the only Army NCO in Japan District. Longcor is the Assistant Iwakuni Project Office Manager and Construction Representative for Japan District; the other four soldiers work at the base's Veterinary Clinic.

The assignment is unique for Longcor, whose previous experience has been mostly troop assignments. Longcor arrived in Japan in July 1998. Before his arrival, he served as a basic training drill sergeant, and later as a drill sergeant instructor, at Fort Leonard Wood, Mo.

"After 13 years of leading soldiers I find myself missing them, but also consider myself fortunate to have the opportunity to work along side professional engineers, both American and Japanese," Longcor said.

Longcor's assignment affords him the chance to gain experience in all aspects of construction from mechanical, civil, architectural, and electrical engineering to contract administration.

His daily routine includes performing quality assurance inspections on U.S. funded construction projects in the Honshu area and on Government of

Japan funded projects on the Iwakuni Marine Corps Air Station. He also attends project coordination meetings with the Directorate of Public Works and other agencies on the air station as well as conducts briefings at the project sites for visiting VIPs and the end users.

One of the biggest challenges for him has been the Japanese language.

"I've had to rely on the Japanese engineers numerous times to translate the details on the construction blueprints, that are often written in Japanese," said Longcor.

On the flip side of that challenge is the translation that Longcor does for the Japanese engineers. "On many occasions I've contacted U.S. manufacturers to get specifications and installation instructions, then I've explained them to the Japanese engineers in our field office. Teamwork enables us to overcome these and other construction challenges that we encounter daily."

Longcor and his family live on the Marine Corps base and he said they really like it. When compared to the long grueling hours of drill sergeant/instructor duty, his current assignment has some distinct advantages.

"This is the first assignment I have had where I actually work a normal schedule," Longcor said. "My two daughters are active in youth sports and I'm able to enjoy watching them participate. My wife, Tammy, is active with arts and crafts and currently has a home business in framing and matting. On weekends we enjoy travelling to the many sites and festivals on the islands of Honshu and Kyushu.



Sgt. First Class John Longcor inspects a recreation craft shop on Iwakuni Marine Corps Air Station.

We especially enjoy tent camping near the ocean at Hamada."

There is another added benefit to working alongside the project office's Japanese engineers. "My family and I have had the opportunity to become good friends with them and their families," Longcor said. "We've been able to experience and learn first-hand

many Japanese customs, while sharing American customs with them. We're often invited to participate in activities with them outside the work place."

While Longcor admits they sometimes miss Stateside duty, "we look forward to the experiences the next year and a half will bring," he said.

Around the Corps

SES position

Mohan Singh was selected as Director of Engineering and Technical Services in North Atlantic Division. Singh is currently the Chief of the Design Policy Branch in the Office of the Deputy Commanding General for Military Programs in Headquarters. A report date is to be determined.

Engineer of year

The Joint Committee of New Hampshire Engineering Societies (NHES) recently selected Leonard Zabilansky, a research civil engineer with the Cold Regions Research and Engineering Laboratory (CRREL), as the New Hampshire Engineer of the Year.

This award is presented during the NHES's Engineers Week celebration. Each engineer is nominated through a dual peer submission.

"I've always felt it was my obligation to give students the opportunity to see engineering applied by serving as a mentor," said Zabilansky. "I see it as a dual responsibility — teachers provide basics, and professionals provide how it's applied."

Viva Las Vegas

Assistant Secretary of the Army Joseph Westphal signed the first Section 211 Agreement at a Tropicana and Flamingo Washes groundbreaking and dedication ceremony on Dec. 17. The amendment to the Project Cooperation Agreement allows the Corps to reimburse the sponsors, Clark County Regional Flood Control District and Clark County, for about \$20 million of channel work along the Las Vegas beltway.

"I've seen first-hand the death and destruction caused by flooding in Southern Nevada," said Senator Harry Reid of Nevada. "We've made great progress in the past decade on flood control, and much of that has been due to the Corps of Engineers. During the next six years the Corps will complete work on a valley-wide system that will minimize damage from a major 100-year flood."

The groundbreaking marked the start of three new construction contracts totaling \$26.7 million. The projects are the Blue Diamond Detention Basin, the Western Beltway/Red Rock Channel, and the Lower Red Rock Complex Channel. All projects should be complete by early 2001. The Lower Blue Diamond Channel and Tropicana Detention Basin Outfall System were completed last October.

Under Section 211, local sponsors funded and provided the design and construction of flood control features on this federal project. This expedites project completion and provides flood protection. The Flamingo and Tropicana Washes project is one of only eight projects nationwide with the potential for local sponsors to implement a federal flood control project.

R&D achievement award

Javier Cortes, a chemical engineer in the Engineering Research and Development Center (ERDC) Environmental Laboratory, recently received the Army Research and Development (R&D) Achievement Award. Cortes and former ERDC employee Brian Miles received the award for their work on the Site Characterization and Analysis Penetrometer System (SCAPS) Laser-Induced Breakdown Spectroscopy (LIBS).

Cortes and Miles developed, demonstrated, and patented the LIBS probe, which scans and measures subsurface heavy-metal contamination for SCAPS. This on-the-spot technique results in soil characterization with greater speed, higher resolution, and lower cost than current soil sampling and laboratory analysis methods.

Shelby Center for Missile Intelligence

The Richard C. Shelby Center for Missile Intelligence was dedicated Dec. 17 at Redstone Arsenal, Ala. The \$33 million, 200,000 square-foot facility is a new scientific and technical intelligence center.

The facility will provide state-of-the-art accommodations for 500 scientists, engineers, and technicians who will analyze foreign material systems for DoD. It employs a comprehensive approach to provide a wide range of products to U.S. weapons developers, countermeasure designers, tacticians, and operational forces.

Thirty people from Mobile District worked from March 1996 through December 1997 on the project, completing it for 46 percent of the normal cost to design such a project, saving DoD about \$1.77 million during the life of the design project. The design team staff worked weekends, nights, and holidays to meet the tight schedule.

Coast 2050

New Orleans District and the Louisiana Department of Natural Resources held an historic signing ceremony Feb. 18 at the state capitol to launch a major coastal wetlands study.

By signing the Coast 2050 Feasibility Cost Share, the agencies initiated a \$6 million study of the Barataria Basin in April. The study will be completed in September 2001.

Barataria Basin was selected as the first area for study and action because it is the most critical, losing about 11 square miles annually. The study will focus on marsh creation, barrier island restoration, and river diversion strategies. Federal and state officials overseeing this effort estimate that an additional \$14 billion will be needed to fully implement the Coast 2050 strategy and restore a collapsing coastal ecosystem.

Hammer Award

Omaha District was one of several federal agencies to receive a Hammer Award for its role in expanding the inland maritime navigation system. Other recipients were the Coast Guard, Federal Railroad Administration, Federal Highway Administration, Department of Transportation, National Oceanic and Atmospheric Administration, and Air Force.

Expanding the Differential Global Positioning System coverage in the Upper Missouri River navigation system significantly benefits not only the Corps' navigation, flood control, and construction missions, but also a wide variety of land, air, and marine transportation and safety activities. This project developed a low-cost, highly accurate, and reliable electronic radio-navigation system revolutionizing Coast Guard buoy servicing operations, and enhancing safe navigation for all mariners.

Earl Hothem is area engineer at Fort Gordon, Ga., and Fort Jackson, S.C.

Correction

Earl Hothem is area engineer at Fort Gordon, Ga., and Fort Jackson, S.C.

ACOE award

The Huntsville Engineering and Support Center received a Chief of Staff of the Army Award in the 1999 Army Community of Excellence (ACOE) program. The winner of the Commander in Chief Award was the Army Armament Research, Development, and Engineering Center at Picatinny Arsenal, N.J. Eleven other Army installations received Chief of Staff of the Army Awards.

The ACOE program encourages the development of a quality environment and excellent facilities and services for soldiers. The ACOE integrates the Malcolm Baldrige National Quality Award criteria with the Army Performance Improvement Criteria for installation assessments. All Army installations, regardless of size, are assessed against this criteria.

Wetlands plan

Los Angeles District is conducting a wetlands plan to achieve a balance between economic development and aquatic resource protection. This federally authorized effort, called a Special Area Management Plan, focuses on three watersheds in Orange County -- San Diego Creek, San Juan Creek, and portions of San Mateo Creek.

The goal is to increase regulatory predictability for development permits, and allow comprehensive management of aquatic resources. Advanced planning would allow resolution of conflicts between conservation and the development of wetlands and other waters.

225 Years

Army skill defeats flood

During the 1937 floods on the Ohio and Mississippi rivers, Lt. Col. Eugene Reybold, district engineer at Memphis, Tenn., used his military expertise to combat the record high waters.

In January, rain equal to half the normal annual precipitation fell on the Ohio Valley, causing record floods at every point of the Ohio River and sending raging waters rushing down the Mississippi. The ground was frozen and the run-off rapid, and the flood threatened Cairo and the valley below.

Reybold drew upon his training at the Command and General Staff School to deal with the situation. He wrote an estimate of the emergency and organized a defensive position against the unpredictable and treacherous enemy. He called on St. Louis and Kansas City districts for boats equipped with radios and drew experienced flood fighters from all districts.

The commanding general of the 4th Corps Area in Atlanta supplemented the floating radio network with Army Signal Corps units equipped with field radios and telephones. Reybold had communications available for practically every mile of main levee in his district.

Finally, he set up Red Cross headquarters in Memphis to take care of anticipated flood refugees.

From his command post in district headquarters in Memphis, Reybold directed his forces against the approaching enemy. There were many dark moments, but Reybold promptly learned of every weakness in the levees and quickly had them reinforced.

"My military training, and similar training of countless engineer officers sent to my assistance, had a lot to do with the safe passage of the greatest flood the lower Mississippi Valley ever experienced," Reybold later observed.

'Capt. Concrete' retires after 59 years

By Jennifer King

Engineer Research and Development Center

I had my first encounter with Dr. Bryant Mather through a memorandum shortly after I graduated from college and started working for the U.S. Army Corps of Engineers. After writing what I thought was a terrific article on concrete research for *Engineer Update*, I received a memo from Mather detailing all the mistakes in the article and suggesting I take a short course on the metric system.

Fearing the worst (since I was a new employee and knew my position was probationary for the first year), I entered my boss's office with some trepidation, loathe to join the ranks of liberal arts majors in perpetual unemployment. I handed my boss the memo and fervently tried not to cry. But he simply laughed. Others later told me, "Congratulations. You've been Matherized."

"Matherized"

At the Engineer Research and Development Research Center (ERDC) headquarters in Vicksburg, Miss., being "Matherized" isn't just an expression. It's a rite of passage...a gauntlet that every employee who deals with the ERDC Structures Laboratory must run. Mather, who employees affectionately call "Captain Concrete" (behind his back, of course) is notorious for not holding back when it comes to concrete research. Being "Matherized" refers to doing something with concrete, doing it wrong, and Mather letting you know about it.

Mather, whose name is synonymous with expertise in concrete circles, recently retired from federal Senior Executive Service after 59 years of work for the government. His most recent position was Director of the Structures Laboratory.

When I entered his office to chat with him, Mather pushed his bifocals higher on his nose, turned up his hearing aid, and stretched out in a chair to tell me about his life.

He joined federal service in 1941, working first as a geologist and later as an engineer, specializing in concrete throughout his career. His first assignment was with the Central Concrete Laboratory at the U.S. Military Academy at West Point, N.Y. He has been affiliated with the Waterways Experiment Station (now ERDC headquarters) since 1946.

Despite a lifetime of service to the Corps, the Baltimore native almost didn't work for the Corps. After receiving a degree in geology from Johns Hopkins University and working for one summer with the U.S. Geological Survey, he joined the Museum of Natural History in Chicago as the curator of minerals. Unsatisfied with museum work, Mather took the civil service exam and received a 40 when 60 was a passing grade. At the time, he was making \$150 per month and putting \$100 of it in the bank.

Family affair

"I reached the point where I had \$1,200 in the bank, and I felt rich, so I got married," Mather said. Mather admits his wife "...got better marks in graduate school than I did." He and his wife Katharine both re-took the civil service exam — she got an 84.4; he got an 84.6, and he got the first job offer.

"I got a job with North Atlantic Division as a junior geologist," Mather said. "I didn't choose the Corps; the Corps chose me. The last thing I thought was that I'd spend my whole life with this organization."

Mather, who received an honorary doctorate from Clarkson University in 1978, admits that some people are surprised that his educational background is in geology (with post-graduate work in both geology and economics) but that he works in concrete.

"Nobody is better qualified to work with concrete than a geologist," Mather said. "Concrete is syn-



Dr. Bryant Mather, known as "Capt. Concrete" in the Structures Laboratory of the Engineering Research and Development Center, is retiring after 59 years of federal service. (Photo courtesy of ERDC)

thetic sedimentary rock, and that's what geologists do. They study rocks."

He should know. He has authored or co-authored more than 600 technical papers or reports.

No simple answers

When asked a simple question on the difference between concrete and cement, Mather leaned back in his chair, crossed his arms, and grinned.

"Concrete is a mixture of hydrated cement, fine aggregate, coarse aggregate and water," Mather began. "If you leave out the coarse aggregate and it's a thin mixture, then it is grout. If you leave out the coarse aggregate and it's a thick mixture, then it is mortar. If you leave out both the fine and the coarse aggregate and it's a thin mixture, then it is neat cement grout. If you leave out both the fine and the coarse aggregate and it's a thick mixture, then it is cement paste."

Then the grin got wider. "But that's probably more than you wanted to know," he added, and chuckled.

So much for simple questions. With Mather, there are no simple answers when talking concrete. But then, he is aware of this, and I think he relishes it.

Through a nearly six decade career with the Corps, Mather has seen many changes, but three stand out.

Changes

"The first change is that prior to my retirement, I was making a lot more money than when I first started working," he joked. Then, for a few moments, he became quietly serious. "As for the Corps in general, over the past 60 years there has been some major changes in that at the end of World War II (yes, he worked for the Corps then), the Corps moved into a period of major construction. Then it managed to do two things. First, the Corps used most of the good dam sites so that future flood control structures are less justified. Two, the Corps failed to anticipate the environmental movement and get into agreement with people interested in protecting the environment."

Mather then discussed his view of the Corps today. "The Corps is still adjusting from construction

work with a disregard for the environment to its present posture where we want to get along with everyone and still get everything done, including some very large projects," he said. "The important thing that has not changed in all this time is that the Corps has preserved its reputation for integrity."

In awe of his having the same job for 59 years, I asked Mather why he stayed for so long.

"I've always regarded changing jobs as something that is done because you expect the new job to be more fun than the current job, or there is some requirement of the present job you can no longer fulfill," Mather said. "Four years ago, I told General Ballard I had the same retirement plans I had 15 years ago. I'd retire in only five minutes notice if one of three things happened. One, if my doctor said working was bad for my health. Two, if my boss told me I wasn't worth what he was paying me. Three, if I got up two days in a row and figured I'd have more fun if I just stayed home."

Insect expert

Besides being an internationally recognized concrete expert, Mather is also an avid lepidopterist (one who studies butterflies and moths). In honor of his work, seven species have been named *matheri*—four moths, two butterflies, and one flyfish.

"The summer when I was 11 years old, my parents sent me to YMCA summer camp," Mather said. "I shared a tent with a slightly older boy who collected butterflies. I came home and told my mother I wanted to do that, so I went to the local public library and learned how to get started. Then in 1932, I joined the Natural History Society of Maryland and learned how to pin and spread the insects."

Mather temporarily abandoned his interest in insects when he discovered rocks, but returned to entomology as a hobby in 1946. When he moved to Mississippi, he discovered butterflies he had never seen. At that time, there was little literature on Mississippi butterflies, so Mather began documenting them. By the time he finished, there were 120 species of butterflies listed in Mississippi. After 10 years of work on butterflies, Mather turned to moths.

Overseas

"I collect insects wherever I am," Mather said. "I've caught a few hundred from windowsills in airports." The list of airports where he has captured insects reads like a jetsetter's grand tour — Moscow, Prague, Vienna, Tokyo, and Singapore, to name a few.

"I've collected a fair amount in Switzerland, too," Mather added. "Sometimes, if I'm going some interesting place that is likely to yield good stuff, I stay an extra day for collecting. I did that two years ago near Banff in Alberta, Canada, and collected just outside a national park."

Years ago, Mather went behind the Iron Curtain and did some catching.

"I caught a white butterfly off a lilac bush in the Kremlin," Mather said. "I put a red label on it."

Despite his formal retirement, Mather isn't through working yet. He currently serves as the Director Emeritus of the Structures Laboratory, where he continues to participate in technical societies and to write technical papers on behalf of ERDC.

"Now I do the same that I've always done, but I don't get paid," Mather said. "But I also don't have to do stuff that as lab director I didn't like to do, such as administration meetings, performance appraisals, worrying about the budget."

He's still running at full speed, too. As we finished talking, he stood up, smiled, waved his hand toward the door and said, "Carry on. I've got phone calls to make now."

I hope those calls keep him too busy to send me another memo. I'd hate to get "Matherized" again!